



The role of intellectual capital in the financial performance of listed manufacturing firms in Pakistan

Dissertation Submitted In Fulfilment of the Requirements For The Degree Of Doctor Of
Philosophy

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Abstract

Intellectual capital is emerging as a growing area of research in accounting and management literature. Prior research still reveals competing arguments about the concepts and components of intellectual capital. Empirical research on the importance of intellectual capital in developing countries' contexts was recognised in the early 2000s. However, there is a lack of research examining the role of intellectual capital in the financial performance of firms in developing countries. This study contributes to knowledge in several ways. Prior studies used return on equity, return on capital employed, and return on assets to determine the long-term profit performance of firms. However, none of those studies focused on the impact of intellectual capital on the short-term profit performance of firms. This study broadened the scope of research aiming to examine how intellectual capital influences both the short-term and the long-term profit performance of firms. Another contribution of this study is that it considered all firms in the manufacturing sector in Pakistan while prior studies were mostly undertaken on the textile companies. The study developed and tested four hypotheses to explain the impact of intellectual capital on the short-term and long-term profitability of the selected firms. Data were collected from the annual reports of 24 manufacturing firms listed on the Pakistan Stock Exchange. Data covered a period of 2012 - 2016 with observations of 120 firm-years. For hypotheses testing, the partial least square method was used to assess the structural equation model (PLS-SEM). The results of the study prove all four hypotheses, including the partial mediational effect of short-term profit between the value-added intellectual capital and long-term profit performance. The study has implications for the listed manufacturing firms in Pakistan to perceive the suggested links between intellectual capital and various types of financial performance of firms. In the absence of generally accepted theories neither found nor suggested in prior research, the study used the resource-based theory which suggests insights for future researchers to perceive and explain the varying relationships between intellectual capital and financial performance of firms.

Key Words:

Agency Theory

Asset Turnover

Business Firms

Capital Employed Efficiency

Developed Countries

Developing Countries

Financial Performance

Gross Profit Margin

Human Capital

Human Capital Efficiency

Intellectual Capital

Long-Term Profit

Manufacturing

Net Profit Margin

Organisational Capital

Pakistan

PLS-SEM

Relational Capital

Resource-Based Theory

Return on Assets

Return on Equity

Short-Term Profit

Stakeholder Theory

Stewardship Theory

Structural Capital

Structural Capital Efficiency

Value Added Intellectual Capital

Value Addition

Declaration of Authorship and Originality

I, the undersigned author, declare that all of the research and discussion presented in this thesis is my original work performed by taking valuable suggestions from the supervisors. No content of this thesis has been submitted or considered, either in whole or in part, at any tertiary institute or university for a degree or any other category of award. I also declare that any material presented in this thesis performed by another person or institute has been referenced and listed in the reference section.

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Dedication

I dedicate this thesis to my father
(Professor Zahier Ahmed Butt)
without his prayers and motivation, I
would have never been able to write
these words.

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Chapter One: Introduction

1.1 Introduction

Intellectual capital (IC) is becoming an interesting area of research in the twenty-first century. Various studies explain the importance of IC for an organisation (Shamsuddin & Jaaffar, 2018; Thiagarajan, Baul, & Sekkizhar, 2017; Lizote, Alves, Verdinelli, & Terres, 2017; Smriti & Das, 2017). However, researchers are still struggling to define the various concepts of IC, examine the relationships among the components of IC and explicate how each component of IC can contribute to a firm's performance (Vidyarthi, 2019; Yilmaz & Acar, 2018; Chowdhury, Mostofa, Rana, Akter, & Hoque, 2018; Wang, Cai, Liang, Wang, & Xiang, 2018; Hidalgo, García-Meca, & Martínez, 2011). This study reviews prior research to primarily describe what IC is and what relationships exist among the various components of IC.

This study is undertaken in the context of Pakistan. Pakistan, being a developing (The World Bank, 2018) country, intends to achieve its sustainable development goals by focusing on the areas that can contribute to build an economically strong nation (Daud & Kaimenakis, 2007; Chen, Cheng & Hwang, 2005). The neighbouring countries in South Asia, such as India and Bangladesh, are on the move to achieve their sustainable development goals by providing immense emphasis on the need for IC to expedite their firms' performance and economic growth. Indeed, there is a relationship between IC and financial performance of firms (Rauf, Khalid, Mustafa, & Isa, 2018). After independence in 1947, Pakistan had a good start towards being an economically strong country, but due to political instability and frequent military takeovers, the country soon lost its momentum (McCartney, 2011). Despite turbulent political circumstances caused by internal and external factors, Pakistan has placed a high degree of emphasis on exploring how it can enhance the skills and capability of its human resources to enhance productivity and performance of firms in various industry sectors with the goal to

ultimately expedite the macro-level economic development (Kazmi, 2017). However, there is a dearth of research examining the association between IC and financial performance of firms in Pakistan. Only a few studies were recently conducted (for example, see Jordan & Martos, 2012; Makki & Lodhi, 2008; Mir & Nishat, 2004). These studies are deficient in explicating the conceptual and theoretical underpinnings of IC. Further, neither do they clearly describe the methodological approaches necessary to explain the relationship between IC and firm performance, nor do they provide effective suggestions for future research. Based upon the perceived knowledge of IC and the lack of research, this study sets its main purpose to examine the association between IC and financial performance of selected firms in the manufacturing sector in Pakistan. The present study contributes to the literature by providing suggestions for policy implications and future research. This chapter in a subsequent section and Chapter seven elaborate the contribution of the study.

The rest of this chapter is divided into seven sections. Section 1.2 discusses the research problem and the rationale behind the study. Section 1.3 explains the research questions addressed in the study and details the hypotheses based on the research questions. The theoretical framework of the study is explained in section 1.4. Section 1.5 briefly explains the findings and conclusions of the study. This section is followed by a description of the contribution and implications of the study in section 1.6. The chapter ends with a chapter-by-chapter overview of the structure of this thesis in section 1.7.

1.2 Research problem and rationale for the study

In today's emerging economies, where everyone is in competition, companies are striving to find ways to ensure long-term sustainability. The reasons for success and failure in these economies have been the focus of researchers (Handzic, Durmic, Kraljic, & Kraljic, 2016). Survival of a business firm depends on its ability to use its resources at optimum level and mix

its investments in physical fixed assets and non-physical assets including IC (Vidotto, Ferenhof, Selig, & Bastos, 2017). Better financial performance of a firm depends on the mix of investment decisions made by the management. Bontis (2000), however, found that even though companies were getting an advantage from IC, not even a quarter of IC was being utilised by companies during the last decade of the previous century.

In particular, after the global financial crisis (GFC), some researchers conducted studies examining the reasons behind the survival of their sample companies that were not affected by the GFC (Teplova & Sokolova, 2019; Zhang & Tao, 2012; Hanif & Jalaluddin, 2013). The capital structure models of such companies were widely discussed in these studies. The findings of these researchers regarding the capital models employed in companies caused a shift in investment from tangible assets to intangible assets (Shakina, & Barajas, 2016). The importance of intangible assets has increased with the development in the areas of science, technology and knowledge-oriented economies (Stewart, 1997; Fu, 2003). The knowledge-intensive industries have been becoming the main focus for researchers for the reason that the value and demand for skilled labour is at its peak (Iazzolino & Laise, 2013). As skilled labour is an integral component of IC, IC has recently been a subject of intense research in the developed world (Abhayawansa & Guthrie, 2014; Striukova, Unerman, & Guthrie, 2008). It is suggested that business firms in developing countries increase their spending on research and development (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). However, people (and firms) in Pakistan trust more in their own experiences rather than in the best management practices (rules) described in various researches conducted on other parts of the world (Jardon & Martos, 2012).

The manufacturing sector has an important role in the economic growth of Pakistan (Hashmi, Mirza, & UsSehar, 2016; Majeed, Hashmi, & Qamar, 2017; Arif & Jamil, 2018; Asghar, 2019).

Manufacturing firms such as textiles, garments and agro-based firms in underdeveloped and developing countries in Asia including Pakistan are traditionally labour-intensive. Prior research shows that the importance of a transition from the labour-based manufacturing process to the technology-based manufacturing process was perceived in the early 1990s (for example, see Nazim, Ma, & Montagno, 1991). With the advancement of knowledge and substantial use of technology in industries in these days, the importance of providing training to employees has increased (Barkata, Beha, Ahmed & Ahmed, 2018; Jaiswal, Gupta, & Singh, 2014; Cisneros & Hernandez-Perlines, 2018; Smriti & Das, 2017)

Roos and O'Connor (2015) suggest that adequate and effective policies are necessary to increase employee skills and thus to enhance a country's manufacturing sector's competitiveness globally. While the manufacturing sector in Pakistan experienced ups and downs (Asghar, 2019), there is no adequate research on the IC in Pakistan. There were some studies (Esso, 2010; Punchihewaa, Chandrakuma, & Kulatunga, 2016; Herman, 2016; Gautam, Baral, & Herat, 2008; Hossain & Dias Karunaratne, 2004) conducted on IC in similar economies but those mainly focused on the knowledge-based sectors (Marr, Schiuma, & Neely, 2004; Campbell & Rahman, 2010). More importantly, research findings based upon empirical investigations have not been well-perceived and applied by industries in those countries (Chiucchi & Montemari, 2016). Managers would have benefited from prior research to learn how to identify employee skills. On the other hand, the same knowledge can be utilised by the business firms in the form of capital if they accrue it over the years. Employee skills along with documented procedures can shape the initial form of IC for a firm (Lentjusenкова & Lapina, 2016).

While the importance of IC is critical for manufacturing firms in Pakistan, real research problems are to identify the different components of IC in Pakistani firms, understand the

interrelationships of the components of IC and also perceive how or to what all these components contribute to enhance the performance or the value of firms. It is argued that “IC is typically understood to consist of human capital, which is creative, organisational capital, which consists of best practices, and relational capital, which draws and develops knowledge from suppliers and customers” (Giuliani & Skoog, 2017, p. 2). All these three types of IC are also classified as internal (structural capital), external (relational) capital, and human (employee) capital (Striukova, Unerman, & Guthrie, 2008). In a nutshell, knowledge-based duties of employees (human capital) together with decision-making abilities of managers (structural capital) and the competitive advantage of a company (relationship capital) is known as the IC of an organisation (Nadeem, Gan, & Nguyen, 2017). However, human capital and structural capital have attained the focus of researchers Maji & Goswami, 2016; Shamsudin & Yian, 2013; Wyatt & Frick, 2010) in past. These two components combined with financial capital employed by the business firms have been used to develop the value-added intellectual capital.

Given the perceived chemistries of the components of IC, a rationale for undertaking this research is to examine how different components of IC simultaneously contribute to the performance of firms and ultimately impact upon the value of firms in the manufacturing sector in Pakistan. A number of researchers argue that value is created when connections are developed among the components (elements) of IC and with other organisational resources (Edvinsson, & Malone, 1997; Mouritsen & Larsen, 2005; Stewart, 1997; Giuliani & Skoog, 2017).

Management’s decisions have a strong effect on organisation performance (Cariola, Rocca & Rooca, 2007). Managers build interconnectivity between different parts of a businesses to achieve constant improvement in the processes (Novas, Alves, & Sousa, 2017). Moreover, the quality of such managerial decisions is based on the ability of managers. Particularly, IC

efficiency can be used as a benchmark and strategic indicator to direct financial and intellectual resources in the right direction.

1.3 Research questions and hypotheses of the study

On the basis of perceived research gap as explained in the previous section, this study sets the following research questions to examine the relationship between IC and financial performance of firms in the manufacturing sector in Pakistan. This section also reports the hypotheses developed in line with relevant research questions.

Q1: What is the role of different components of IC on the short-term and long-term profit performance of firms?

This question addresses the main research problem of the study to find the impact of intellectual capital on the financial performance of firms in the manufacturing sector. The following two hypotheses are relevantly developed below:

- H1: Value-added intellectual capital (VAIC) has a positive and significant effect on the long-term profits of firms.
- H2: Value-added intellectual capital has a positive and significant effect on the short-term profits of firms.

Q2: How important is the short-term profit performance to achieve a steady growth in the long-term profitability of firms?

This question adds to the current literature by investigating the importance of short-term profitability of firms in regard to the long-term sustainability of firms in the manufacturing sector in Pakistan. This question leads to the following hypothesis (H3):

H3: Short-term profit has a positive and significant impact on the long-term profit.

This research question is also considered while developing a mediating hypothesis below:

H4: Short-term financial performance mediates between the value-added intellectual capital and long-term financial performance of firms.

1.4 Theoretical framework

Prior researchers unfolded a few theories, such as signaling theory (Singh & Zahn, 2009; Li, Mangena, & Pike, 2012) to explain the effect of IC on the disclosure of information and actor-network theory (Mouritsena, Larsena, & Bukhb, 2001) to narrate the relationship of IC and the capable firms. However, these theories are not well applied in contemporary research on IC. As this study aims to specifically examine the relationship of IC and financial performance of firms, chapter three identifies and discusses stakeholder theory, agency theory and stewardship theory to examine whether any of these theories fits well into this study to explain the association between IC and financial performance of firms.

As stakeholder theory, agency theory and stewardship do not explicitly explain the relationship of IC and financial performance of firms, resource-based theory finally has been used in this study for a number of reasons. By definition, IC refers to knowledge-based resources of an organisation (Striukova, Unerman, & Guthrie, 2008). The three forms of IC, such as human capital, structural capital and relational capital are the indicators of a varying range of firm resources (Giuliani & Skoog, 2017). Which also related with the first question of the study related to first two hypothesis of the study to find the relation between components of IC and firms' short term and long term profits. Finally, resource-based theory links between employees' knowledge and organisational competencies (Mouritsena, Larsena, & Bukhb, 2001) which is an important factor for the firms to transform short term profits into long term

profits. This relationship between the employees' knowledge and organisational competencies is linked with the second research question of the study which addresses the third and fourth hypotheses discussed under section 1.3. Thus, resource-based theory focuses on the importance of human capital and links it with the financial growth or performance of business (Pradita & Solikhah, 2017). Resource-based theory also has more support from prior research (Barney, Jay, & Clark, 2007; Wan, Hoskisson, Short, & Yiu, 2011; Helfat & Peteraf, 2003) that have conducted research on the relation of intellectual capital with the financial performance of business firms. The main arguments for the resource-based theory and a theoretical framework showing the connectivity of the components of IC have been presented in chapters three and four.

1.5 Discussion on the financial reporting and regulatory environment in Pakistan

At the time of independence in 1947, the first corporate law incorporated in Pakistan was the 'companies act 1913' with a very basic requirement for companies to maintain the records for all sales (receipts) and purchases (payments) and to maintain a record of assets and liabilities. The first body of accountants was formed in 1952 under the name of 'Pakistan Institute of Accountants (PIA) followed by the formulation of Institute of Chartered Accountants (ICAP) in 1961 and Institute of Cost and Management Accountants (ICMA) in 1966. The formulation of professional accounting bodies provided a path for improvement in accounting regulations in Pakistan (Shah, Hussain, & Ahmed, 2008).

Major amendments in the companies act 1913 were implemented in 1972 which involved the semiannual accounts for all public listed companies in Pakistan. But business firms were not required to follow the International Accounting Standards (IAS) up until the introduction of the Companies Ordinance 1984 which made it compulsory for the public listed firms to provide

adequate disclosures and implement the standards provided by IAS. It was the first time when the public listed companies started reporting the remunerations of their directors, chief executives and auditors. This was one of the major steps towards the importance of intellectual capital for the business firms.

The governing body formed in 1981 under the name of Corporate Law Authority (CLA) was replaced with the Securities and Exchange Commission of Pakistan (SECP) in 1997 to provide further improvements in the corporate sector of Pakistan. The new governing body helped opening new stock exchanges in Lahore (LSE) and Islamabad (ISE)¹. SECP also formulated the corporate governance code of conduct in Pakistan in the year 2002 which opened a gateway for researchers in Pakistan for the study of intellectual capital and corporate governance. It also encouraged public limited companies to work in favour of community and adopt according to the changing demands of general public. The practice provided a chance for the business firms to be a part of society by providing support to general stakeholders without impacting the interests of shareholders in the business (Ahmed & Ahmed, 2011).

Realising the importance of corporate social responsibility of public limited firms, SECP issued a general companies social responsibility order² in 2009 binding all public companies to specify corporate social responsible (CSR) activities with all audit reports. In the year 2012, SECP provided guidelines to all public limited companies to adopt voluntary disclosure of all CSR activities (SECP, 2016). Large scale companies have utilised the benefits attached with the voluntary disclosure through their annual reports as well as creating awareness in general

¹ These exchanges are now merged into one and renamed as Pakistan Stock Exchange (PSE)

² (i) Corporate philanthropy (ii) Energy conservation (iii) Environmental protection measures (iv) Community investment and welfare schemes (v) Consumer protection measures (vi) Welfare spending for under-privileged classes (vii) Industrial relations (viii) Employment of special persons (ix) Occupational safety and health (x) Business ethics and anti-corruption measures (xi) National-cause donations (xii) Contribution to national exchequer (xiii) Rural development programs.

public about the role these businesses are paying towards a safe and better social environment (Ahmed & Ahmed, 2011).

1.6 Findings and conclusions

This study is conducted in an effort to examine the effects of intellectual capital on the financial performance of firms. In particular, this study tests the importance of short-term profits for the long-term growth of the selected firms and tests their ability to convert short-term gains into long-term profits by making decisions based on the strategical analysis regarding the past performance. The study tests four hypotheses to answer the two research questions. The first two hypotheses that were tested for examining the impact of value-added intellectual capital on firms' short-term and long-term profit are found to be significantly positive. The test of the third hypothesis supports the importance of short-term profit for growth of the firms' profit in the long-run. The results for the third hypothesis are also found positively significant. However, the results found upon the fourth and the last hypotheses show a partial relationship as to the short-term profit's mediation between value-added intellectual capital and the long-term profit performance of firms.

1.7 Contribution of the study

The study contributes to the existing literature on intellectual capital and organisational financial performance in a number of ways. Firstly, the study contributes to fill in the research gap by examining the relationship between intellectual capital and financial performance of firms in Pakistan. There is no previous study conducted on this topic. The study is also unique in its nature as it considered only those firms that earned profits during the study period (2012 to 2016). Firms that were unable to maintain their short-term profit and convert them into long-term profit were not considered. As the study's aim involved checking the profitability of the firms, all companies which suffered losses during any of the years were removed from the list.

Only Top performing firms were chosen from different industries in the manufacturing sector. Secondly, this study is the first in its nature considering both short-term and long-term profits as the proxies of financial performance. A comparison of short-term and long-term profit helped in examining the operational efficiencies of the top management by analysing their ability to transform the available resources in the best possible mix. Another contribution of this study is that it highlights the importance of short-term profitability of firms to maintain their competitive edge over other firms in the industry in the long-run. In the absence of generally accepted theories suggested in prior research, the study used the resource-based theory which suggests insights for future researchers to perceive and explain the varying relationships between intellectual capital and financial performance of firms.

The study also provides suggestions for future research. Future studies may consider expanding the concept of intellectual capital to one particular industry and can enhance their findings by dividing the sector into different categories in terms of their profits in several years. A further contribution of the study is that it suggests the use of a research methodology by considering the mediating affect that the short-term profit has on the long-term profit.

1.8 Structure of the thesis

This section sketches what each chapter covers in the thesis. Chapter one outlines the importance of the study and then outlines the research questions, relevant hypotheses, theoretical framework and research methodology of the study. The chapter ends with a brief description of the contribution of the study towards a body of knowledge and actual practices.

Chapter two presents the literature review. The chapter describes various concepts and components of IC. Overall, three components of IC are commonly found in prior research. These components are the human capital, structural capital and relationship capital. Each component of IC is then explained in detail with its importance for organisational financial

performance. The chapter describes the importance of financial performance for sustainability of a firm.

Chapter three critically evaluates four theories from accounting, finance, management and psychology literature to develop the theoretical framework of the study. Based upon critical evaluation of the contrasting features of four theories, such as resource-based theory, stakeholder theory, agency theory and stewardship theory, the chapter finally explains why the resource-based theory fits into this study for explaining the relationships between IC and financial performance of firms.

Chapter four, explains the research methods, including the collection and analysing of data. It further explains the importance of long-term and short-term profit for firms, and then the methods used in the past to measure the efficiencies of the components of IC is discussed. In addition to the research methods for analysis of data used in previous empirical studies, this chapter describes the PLS-SEM method used in the present study.

Chapter five presents extended explanation of the concepts covered in chapters two and three towards the development of the research model. This chapter shows the relationship between the variables selected for the study by linking the efficiencies of IC with organisational financial performance. The variables used in the model are also discussed in this chapter.

Chapter six presents the findings of the study using the PLS-SEM method. Data are tested for the structural analysis and all results were presented aligned with the details provided in chapter four. Based on the results found, this chapter presents that the main three hypotheses are found significant while the mediatory hypothesis is found to be partially significant. Thus, this chapter reports that all hypotheses tested are accepted in this study.

Finally, chapter seven discusses the findings of the study and relates those to the findings in previous studies. The chapter provides a snapshot about the issues and problems that were faced during this study. The chapter finally presents the policy implications and suggestions for future research.

Chapter Two: Literature Review

2.1 Introduction

Chapter one has explained the purpose and background of the study. The present chapter reviews prior research to explain the history of IC, the conceptualisation of IC, the relationship of IC to financial performance and the extent of research examining the relationship of IC and financial performance in Pakistan. The chapter is organised as follows. Section 2.2 covers the journey of IC, covering the confusions or misconceptions that top management and shareholders can have about the importance of IC. Section 2.3 offers a detailed discussion about the concepts and components of IC, which are further divided into subsections explaining the most important components of IC that has been covered in the past by various studies. A detailed understanding of human capital, structural capital and relational or customer capital is provided under subsections 2.3.1, 2.3.2 and 2.3.3. Section 2.4 explains the concept of financial reports and helps readers to understand the meaning of financial performance. After explaining IC in Section 2.3 and value added intellectual capital under Section 2.4, Section 2.5 explains the concept of financial reporting followed by the relationship between these two under section 2.6. Chapter ends with a brief summary under Section 2.6.

2.2 Evolution of intellectual capital

In the era of globalisation, firms in the capitalist and developing countries compete with each other both nationally and internationally to sustain an ongoing concern with successful performance over the years. However, the values of firms in the balance sheet may be different than their value in the market despite their similar amount of investment in assets. Researchers suggest examining whether or not IC contributes to this difference. There is a huge gap in research which needs to be addressed to find out the reasons behind the difference in corporate values of the same-sized businesses. (Maji & Goswami, 2016). The idea of disclosing the IC

emerged due to these efforts, and extensive research was conducted to ensure the awareness of the hidden strengths of the firms in the form of IC to all stakeholders (Giacosa, Ferraris, & Bresciani, 2017). This era of initial research is called the static era for development of IC (Giuliani, 2015). During the static era IC was treated only as a source of knowledge or compilation of knowledge, but still the real value was not recognised (Lentjusenкова & Lapina, 2016).

Due to the efforts of researchers the companies slowly started to realise the importance of the knowledge of the workers they had. Managers started to realise that the things that really matters are to transform knowledge that the firm has in its employees and utilise their knowledge at the best possible level. The transformation of the IC of the firm into output through an efficient production system was the main task assigned to every business (Forte, Tucker, Matonti, & Nicolò, 2017). Once comprehended, companies tend to increase their interest in incorporating IC to gain more advantage over their competitors (Nimtrakoon, 2015). Firms slowly started to recognise the importance of IC and started focusing on enhancing their skill levels.

The increased knowledge was finally recognised by the managers. With the passage of time IC started to be recognized as the main reason that provides the competitive edge to one company over the other. This also caused a shift in the approach of researchers from considering IC as a set of information to a basis of value creation for the organisations (Lentjusenкова & Lapina, 2016). The era for value creation is termed the dynamic era (Giuliani, 2015). Firms started to focus on the skilled labour they had rather than focusing on increasing their investments in tangible assets. Researchers played a vital role in making the shift to focus on the brains in an organisation rather than the physical assets (Farahani & Ramezan, 2015).

During the last two decades (Nimtrakoon, 2015; Nawaz & Haniffa, 2017) companies across the globe have realised the importance of reporting IC, but its importance has not been realised in developing countries (Dumay, 2016). The main reason behind the success of businesses in developed countries was that they started focusing on the knowledge much earlier than the developing countries. Developed nations were the first ones to realise the importance of IC. Countries like Japan, Germany and Hong Kong even allocated resources at the government level and are still trying to achieve the desired output. The focus of firms' managers in these countries was only to understand how the reporting of IC can benefit the companies rather than looking at the broader aspects (Dumay, 2016). There is a need for the companies in developing countries to provide resources which will enable them to enhance their production abilities.

Companies suffer due to the weaknesses they have in the skillset of their employees. On the contrary, the companies that utilise the human workforce get better profits in the short-run and in the long-run. Research on the importance of IC facilitates organisations to find their weak points or to build on their strong points, and to encourage employees of the firm to share their knowledge through various knowledge-sharing activities, including on-site or off-site training. It is also beneficial for shareholders in the developing countries to know exactly where their business stands after years of repetition of tasks conducted in the organisation. Top management need to make procedures where all actions can be monitored and gathered for the benefit of those who are following (Pablos, 2004). Top management, including the chief executive, are paid higher salaries for the reason that they can share their skill level with the human capital of the firms. The investment made in the form of salaries for top management can only bring returns if every employee gets the benefit from the experience of top executives.

2.3 Concepts and components of intellectual capital

The clarity of a concept makes it easier for a researcher to define the direction of study and to come up with the desired results. The clarity of the concept of a study is very important to understand the results. Empirical findings with strong concepts are very important for any study especially in the area of business management. The same is the case with IC and its relationship with firms' financial performances. Historically, the phrase 'intellectual capital' was always linked with the financial performance and corporate value of a firm. The relationship grew stronger especially after the world shifted from the traditional methods to information- and technology-based businesses. Since then the topic has intensely been researched for the proper definition of IC. But the researchers are still finding it hard to come up with a definition that can be accepted across all businesses in the world.

Different researchers (Ferenhof, Durst, Bialecki, & Selig, 2015; Israelsen & Yonker, 2017; Jordao & Almeida, 2017) have defined IC in different ways. Table 2.1 compiles some definitions used in the past by different researchers. Apart from the differences, these definitions have been proved with research-based evidence. These researchers may have disagreed on the definitions, but all agreed on one statement: the fact that so far there is no proper definition for IC; it is really hard, if not impossible, to accept one definition and reject the others (Shamsudin & Yian, 2013). The very basis of all definitions is the focus on the importance of the people involved in the production methods. The skillset possessed by the workforce has been the most debated topic in all research conducted in the recent past. In its simplest form, IC refers to a group of employees who have knowledge, experiences, and achievements that will enable them to contribute towards achieving a firm's long-term goals and maximizing shareholders' worth and society benefits (Khalique, Bontis, Shaari, & Isa, 2015).

Table 2. 1 List of Prior Studies

Authors	Year of Article	Objective/Aim	Research Framework/Conceptual Model	Brief Method	Key Findings	Key Limitations
Filipe Sardo, Zélia Serrasqueiro	2017	Relationship between Firm's financial performance and Market Value and relation between ownership and IC performance.	Study of non-financial listed firms in 14 countries from year 2004 to 2015.	Tobin Q, VAIC relation with ROA. Calculated statistical data (Mean, Median SD) for all values across all countries.	HC is a key factor for company's wealth. Capital employed efficiency has positive relation with FP in short-run. Structural capital affects FP in the long-run.	Difference between the cultures of countries was not accommodated. Other characteristics like legal aspects, accounting practices were not considered as well.
William Forte, John Tucker, Gaetano Matoni and Giuseppe Nicolò	2017	To find the relation between IC and Market to Book Ratio.	To find the relation between IC and firms financial performance using ROE as firms' financial indicator. 140 Italian corporations between 2009 - 2013	OLS regression. ROE taken as the financial performance indicator for the firm.	Other than age and size of the firm, most of other IC components affect the financial performance of the firm.	Pooled OLS regression with control for years in employed. MTB ratio may have affected due to fluctuation in historical cost and market fluctuations.
Lara Agostini, Anna Nosella, Roberto Filippini	2017	Relation between IC and SME innovation process	150 SSME's from manufacturing industry. Data collected via Survey. To validate the reason behind SME's innovation process and its significance related to IC.	Cluster analyses complemented by a t-test.	Some SMEs are related to IC in terms of Human capital, innovation capital and relational capital while others show different measures of strengthening their innovation process.	Difficulty of data collections, Specific industry only. Interrelation between components of IC was not checked.
Tasawar Nawaz, Roszaini Haniffa	2017	Relation between IC and financial performance of banking sector	Studied 64 Islamic Financial Institutions in 18 different countries.	VAIC method used. Return on Assets (ROA) was used as measure of financial performance.	Significant relation between HCE & CEE with financial performance and no significance found between SCE and FP of the institutions.	Use of secondary data taken from annual statements of the financial institutions.

Ricardo Vinícius Dias Jordão, Vander Ribeiro de Almeida	2017	Finding ways of measuring their IC (IC), and its effects on competitiveness and financial sustainability.	To analyse the influence of IC on the long-term financial performance of Brazilian companies	Descriptive and multivariate statistics	IC influences positively the profitability and corporate return of these companies. Higher value of IC shows higher performance of companies. IC helps increasing FP over time.	Only theoretical and imperial measures were studied. The concept of IC is still under evolution.
Jorge Casas Novas, Maria do Céu Gaspar Alves, António Sousa	2017	To examine the role of management accounting system on the development of IC.	To find the relation between HC, SC and RC on organisational performance.	Questionnaire method, analysed through the use of Structural Equation Modelling with AMOS.	Management accounting system has a positive role to play in improving HC and SC in organisations. SC has a positive link with organisational performance as well.	Relation between variables was positive but not statistically significant.
Mariia Molodchik, Carlos Maria Jardon	2017	Justify the link between the endowment of intellectual capital (IC) and product novelty in SME in Russian businesses.	To study the role of knowledge in business growth. Studied 1400 Russian manufacturing SMEs.	Regression model	Higher (IC) endowment promotes the level of product novelty.	The study employs cross-sectional data that restrict the analysis of innovation dynamics.
Irina Berezinets, Tatiana Garanina, Yulia Ilina	2016	To determine the IC of the Board of directors.	To find out the origin of IC Creation in a company.	Questionnaire approach in US companies regarding importance of IC of Board of Directors.	A board member with relevant knowledge about business operations can improve ROA of the company.	Only considers Board of Directors as the source of IC and ignores all other stakeholders.
Santi Gopal Maji, Mitra Goswami	2016	Impact of IC (IC) on Indian traditional sector and compare the relative importance of IC on corporate performance of Indian Engineering and Steel sectors.	Secondary data on 100 listed Indian firms for a period of 14 years from 1999-2000 to 2012-2013. Using ROA as the measure for financial performance.	VAIC method using Fixed effect regression model and quantile regression is used to check the robustness of the results	IC efficiency positively and significantly associated with the firm performance for both the sectors. Furthermore HCE is more significant as compared to structural capital efficiency.	Limitations of Pooled OLS Regression model and to overcome authors used panel data regression model with fixed model.

Gianpaolo Iazzolino, Domenico Laise	2016	To place the value creation process within sustainable growth strategies and to propose an accounting-based framework to distinguish between knowledge intensive and non-knowledge-intensive firms.	1000 Italian firms in ten different industries.	VAIC method used	HC investment is less significant in traditional industries as compared to non-traditional industries.	Only HC element was taken and ignored the other important components of IC.
Muhammad Khalique, Nick Bontis, Jamal Abdul Nassir bin Shaari, Abu Hassan Md. Isa	2015	Relation between IC and SME performance in Electric sector of Pakistan	Questionnaire method from SME in Gujranwala and Gujrat region.	Multiple regression method	HC did not show any significance while other components felt significant.	Study is longitudinal and not cross sectional. Limited to one small sector with only two cities studied. Questionnaire method used which may raise question on data reliability.
Sirinuch Nimtrakoon	2015	Relation between IC and firms' financial performance.	213 firms from technology sector were studied for importance of IC for the FP and MV.	VAID with an additional variable of RCE was used. Profit margin ratio and Return on assets were used to measure the financial performance of the firms.	Positive relation between IC and MV across all countries. All countries showed similar significance for the importance of VAIC. FP is also positively significant for FP of the firms. Structural Capital Efficiency and Relational Capital Efficiency had less importance in relation to FP.	Only one sector was studied across five countries using secondary data from stock exchanges.

Daniel Pitelli Britto, Eliane Monetti, Joao da Rocha Lima Jr,	2014	Role of IC evaluation in Profitability of tangible intensive firms.	Studied Brazilian firms from year 2007 to 2011 to find the importance of IC reporting system. Taking ROIC as a measure of financial performance.	VAIC method was used with ROIC as proxy for profitability.	IC has a significant inverse relationship with market value. The more valuable companies showed lower levels of IC except for CEE which explains value as much as ROIC. Also, IC does not influence market risk caused by size and leverage and does not explain ROIC.	IC has a significant inverse relationship with market value. The more valuable companies showed lower levels of IC except for CEE which explains value as much as ROIC. Also, IC does not influence market risk caused by size and leverage and does not explain ROIC.
Gianpaolo Iazzolino, Domenico Laise, Giuseppe Migliano	2014	Relation between VAIC and Economic Value Addition.	Data selected from Northern Italian forms from 6 different sectors for the year 2011.	VAIC method with Correlation analysis.	Results show that EVA and VAIC have no significant relationships; as a matter of fact, EVA is based on financial theory, whereas VAIC is focalised on the assessment of IC Efficiency (ICE).	One sector, Only one year data used.
Mahesh Joshi, Daryll Cahill, Jasvinder Sidhu, Monika Kansal,	2013	IC performance for Australian Financial Sector (2006 – 2008)	Relation between IC performance and Financial Performance.	VAIC approach. Data obtained from Annual statements. ROA used as dependent Variable and HCE, SCE and CEE plus VAID used as independent variables.	Value creation is highly influenced by HC. Performance of Various components of VAIC differs for different sub sectors with Investment companies as highest and insurance companies as lowest.	Small data, only for three years.
Gianpaolo Iazzolino, Domenico Laise.	2013	To find the strengths and weaknesses of VAIC, primarily from accounting theory prospective.	Relation between VAIC and financial performance	VAIC approach. Mainly related HCE with ROA	VAIC method does not modify or contradict accounting fundamentals, emphasises on Value added Income Statement	Lack of empirical testing.

Karam Pal, Sushila Soriya	2012	IC comparison between Pharmaceutical and Textile Industry in India	Investigate association between ICE with FP and MV	VAIC method with Correlation and OLS Regressions Models with Panel data analysis.	IC and FP but no relation IC and MV for both industries.	Only two sectors studied which could have expanded to other knowledge extensive industries for better understanding of importance of IC.
Sukhdev Singh, Monika Kansal (2011)	2011	Find out the impact of IC disclosure on the creation of IC in monetary terms, find out correlation between IC valuation and its disclosure, and test significance of correlation.	Content analysis for 20 companies for the year 2009	Chi Square, Karl Pearson's correlation and Student's t-test	IC disclosure is low. Overall correlation between IC valuation and disclosure is negative, weak and insignificant.	Subjectivity inherent of rating scale, only knowledge based sector was studied and results are only true for India.
Kongkiti Phusavat, Narongsak Comepa, Agnieszka Sitko-Lutek, Keng-Boon Ooi	2011	To find relationship between IC and its components with firms' industrial operations and performance in Thailand.	Study of 100 manufacturing entities registered on Thailand stock exchange. Return on equity, return on assets, revenue growth, and employee productivity taken as measures of performance.	Correlation and multi regression analysis using VAIC method.	IC positively and significantly affects a manufacturing firm's performance. It impacts all four performance indicators under study. In addition, based on the relatively high adjusted R ² , human capital exhibits the relationships with employee productivity.	Secondary data used. R&D is not formally recorded. Focused on manufacturing sector only.
Dimitrios Maditinos, Dimitrios Chatzoudes, Charalampos Tsairidis, Georgios Theriou	2011	To examine the impact of IC on firms' market value and financial performance.	Studied 96 businesses from Athens Stock Exchange from year 2006 to 2008.	VAIC method. Taken ROE and ROA and Revenue Growth as the measures of FP. Used Regression models.	Other than HC, no other component of IC has any significant relation with financial performance of the companies under study.	The lack of available data for the appropriate analysis, the investigation of four sectors of economic activity and the relatively narrow three-year period for data collection are the main limitations of the present study.

Irene Wei Kiong Ting, Hooi Lean	2009	Relation between IC and FP of firms in Malaysia.	Studied financial institutions for relation between IC and FP by using ROA as the proxy for firms' financial performance.	VAIC method.	VAIC and ROA are positively related among Malaysia's finance sector. The results also show that the three components of VAIC are associated with profitability	Limited data for study.
Klaus Moeller	2009	To analyse the effect between intangible and tangible (i.e. financial) organisational performance	Questionnaire method from 100 German business networks.	Structural equation modelling	interrelation between intangible and tangible/financial performance that is mainly influenced by strategic relevance and participation	Based on businesses in Germany only. Authenticity of data is questionable as it was collected through questionnaire.
Jamal A. Nazari, Irene M. Herremans	2007	To study the role of IC in organisational performance	The study provides a theoretical discussion designed to push the measurement of IC into a more rigorous and comprehensive domain	VAIC Method	Suggested guidelines for future studies.	Did not include statistical analysis and was mostly based on literature
Ming-Chin Chen, Shu-Ju Cheng, Yuhchang Hwang	2005	To investigate empirically the relation between the value creation efficiency and firms' market valuation and financial performance	Examine the relationship between corporate value creation efficiency and firms' market-to-book value ratios. Using Capital Employed as the measure of Financial performance.	VAIC method used. ROCE used as FP indicator.	IC has positive impact on FP and MV of the firms.	Use of secondary data taken from annual statements.

Skilled labour involved in production process plays the most important role in transforming the investments made by the shareholders into a final product with the quality that can bring profits as a return on investments. The skillset of the human labour involved is accumulated by the managers and is treated as the human capital (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017). Human capital is the component of IC that has been most agreed upon by researchers in the past. Apart from the importance of human capital, different researchers have introduced various different components which can be treated as IC. These other components, however,

were not able to get the attention of other researchers. Different names were used to describe components of IC; however, the one agreement is that no proper way has yet been established to define the most accurate definition of IC (Shamsudin & Yian, 2013). Intellectual capital has been treated by researchers as a resource or as an intangible resource or even as capital, but the realisation of its nature has yet to be defined by the firms utilizing it (Lentjusenкова & Lapina, 2016).

Different firms have different ways to treat IC and define it based on the concept they have developed as to what can be treated as IC. Some firms consider it from the operational point of view only. The managers in these firms have the viewpoint that with the proper mixing of all components of IC they can transform the investments made by the shareholders and the investors into a product which can provide them a competitive edge in the market. They treat IC as a source with which they can transform their physical assets into profits with the most effective and efficient methods (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017). While other firms believe that the level of investment made by them for training and development of employees has a long-term benefit for the firm. The investment made with this consideration is, thus, treated as IC. These firms believe that the amount rightly spent for training and development is not an expense for them and do not consider this as a mere operational expense. These firms have the long-term vision and tend to invest heavily in the areas of research and development as well as in training their employees for future technologies. They can get the benefits from the investments in intangible resources; hence, they treat these resources as IC. This is why the most common definition of IC is that it is the intangible value of the business that is created by its workers over the years of repetition of work (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). Table 2.2 shows different definition of intellectual capital that various researchers have used in past.

Table 2. 2 Definitions of Intellectual Capital

Year	Reference	Definition
1992	Hall	Intellectual capital can be classified as the assets (like trade mark) or skills (like technical knowledge of personnel, organisational culture)
1996	Kaplon and Norton	Companies invest in customers, suppliers, workflows, technology and innovation to increase the future value. These collective values are called intellectual capital.
1996	Edvinsson and Salivan	A knowledge that may be converted into profit.
1997	Sveiby	It includes three classes of intangible assets: Internal structure, external structure and staff competency.
1997	Ross and colleagues	It refers to the hidden assets of the company that are not mentioned in the balance sheet completely and so it includes those things existing in the minds of organisation staff and what remains if they leave the organisation.
1997	Edvinsson and Malone	Knowledge asset, practical experience, organisational technology, customer relationship and professional skills that create high competitive advantage for organisations.
2000	Dzinkowski	Intellectual capital means total knowledge-based ownership right or asset that the company owns.
2001	Marr and Schiuma	It is the group of knowledge assets by which the organisation is characterised and its main usage is to help improvement of the organisational competitive situation by increasing value for its key beneficiaries.
2003	Meritum	It includes all intangible assets, whether they are owned and used by the organisation officially or developed non-officially. Besides human, structural and communicative resources of the organisation, intellectual capital includes its usage for value creation.

Source: (Farahani & Ramezan, 2015)

Intellectual capital is also considered the collective know-how of every discrete aspect in the business that has been compiled or documented by the management over the years (Nawaz & Haniffa, 2017). A successful business is a kind of synergy between all available sources and resources. The success of the business depends on creating and supporting connectivity between all sets of expertise, experience and competences inside and outside the organisation (Stewart, 1997). A firm may have the required amount of tangible and intangible assets but may not have the necessary relations with their suppliers or with the customers. The relationship with suppliers are vital to get the supplies in time, which helps in creating efficient

production levels. Moreover, this relationship is also very important for future growth because the same customers may come back if the firm is able to win their loyalty.

Intellectual capital for a firm can also be generated by internal (employees) or external (suppliers) resources (Berezinets, Garanina, & Ilina, 2016). The concept of IC is so wide that it is hard to summarise in a few sentences. Intellectual capital is a diverse factor that helps firms in achieving higher levels of profits. It helps firms in creating revenue by creating added value to its products. Intellectual capital adds monetary value to the efforts put in by combining tangible and intangible investments. It also adds corporate value to the firm's stock exchange ranking providing them a competitive edge over other firms. All information collected by the management through its intangible resources provides an edge over its competitors as competitors cannot copy the skillset possessed by the workforce of a firm: they can copy the methods, the production levels or the strategies, but they cannot copy the implementing force that converts the planning on papers into the money value for the business (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017). Intellectual capital is the collective information of the firms that gives them an edge over their competitors and also helps them to improve their operational capacity. Based on the knowledge collected over the years by its skilled workers, the firm not only increases its production capacity but also enhances its efficiencies to gain a competitive edge over its counterparts (Iazzolino & Laise, 2013). With the help of proper planning, a firm can convert the knowledge it has collected over the years into a profit-making exercise (Edvinsson & Malone, 1997). Intellectual capital is the combination of the money that a firm has along with its ability to utilise it to create social value as well as to sustain it in the society for a longer period of time (Dumay, 2016).

Intellectual capital has a strong influence on the performance of companies (Iswati & Anshori, 2007). An increase in IC is positively associated with profitability of businesses (Chu, Chan,

& Wu, 2011). Intellectual capital is an important source for the continuous progression of an organisation (Tsen & Hu, 2010), and it plays an important role in creating competitive advantage for the firms (Ahanger, 2011; Luthy, 1998). For years, the stakeholders and potential investors have been puzzled by the reason behind the difference of stock value and the market value of the firms. Firms with heavy investments in fixed assets may be rated low on the stock exchange while the firms much smaller in size may have a better value on the stock exchange (Nadeem, Gan, & Nguyen, 2017). Studies showed that goodwill creates the value of a company rather than its monetary value (Melloni, 2015). Most companies have goodwill included in their balance sheets, which indirectly indicates the value added by the IC it holds. The value of goodwill is in fact the combined value of the competitive edge the firm has accumulated over its competitors through proper management of all components of the IC it possesses.

Organisations have always wondered what makes a company successful when its investments in fixed assets were the same as others (Jordao & Almeida, 2017). Shareholders were always reluctant in making decision based on the book value of the companies. The difference in book values pushed the management of the companies to come up with strategies to produce the full value of the investments made by owners of the business. The value a business has in the form of intangible assets is now considered to be greater than its investment in fixed assets (Agostini, Nosella, & Filippini, 2017). These continuous struggles have lead businesses in developed countries towards adopting the notion of IC. Initially many managers were not ready to accept the secret force behind their success. They were of the view that it was the amount of investment in the fixed assets that was behind the success of the company, and that it had nothing to do with the skillset of the labour involved in production.

The concept of IC emerged through three different phases, divided into awareness, justification and importance (Chiucchi & Dumay, 2015). Realizing the importance of IC, the organisations have started empowering their employees. Managers have realised the importance of the autonomous powers given to the workers so that they can take decisions as and when required. The removal of delays has improved the process and has resulted in increased levels of efficiencies. Workers are now held responsible for the actions they take along with having increased power and authority. This has given them a sense of ownership in the business and they feel themselves responsible for all the actions they take. As a result, they have introduced various innovations in the process including the fairness of the procedures with which they make sure that every employee equally participates in the business. This has also enhanced the focus of the workers on the importance of value addition. Workers have realised the importance of education and training related to their work. Increased levels of training enable them to introduce innovative methods which boost their confidence, resulting in an increase in production levels. Every decision taken by these workers reflects the level of education and training these employees have with the business. These processes not only help firms in attaining optimum outputs but also help them to retain their existing customers as well.

In this highly competitive era, firms do need a process which can help them get maximum outputs with lesser inputs. Managers always believed that the aim of maximizing profits can either be achieved by increased revenues or by reducing costs. The concept of IC, however, has changed their conceptions by introducing a way to maximise profits with the same level of input, which provides efficiencies in the production methods. The knowledge of workers has made companies like Facebook, Google and other giants in their industries purely based on the ideas produced by their outstanding employees. It is also evident that skill alone cannot achieve the targets of the desired revenues. The combination of resources with the strategies to attain these levels of outputs need a strong procedure to support them. These measures help

organisations to develop their brand, which provides some extra quality to the buyers. This helps businesses to build their reputation and attract new customers. The continuous improvement in process also helps to retain the existing customer base (Agostini, Nosella, & Filippini, 2017).

The increased awareness of knowledge-based business has changed the way businesses have been conducted in the last few decades. Employees are now in a better condition to negotiate, and the businesses have also changed the way they treat their employees. The conception of managers about the workforce has changed, and businesses are now focusing more on training their workers. These trainings help workers to get familiarised with the latest technologies being introduced in their respective areas of production. Previously the employees of these firms were treated only as the base for knowledge with no or very little value given to their knowledge. There were no retention policies in place to retain an employee who had valuable knowledge about the business. An employee's knowledge does not depend on the number of years he has spent with the business (Lentjusenкова & Lapina, 2016). However, retention policies were made based on the experience or the number of years that an employee had spent with the firm without considering the real value addition that a worker was contributing towards the business. The focus has now shifted towards the importance of employees who add value to the business processes regardless of the years of experience they have with the firms. The concept of IC has also changed the hiring policy of the firms. Firms are no longer looking for people with years of experience but are now focusing on people who have knowledge about modern technologies. Firms around the world are now focusing on hiring educated employees with the knowledge about the latest technologies being used in the relevant sector. The ability to add value on top of the knowledge has now become an essential part for the employees to survive in the business space and to retain their jobs (Lentjusenкова & Lapina, 2016).

The survival of modern era firms is based on the ability of management to develop a sense of accountability and responsibility among its workers, which results in value creation and increased competitiveness among firms (Nawaz & Haniffa, 2017). Shareholders of the firms put their blind faith in the abilities of the top management, which they elect in the form of a board of governors and the CEO. These are the people who have the highest payments in the form of salaries and stocks paid to them in return for the skillset they possess. The relation between the performance of the CEO and the amount of bonus that he or she receives has been observed as very significant (Sardo & Serrasqueiro, 2017). The salaries of top management are linked with their ability to make decisions for the future and to grow the corporate value of the business (Wyatt & Frick, 2010). Stakeholders also expect the business to make higher profits by the presumptuous believe that the management has the ability to utilise the knowledge and experience of its workers (Agostini, Nosella, & Filippini, 2017). However, the business can only benefit from the top management if their experience is shared with the workers. In the absence of knowledge sharing the top management becomes a liability and, hence, increases the agency cost for an organisation (Forte, Tucker, Matonti, & Nicolò, 2017).

If a highly paid manager with a high level of experience passes their knowledge on to their workers, it will lead the business to higher levels of success. Most of the portion paid by the business in the form of salaries is paid to people working at the top. The top management of a business is hired to find solutions to the challenges that are or can be faced by the labour or staff at lower levels. These challenges can be of various types and can be faced by the business at different levels. This may include the challenges or obstacles faced by the human factor (human capital) in achieving expectations of the business from them. It may also involve the issues with the proper utilisation of the structural capital (how to utilise investments in fixed assets). It may also be for the efficiency of investments made by the business in the capital employed or the relationship capital (how to capitalise on relationship with customers and

suppliers) that may be hindering businesses in achieving their targets. It is the duty of the top management to combine all the knowledge and experience shared by the workers to formulate the tangible capital for firms. The constant improvement in the business process makes it possible for the firms to get ahead of its competitors in terms of productivity and improved methods of production (Giacosa, Ferraris, & Bresciani, 2017).

The involvement of top management in all types of decisions can be crucial. All decisions taken by the top management may either lead the businesses to a higher corporate value or may end up in disasters (Wyatt & Frick, 2010). Top management's involvement starts with hiring suitable employees for the business, keeping in mind the direction in which the business is heading. It may also involve introducing new methods with which the business interacts with its stakeholders including its customers and suppliers. Such decisions work both ways for the business as these not only help the business to integrate its relations with its suppliers but also help to create, maintain and retain its relations with its customers. All these factors greatly affect the corporate value and financial performance of the organisation (Benevene & Cortini, 2010). Effective management identifies the skillset of its employees and uses it in a way to convert it into IC (Roos & O'Connor, 2015). The vision of the top management about future opportunities is very important for the growth of the business (Cortés, Sáez, Manchón, & García, 2015). The duty of the management is to lead by example, and to create an environment where everyone can see the involvement they have in decision making. Their own performance should not be questioned by the employees following their orders.

As discussed above, there have been many researches involved in defining IC and different ways to measure it. Different researchers measured the importance of IC through different methods. They have defined different areas which, when combined, add up to the total investment of a firm in IC. But the main or major areas that are defined by the researchers can

be short listed into three main categories. The following paragraphs explain the terms that were assigned by researchers in the past to the components of IC. Researchers started to describe and define these major categories towards the end of the last century (Shamsudin & Yian, 2013).

To date there have been many phases of research on IC, and researchers have defined many important factors that may affect IC. Intellectual capital is an extensive term (Ting & Lean, 2009), and there is no clear definition as to what exactly makes IC for the firm (Maji & Goswami, 2016). Different studies have described the components of IC as human capital, structural capital, and relational capital/capital employed (Edvinsson & Malone, 1997; Lynn & Dallimore, 2002; Buren, 1999; Shamsudin & Yian, 2013). Knight (1999) explained the components of IC as human capital, structural capital and external capital. Jardon and Martos (2012) suggested that these components were very important for firms in developing countries as they complement each other. Any component's underperformance will impact on the performance of other factors in maximizing shareholder's worth. Many researchers have described it as collection of knowledge over a period of time about its employees, procedures and the external stakeholders, which is combined by successful organisations (Jordao & Almeida, 2017).

After years of research, three main elements of IC have been agreed upon (Maji & Goswami, 2016; Cortés, Sáez, Manchón, & García, 2015). Initially different names³ (Agostini, Nosella, & Filippini, 2017) were given to these factors, but the mutually agreed names are human, structural and relational capital (or capital employed). Intellectual capital comprises three main components: human, customer, and relational capital (Ting & Lean, 2009; (Handzic, Durmic, Kraljic, & Kraljic, 2016; Bontis et al, 2000; Nawaz & Haniffa, 2017). Researchers have focused

³ Human capital, customer capital, structural capital, social capital, technological capital and spiritual capital.

on various aspects of intangible assets for an organisation (Maji & Goswami, 2016). Efforts have been made to make it comprehensive for researchers as well as for managers (Vidotto, Ferenhof, Selig, & Bastos, 2017). Optimum levels of output are achieved by the manifold effects of these factors and not through the simple accumulation of different components of IC (Giuliani, 2015). Bontis and Cabrita (2008) examined three constructs that make up IC and really have an effect on one another. Stewart (1997) has discussed that the major components of IC consist of human capital, customer capital and structural capital.

Furthermore, structural capital was categorised into customer capital, innovation capital and process capital and was also named as organisational capital (Hamzah & Ismail, 2008). Intellectual capital comprises three components: human capital, structural capital, and relational capital (Edvinsson, 2003; Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011; Melloni, 2015). Li et al. (2008) analysed three measures of IC disclosure and found a significant association with all the governance factors except for role duality' all corporate governance variables together with firm size, profitability and listing age are associated with one or more of the IC disclosure measures. A single element of IC would not be able to generate any significant value in the business (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). The following sections will cover the most important components of IC. For the purpose of this study only human capital and structural capital are used.

2.3.1 Human capital

The ultimate goal for any business is to maximise profits through improved methods of production. A company's costs are mostly operational costs associated with the production process, and wages and salaries paid to its workers are the highest operational costs for a firm. Managers have always been working hard to find a solution which can help them reduce this cost. As discussed in the previous section, the cost associated with labour was considered

difficult to be justified to shareholders. Shareholders, being non-business people, found it hard to understand the amounts of salaries and wages being paid to the employees, especially to the top management. This pushed managers to come up with the solution of justifying their remuneration in terms of the value added by them to the business. This was the reason for the emergence of IC into annual statements as an important item for discussion. For shareholders, IC is a process that a firm uses to improve the production methods for transformation of raw materials into sales through innovation (Wyatt & Frick, 2010).

Among all components of IC introduced by researchers, human capital is treated as the most important component. The knowledge of all workers is collectively used for a quality product, which is distinct from the product quality offered by others. More specifically, human capital is a combination of knowledge and skill possessed by the workers in the organisation (Vidotto, Ferenhof, Selig, & Bastos, 2017). Organisations combine the years of experience that the workers have along with the type of education and training they have received in the past (Khalique, Bontis, Shaari, & Isa, 2015). The skill and knowledge of the worker grow over the years and increases the capacity of the firms to compete in the market. A skilled employee is able to demonstrate innovation in the existing process and has the ability to adapt new technology with less, or without any, training (Agostini, Nosella, & Filippini, 2017). This is the main reason that with the passage of time firms put more weight on the tasks performed by a skilled worker rather than the number of years they have spent with the company.

Companies are now focusing more on the skills of the worker and focusing on investments for the training and development of workers to enhance their skills. Money spent for training and development were treated as an undesirable expense for the companies in the past as there was no proper method for the managers to justify the outcomes of the training sessions. The change in attitude from the management towards the importance of IC has changed this aspect.

Shareholders now understand the significance of these trainings and set aside a part of the budget for the purpose of enhancing the skillset of their workers. As a result of these investments in training and development, the workers are able to fill the gaps in their knowledge. They are able to gain the knowledge to run the operations of the company as smoothly as possible and to increase the financial performance of their firm. It also enables them to enhance the quality and level of production by incorporating the latest techniques in the industry.

Even though it is important, the justification of training and development is still a complex issue for managers. They need to justify what type of training is beneficial for the workers and what returns these trainings will bring to the shareholders. Shareholders, being the real owners of the business, are always concerned with their return on investments. Companies now prefer educated people rather than hiring skilled workers for traditional production methods. More fresh people without any knowledge about the production process are being hired, so the investment in training and development is higher than ever before. Managers, however, need to justify the difference between the cost benefit of hiring the skilled worker, who may cost more to the business as compared to hiring fresh educated people who need training. The cost of training has been proved to be less than hiring a trained worker as the new workforce has knowledge about new technologies and only need to be trained in the regulations followed by the industry (Wyatt & Frick, 2010).

The manufacturing sector predominantly depends on the workforce due to the traditional methods of production. Firms involved in manufacturing or from the service sector have their main strength in the human factor, and their human resources are invaluable for the firm (Olander, Laukkanen, & Heilmann, 2015). Human resources refers to total man power an organisation possesses. The shift in production methods are due to the introduction of the latest

technologies, which has removed the constraint of dependency on the workforce. Companies are now focusing on hiring workers who are trained in the latest production technologies so that they can compete with their counterparts who have introduced innovations. Based on these changes, the human capital has become the most important construct in the definition of IC for manufacturing firms (Ting & Lean, 2009), especially for the manufacturing sector in developing countries where the businesses have limited resources available to invest in tangible assets. For firms operating in developing countries, the skill level of workers in any manufacturing entity is in fact the real asset for them to survive.

Manufacturing firms compile the knowledge of their workers and combine this knowledge with the existing resources (Massingham & Tam, 2015). The additional benefit is obtained by compiling the data about the nature of workers including their attitude, adaptability (Khalique, Bontis, Shaari, & Isa, 2015) and skills of the people, which also helps the organisation understand the utility of skills specifically distinctive to the workforce they have (Ting & Lean, 2009). Such a compilation helps firms to have a mix of people with different skills and to mix the specialities of people working in different sectors of the manufacturing process in the organisations (Farahani & Ramezan, 2015). The real competitive advantage a firm has is in the ability of its management to find the mix of these skills in the best possible way based on strategical planning. The compilation of data is in fact the total investment of an organisation into its knowledge stock in the form of its employees' knowledge and skills (Nawaz & Haniffa, 2017) with which they increase the corporate value of the firm.

Human capital can also be known as an asset of the firm in the form of the competence of its employees (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011), which has no material existence but can play an important role in imminent revenues (Farahani & Ramezan, 2015). Skilled employees are mostly trained in particular areas in order to attain efficiencies. These employees

can only bring revenues for the business if they are properly utilised. Managing the skillsets of employees depends on the ability and understanding of management to deploy the right person for the right job. To find the suitable person for a particular job, the real help is derived from the compiled data that the management has for its workers. In other words, in order to get the real value out of human capital, the management of these organisations must know which part of the knowledge needs to be utilised. Manufacturing entities have different processes involved in production, and the level of speciality of an employee affects both the quantity and the quality of the product (Chiucchi & Dumay, 2015).

Another important factor for the importance of human capital is the transition of the firm from a small-sized entity to a large-scale manufacturing business. The transition period involves an increase in investment for the business in all resources including tangible and intangible. One of the major costs involved, however, is in form of human capital. A gradual increase in human capital is also to be made by the management with the expansion of its production levels. The increase in human resources can sometimes play a crucial role in the transition phases. The easiest way of transformation for small-to-medium-scale companies into large ones normally spans years, but another way of expansion for the business is through mergers and acquisitions. These mergers may cause a sudden change in the costs associated with human capital. In the last couple of decades, the world has seen many mergers between businesses.

These mergers may result in an increase or a decrease in the human work force depending upon the nature of merger. If the merger is between two organisations that are the best in what they do, the idea of retention of employees becomes more important. Firms are reluctant to let go any employee who have contributed towards the profits of the firms in the past. On the contrary, in the case of a merger between a less productive and a more productive firm, the former wants to get the benefits from the skillset of the latter. In other words, in the case of a merger the

increase in human capital becomes inevitable if the merger has resulted in greater production levels (Wyatt & Frick, 2010). On the other hand, in the case of a merger where one business is stronger than the other, the management gets additional resources after which the tough decision is made to decide which workers will be retained and which ones the business should let go. These decisions are very tough and may lead a business to self-destruct, especially in the case of small businesses where the decision of redundancy may be made for one employee who may have most of the knowledge and may not have been previously identified as such by the management (Israelsen & Yonker, 2017).

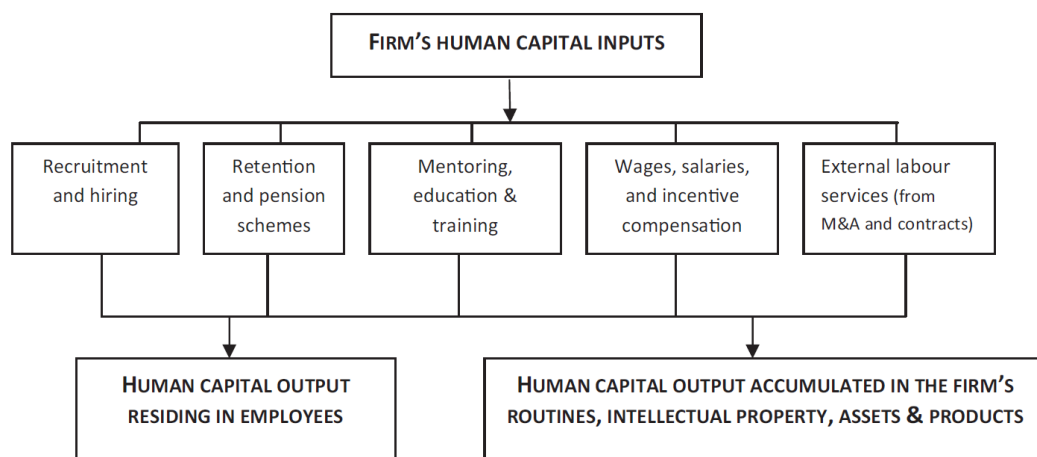
It is very important for managers to judge the nature of employees' knowledge in order to check if that knowledge can be compiled in any form to benefit the future of the firm. They need to make sure that only those employees are retained by the business who can prove to be a capital and will not become a liability for the business. For this purpose, the managers are constantly required to compile their feedback about the performance of workers to be able to make such decisions. Data compiled in the form of documentation is the only source of capital that will remain with the company if the management decides to dismiss a worker or in some cases where the business has invested heavily in employee's training, but the employee decides to leave after receiving such training (Vidotto, Ferenhof, Selig, & Bastos, 2017).

Small- and medium-sized companies are considered an important part of economic growth. These companies have to rely heavily on the skillsets of their workers. As the number of employees are limited for these companies, the management has to rely on the skillset of available resources. In order to progress both financially and to add corporate value, these companies consider the skills of their employees as an important factor in adding additional profits to its performance in terms of value addition (Shamsudin & Yian, 2013). The human capital of these firms acts as the main input for production, which is built over the years through

various methods. These methods include a mix of people hired with prior knowledge of production and current staff with training and development for new technologies (Wyatt & Frick, 2010).

Some firms believe that if they hire skilled worker they get a better chance to compete in the market and the business can expect enhanced profitability and corporate performance (Agostini, Nosella, & Filippini, 2017). The management of such organisations believe that the level of future profits depends on how well they use the skilled labour. So, they tend to take care of their skilled workers more by rewarding them for the efforts made in the past. Organisations that recognise the importance of skilled workers invest more in them to benefit from their knowledge in years to come (Agostini, Nosella, & Filippini, 2017).

Figure 2. 1 Human Capital - Some Examples



Source: (Wyatt & Frick, 2010)

Figure 2.1 provides some examples of human capital that differentiates the skilled labour from the traditional labour. The demand for skilled labour became more popular than the demand for traditional labour towards the end of the last century. It was the time when manufacturing entities started concentrating on human capital and started preferring people with education

over people with traditional knowledge. As the world was advancing towards technology-based production methods, people with the knowledge of old methods were not acknowledged by companies all over the developed countries. The impact on the economies in developed nation was very high, and in the US the share of traditional manufacturing labour reduced to one third of the total budget of the firms on employees (Nazim, Ma, & Montagno, 1991). The return on investment on skilled workers was getting more attention from firms as compared to investments in other ventures of the business. During this period the firms started to realise skilled labour as a form of capital which could benefit them even more than the heavy investments in other areas of the business (Agostini, Nosella, & Filippini, 2017).

The method of production was very different in the past in relation to the availability of the labour force. Labour was not given any importance for the enhancement of production levels. The idea that workers can increase output with limited input was not considered by the management. Businesses around the globe used to link the performance of traditional labour with availability of material. Labour was treated as a seasonal demand and every increase or decrease in labour was made in accordance with the increase or decrease in demand. Apart from changes in demand and supply of the product, the change in demand of labour was also linked with the availability of materials. With the changed view of management towards human capital, the businesses started to link their labour with the amount of information they had rather than the availability of material or seasonal demand in the market. Businesses started treating the expenditure in training and development as an investment for their long-term profit sustainability. Organisations began to appreciate the contribution of skilled workers by offering them a share in the profits in the form of stocks (Wyatt & Frick, 2010).

Organisations valued the old labour that they had, rather than just shifting towards people with educational backgrounds. They were provided opportunities to learn about the new

technologies so that they could become a part of the latest methods being introduced in industries. Even though traditional labour did not have adequate knowledge about the new technologies, they had the knowledge about the corporate culture and environment. In order to retain those employees with traditional knowledge, huge investments were made in training and development. This training and development was not only important for the traditional labour but also was equally important for the new workforce. The traditional employees were given the training about the new technologies, and they added their knowledge about the traditions and cultural values. In other words, after receiving the training for new methods of production, the skilled labour can introduce new methods of production based on their knowledge and skillset, which reduces the dependence on the availability of materials (Agostini, Nosella, & Filippini, 2017).

Companies fail to achieve the productivity levels mainly because they depend on investments in tangible assets rather than intangible. The investment in labour was affected by the level of investments in materials in the past. The problem with the investment in tangible assets is that many businesses invest heavily in tangible assets, but most of these assets are underutilised. Organisations invest in fixed assets even when such investment may not be required (Bae, Kang, & Wang, 2011). Management in some firms believe that the business's corporate values depend on the size of its balance sheet, even if these assets are not being utilised. Firms that realise the wastage of resources, shift their focus of investment towards knowledge and training. The understanding of proper resource allocation causes the introduction of capital equipment in production, and a large number of manual labour gets replaced with automation processes (Baines, 1997). The wastage of resources also raises alarms for shareholders with the indication of an increase in debts without the increase in profits (Bae, Kang, & Wang, 2011). These heavy debts also affect the cash flows of the business and may force insolvency for the business.

As human capital is directly linked to the knowledge, experience and education of employees, the investment in human capital is crucial for employees of firms (Wyatt & Frick, 2010). The investment made in human capital is not necessarily in form of money, rather in the form of work experience. In other words, this additional investment in skilled workers of an organisation can be made either through repetition of work or through any training conducted by a business (Vidotto, Ferenhof, Selig, & Bastos, 2017). Such investment in human capital is crucial for the organisations as they cannot own the human capital and can only get benefit from them in the form of performance. The investment can be wasted if the workers undergoing the training decide to leave as soon as the training is conducted (Khalique, Bontis, Shaari, & Isa, 2015). The payments made to workers depend on the strategy taken by the management in relation to the value addition made by them. Workers, on the other hand, do not relate their performance to the amount of salary alone. They treat their salary as the value that the company assigns to their efforts and constantly compare it to assess how well the company treats them as individuals. For such workers the company needs to create a sense of ownership among them by taking care of their personal issues including, but not limited to, their health, which includes mental as well as physical health (Shamsudin & Yian, 2013). Salaries and wages paid to different workers depend on the level of education and the training they have received over the years. The management needs to justify the investment made in the workers by properly utilizing their skills (Wyatt & Frick, 2010). Employee are motivated by receiving bonuses or any other extra benefit the company provides in addition to their regular salary.

Different workers working in the same section of a business may not get the same salary or the same perks. This is due to the fact that not all workers working in the manufacturing process can be counted as human capital. These workers may have the knowledge about the manufacturing process, but they may not have the knowledge required to do the job. It is the responsibility of managers to appoint the workers with the desired attributes. If for any reason

the management does not have additional resources to replace a particular worker, then the management needs to point out any lack in the skillset of the worker. They need to overcome the lack by providing suitable training to uplift the worker's skill levels. Some workers may possess the skill, but the business may not be using them for the best interest of the company. They may be placed in a different workplace and not be being used according to the skillset they possess. A skilled worker cannot produce high-quality returns without proper administration from the management. It is the duty of managers to come up with tactics that can enable organisations to get the maximum out of the skillsets of the labour employed (Khalique, Bontis, Shaari, & Isa, 2015).

According to Agostini et al. (2017), human capital for the firm depends on many factors including its education, talent, experience and attitude. It also depends on the ability to be creative in the process of management with leadership skills. As mentioned above the trend has now changed in firms, and hiring labour with some technical educational background has increased. With the increase in the hiring of educated employees, the firms also give equal importance to their future. For modern businesses, education and training complement each other. Training is very important as in the absence of continuous training, skilled employees may become sluggish with their knowledge. A lack of training may result in a reduction of productivity over the years. Training, however, may not be the answer for all situations as to train an employee with limited or no education related to the field may be a complete waste of resources (Agostini, Nosella, & Filippini, 2017). A person who has no knowledge about the latest productive methods may also become a burden for the business. Employees without any motivation to learn can also be an issue for the firms. Forcing those employees to learn something new would not help either as that person may just waste his time and the company's resources on training.

Employee motivation can help to overcome this problem. Managers need to identify their labour based on their eagerness to learn as some employees do not have the urge or understanding about the importance of training (Khalique, Bontis, Shaari, & Isa, 2015). This type of labour stays with the organisations for years but does not really add value in production. For these employees, managers need to constantly train them for the level of skill they have and utilise them as the basic source for routine production processes. On the other hand, some employees with a number of years' experience are in need of improvement in the new innovations that may have been introduced in the technology. Identification of such employees is very important as these employees may want to master their profession. This constant improvement process is increasing the pressure on managers to train their employees and is increasing with the rapid increase of new technologies and methods of production. Managers frequently need to identify the shortcomings in the skill levels of employees in order to sustain the businesses' competitive advantage in the industry.

Employees must be trained in different sectors of production and not only for current, but also for future, proposed methods of production. The corporate value of the firms depends on their future profits, and the future profits depend on the firm's financial sustainability in the long-run. For this reason, in order to be sustainable in the long-run, managers can prepare their employees for the upcoming production methods, they can put their firms on track for constant financial growth (Agostini, Nosella, & Filippini, 2017). The risk of losing a trained employee may also force the management to reduce the investment in intellectual capital, if the business is unable to retain the trained workers with the business. It is argued that the best strategy to retain a trained worker in the business is to increase his salary gradually with the increase in his skill level (Wyatt & Frick, 2010). Firms have been successful in retaining their employees if the employees can relate the growth of the firms' financial performance with the growth of their salaries over time. If the business has a profit-sharing strategy, with an increase in the

short-term as well as long-term profits, the business is more likely to stop employee turnover and will increase its human capital as well (Nadeem, Gan, & Nguyen, 2017).

Repetition of the same job for years creates specialties in the employees. A skilled worker is not only effective in his work but also enhances the value of the product with his vast experience. The committed workers employed by an organisation create the corporate value of the firm. Knowledge can be enriched through on the job training or off the job through the exchange of ideas with skilled people who are not the part of the same organisation (Olander, Laukkanen, & Heilmann, 2015). Bontis (2004) suggested that almost 75% of an economy's wealth is produced by human capital. An increase in the wealth of an economy is also associated with employees' satisfaction with their salaries and wages. A company's investment in human capital can be found from its financial statements in the form of salaries and wages (Wang, 2011). An employee will always link the value created by his knowledge with the amount of salary or wage he is gaining in return. A higher satisfactory level will increase the level of commitment of an employee, which will lead to increasing efforts for a better reward.

Researchers are trying to come up with a method for management to understand the value attached to human capital. If the management can see the growth in the skill level of its workers in terms of value attached, they can decide where they need to invest (Novas, Alves, & Sousa, 2017). More investment in skilled labour by a firm increases the chances of retaining them for a longer period of time. With the introduction of the latest technology in the production sector, it has become a difficult decision for the management to decide whether to hire employees with knowledge of the new and latest techniques or to retain the existing workers with the on-the-job skills and knowledge. This has led to a shift in the world to observe less capital rigorous and more experience-based markets (Nawaz & Haniffa, 2017). Firms are exposed to new types of risks as a skilled employee leaving an organisation can be a threat to a company's future

plans as knowledge may be leaked out to its competitors (Olander, Laukkanen, & Heilmann, 2015).

Due to the high risk involved, some organisations prefer to hire fresh candidates to build up their own skillset (Bontis, Keow, & Richardson, 2000) while others trust the experience and commitment of the current employees within the organisation. The difference of the skill levels between an experienced and a fresh worker can be addressed by organising training sessions with the current employees. Workers can also be sent overseas to get the latest knowledge of modern techniques (Benevene & Cortini, 2010). A worker's knowledge, their position in the organisation and the number of years in the industry also determine human capital. Ever changing conditions of the manufacturing sector have exposed it to the importance of knowledge-based operations (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). Day-to-day operations with a passion for the job leads to the perfection of relevant knowledge and make it possible to save time in production and establish a smoother manufacturing process. Workers develop skills through repetition of work and create contemporary ideas that diminish existence of same nature of issues (Agostini, Nosella, & Filippini, 2017). The amount of knowledge and the level of passion about the job by the workers predicts the future productivity of a company.

Productivity is also related with the satisfaction of the employees with their job (Massingham & Tam, 2015). Carson, Ranzijn, Winefield, & Marsden (2004) divided this satisfaction into two major groups: 'personal' (psychosomatic) and 'skills' (expertise). Productivity can be defined as a relationship between these two variables. An employee's performance can be measured using the old method of ratios, but the issue with employee productivity is to decide which measures to consider. Different ratios can be used by different firms to suit their own needs to measure the productivity of employees (Nazim, Ma, & Montagno, 1991). Employees' productivity is generally considered as the sum of knowledge, satisfaction and commitment

towards their organisations (Massingham & Tam, 2015). Komnenic & Pokrajcic (2012) found that human capital is positively associated with all three corporate performance measures, and that structural capital variables also showed a statistically significant and positive relationship only with the performance measure, return on equity. Regardless of its importance, a company does not own this type of capital. An employee can move on from his job at any time. It is up to the management how they utilise the skills of the employees. Human capital needs to have strong structural and relational capital in order to perform effectively (Jardon & Martos, 2012).

2.3.2 Structural capital

As discussed above the most important part of IC for any business is its human capital. The firm focuses on the skillset of its human workforce. Skilled labour, however, cannot perform without additional resources provided to them to utilise their knowledge in the best possible way. This section introduces the second most important factor of IC, known as structural capital. It is the investment of the company in intangible assets excluding the human factor (Khalique, Bontis, Shaari, & Isa, 2015). An ongoing business needs structural capital as it provides infrastructure and platform for its employees and facilitates them to perform their duties (Nawaz & Haniffa, 2017). Researchers believe that the structural capital provides the platform for all other components of IC as well as the tangible assets to be transformed into outputs (Ferenhof, Durst, Bialecki, & Selig, 2015). Unlike human capital, for which there is a risk of loss for a company in case the employee decides to move on with his career, structural capital is the part of knowledge that stays with the organisation (Ting & Lean, 2009). Structural capital is the type of IC that always stays with the organisation even in the absence of other elements of IC (Carson, Ranzijn, Winefield, & Marsden, 2004).

Structural capital is compiled in different forms and it may include tangible as well as intangible components. It is the combined investment of the firm in its hardware, database or

charters (Farahani & Ramezan, 2015), process manuals (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011), routines (Khalique, Bontis, Shaari, & Isa, 2015) and cultures, and intellectual property (Low, Samkin, & Li, 2015). Structural capital plays a prominent part in enhancing corporate profitability and helps organisations in utilizing their human capital, and firms are now concentrating on developing structural capital. Structural capital is considered to be the main factor causing the difference between the corporate value and the book value of the assets of a company. It provides a competitive edge to the firm. Strategies based on analysis of historical data make it very hard for competitors to copy their procedures. This data is compiled by the management and includes all the processes a firm has with which management prepares the strategies to properly utilise its human capital (Cleary, 2009). Structural capital is equally important for the third component of IC, which will be discussed in detail in the next section. Human capital combines with structural capital and provides the basis for relational capital, which enhances the customers' loyalty for the products of the firms. The performance of human capital is significantly affected by the mixture of structural capital and relational capital (Agostini, Nosella, & Filippini, 2017).

The innovation capability of a firm constantly improves when it realises its social responsibility and focuses more on customer's loyalty with its products as well as with its employees. This can only be possible if the firm has complied the feedback from its customers in order to constantly improve its products. The compilation of knowledge about the needs and requirements of customers has become an essential part of businesses. There is no doubt that a better customer service or after sale service plays a vital role in a firm's future performance as well as retention policy (Agostini, Nosella, & Filippini, 2017).

The profits of an organisation depend both on internal and external factors. External factors for profitability are compiled by the organisation in the form of relational capital. As discussed

earlier, an organisation does not own the human capital, and when people move on from a business they will not be part of the business process anymore. In order to avoid the damage which may be caused by the skilled workers threatening to leave the organisation, management needs to develop rules and procedures. Weaknesses in structural capital can harm a firm's ability to utilise its human capital (Bontis, Keow, & Richardson, 2000). Further, the organisation retains structural capital through the collection of their knowledge in the form of procedures and data bases, and this remains with the firm as structural capital (Nawaz & Haniffa, 2017). This capital then can be combined with any replacement workers who join the company in the future and benefits from the firms' relational capital as well. Structural capital is a catalyst for the profitability of the firms, and, hence, it can also be named as an organisational capability (Jardon & Martos, 2012).

The collection as well as the arrangement of relevant information is critical to understand the knowledge a firm gathers over the years. Such information is collected through documenting different procedures with the help of skilled people to compile the structural capital. The procedures collected can be used by the workforce in the years to come. It also reduces the dependency of the firms on its workforce, and the labour does not have the power to dictate their conditions. That is why a firm constantly collects feedback from its workers about the efficacy of the procedures used by them in production (Nawaz & Haniffa, 2017). The task of compiling the data is assigned to senior members of the workforce. These senior members are given the responsibility to create procedures based on their skillsets and set rules for the workers that may then follow them in the company. These documents are in fact the compilation of their knowledge and learning over the years. Shareholders are aware of the risk involved in investments made in human capital, and firms need to convert the investment in human capital into structural capital (Shamsudin & Yian, 2013). Every input to human capital

adds a value to the firm's existing knowledge base and is examined by the managers to assess the level of the knowledge possessed by the new employee.

The management has the discretion to decide if the business needs highly educated worker without adequate knowledge of the business. This sort of decision depends heavily on whether or not the company has compiled its structural capital. i.e., if the company has compiled and documented over the years on the basis of experience of its workers. It is essential for them to train the new hires although such candidates may have the lack of experience, but they have the knowledge of the business that they learned from the latest education system (Wyatt & Frick, 2010). With the help of structural capital, the management can train employees on site by improving the current methods of production. If the management thinks that hiring new people and providing training will enhance the human capital, skilled workers then can be given training on- or off-site for the innovations in the production area (Wyatt & Frick, 2010).

Once the procedure is established, the structural capital becomes inevitable for the firm and the procedures become the intellectual property of the organisation (Nawaz & Haniffa, 2017). These procedures can then be used to train other workers to obtain the knowledge necessary to become a productive part of the organisation (Jardon & Martos, 2012). A combination of structural capital and human capital provides the justification for the firms for the increase in investment in human capital. The firms that invest in both human capital and structural capital tend to attain higher competitive benefits over their competitors (Nadeem, Gan, & Nguyen, 2017). Human capital and structural capital are related to each other and act as compliments for each other. The growth of one is positively linked with the growth in the other, and the growth of structural capital is more likely to increase with the increase in human capital (Benevene & Cortini, 2010). Based on this relationship, structural capital is also called process capital (Bontis 2004). Bontis suggested that the introduction of information technology boosted

compilation of this type of capital. New technologies made it possible to gather details of methods used by the human capital in production methods from different parts of the world. He further suggested that countries with no or less focus on information technology fail to get the full benefit from the skills of human capital.

The collection by a business of the knowledge of its employees can be in the form of documents prepared by the workers. A company can also compile a database of the procedures used by the workers through different means of information technology available these days (Shamsudin & Yian, 2013). Carson et al. (2004) stated that structural capital can be divided into tangible and non-tangible groups. The authors suggested that everything that is documented over the period of time becomes tangible. This type of capital, thus, can be distinguished from intangible structural capital, which is described as a set of necessary policies or procedures. Especially, any document which is legally owned by the business can be treated as intangible structural capital (Ting & Lean, 2009). The collected information of work knowledge slowly develops as structural capital for the organisation (Jardon & Martos, 2012). Successful firms always increase their structural capital with the help of their human and relational capital (Cleary, 2015).

The transformation of human capital and relational capital into structural capital depends on the knowledge of management. During this transformation, the management should not consider informal groups of employees as structural capital (Carson, Ranzijn, Winefield, & Marsden, 2004). The introduction of technology has changed the ways businesses are conducted compared with previous years. A new era of machines replacing human beings was introduced, resulting in an increased spending on skilled workers (Ramírez & Nembhard, 2004). This trend, however, was not justified by an increase in revenues for the firms. Essentially it was introduced to have new methods to measure the productivity of employees

(Nazim, Ma, & Montagno, 1991). Although it was the need of every business to set goals to achieve expected productivity, there was no defined way to do so (Baines, 1997).

2.3.3 Relational capital/customer capital

Apart from human capital and structural capital discussed in the previous two sections, researchers developed two separate categories of IC. These categories are known as internal capital and external capital (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017). Internal capital consists of the structural capital of the firm, which includes the compilation of the procedures and methods developed by the human capital over the years. This also includes the process building or the methodology developed with the help of experienced and skilled labour. External capital, on the other hand, is the capital used by the business to develop its relations with the stakeholders. Stakeholders are those people who are not part of the main process of the business but are somehow linked with the process developed in the business. Stakeholders include, but are not limited to, the customers, suppliers and the society in general. All stakeholders may or may not be potential customers of the firms.

After the introduction of stakeholder theory, the relationship of the firm with the stakeholders has become crucial in the twenty first century. The previous two factors of IC emphasised the compilation of knowledge that is within the organisation and can be controlled by the business. This part of IC covers the aspects that are not covered by the previous two factors. Human capital captures the importance of skilled worker in the business, whereas the structural capital covers the provision of tangible assets that the company has deployed in the business. The relational capital element of IC covers the intangible part of IC other than human capital that a firm possesses (Shamsudin & Yian, 2013). The feedback compilation from the customers is very important to determine the future profit of firms. This type of capital also helps a firm to

build its relationship with customers and, thus, increases future performance on the basis of the information collected.

A firm cannot continue with the same product over a long period of time. History has shown the failure of firms who did not consider improving their processes with the innovations developed by their competitors. One of the biggest example is the downfall of the giant mobile company Nokia. Customer's expectations change over a period of time in accordance with their living standards. They expect enriched quality of products and need constant improvements. Companies need to be proactive to deliver in accordance with the changed choices and demands of customers (Roos & O'Connor, 2015). In order to sustain long-term profits and to survive in the market, a firm has to keep pace with the changing demands and choices of customers. To keep itself updated about the behaviour of the market will not only give a firm competitive edge over its competitors but will also help it to enhance its long-term profits (Shamsudin & Yian, 2013). Customer capital provides a chance for firms to familiarise themselves with the requirements and the environment that may affect the company's growth in the future (Jardon & Martos, 2012). The firms need to be constantly progressing and engaging in ongoing research about the products at present and in the future (Handzic, Durmic, Kraljic, & Kraljic, 2016), and engage in negotiations with its current as well as prospective suppliers (Berezinets, Garanina, & Ilina, 2016). The firms should also stay in touch with the changing rules of the local or global governing bodies upon which its operations depend. Moreover, constant advertisement of the brand carried by the business is very important to attract the loyalty of customers (Agostini, Nosella, & Filippini, 2017). In other words, the relationship capital is the process with which the other two components are matured, and it keeps the business running and competing in the market (Ting & Lean, 2009). The strength of the business depends on the number of customers it has as the profit is mainly dependent on the level of sales a firm is able to attain through its relationship with the customers (Khalique,

Bontis, Shaari, & Isa, 2015). The costs involved in the production not only depend on the skillsets of the workers (human capital) and the process the firm has in place (structural capital), it also depends on the costs associated with the materials the firm uses and controls in the business through building and maintaining relations with suppliers (Carson, Ranzijn, Winefield, & Marsden, 2004). In order to build relations with customers firms usually introduce loyalty programs. These loyalty programs help a business to build its reputation and attract new customers by promoting various rewards (Agostini, Nosella, & Filippini, 2017).

Relational capital postulates the basis for the execution of human capital performance for an organisation (Agostini, Nosella, & Filippini, 2017). The innovation competency of a firm persistently improves when it understands its social accountability and focuses more on customer's adherence with its products as well as with its employees. There is no doubt that a better customer service or post sales service plays a vital role in firm's future performance as well as a customer retention policy (Agostini, Nosella, & Filippini, 2017). Business firms need to build strong relationships with stakeholders, in particular their customer (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017), and large companies focus more on the customer capital through heavy investments in research and development. A firm needs to maintain its relationship with customers through its post sales service, guarantees and warranties. Utilisation of the knowledge gained from its existing customers will help to build its relations with future customers (Farahani & Ramezan, 2015). Acknowledgment of customers' feedback simultaneously improves the quality of the product and the skill levels of the firm's workers (Agostini, Nosella, & Filippini, 2017).

In addition, the customers' positive responses about their satisfaction, when communicated to the firm, enhances employee productivity; employees get motivated and become eager to learn more and deliver better productivity in the future. The management then decides to train them

further and invest in their training and development, and on the basis of the findings of customer surveys, firms get motivated to spend more on the training and development of employees. (Mouritsen, 2000). The firms do not feel comfortable in conducting surveys related to a special skill held by their employees. As most of the firms get the knowledge about the customers' satisfaction based on the views of their products so feedback can also be valuable regardless of the source, which may begin with customers and may end with competitors (Bontis, Keow, & Rishardson, 2000). The firm that grows always treats the information collected as a form of capital, which it accumulates over a period of time in the form of client faithfulness (Wang, 2011).

While the other two types of IC take care of shareholders, the relational capital component is more closely linked with the stakeholders. This is the second important component of IC after human capital (Ting & Lean, 2009). It is the collective information that a firm collects from its customers regarding its relationships with them. The information works in three different directions. Starting from the relationship with its supplier, which may help them in getting all supplies in without any surprises, it is then linked with the requirements of the market (Shamsudin & Yian, 2013). The link creates value for its investments in fixed assets, especially those which are used in production. A firm can utilise its capital employed by building the relationship with its stakeholders for future growth (Ferenhof, Durst, Bialecki, & Selig, 2015). Development of a good structural capital constantly helps a firm to improve the ways they are interacting with the outside world. Ability to judge the feedback properly is what distinguishes the firms from its competitors (Benevene & Cortini, 2010). With the use of the feedback from customers and the according introduction of new technologies, a firm can sustain itself in competition with other businesses launching new products in the market (Agostini, Nosella, & Filippini, 2017).

Relational capital combines the development of all sources of value added at various steps and finalises them with people outside the organisation including, but not limited to, suppliers and customers (Pablos, 2004). Even though this type of capital is intangible in its nature, this can be measured by the total investment a firm has in its fixed assets as well as assets financed by it (Shamsudin & Yian, 2013). Most of the businesses in developing countries rely on relational capital, this is because they have limited resources and less ability to expand their operations at a massive scale. Such businesses rely heavily on intangible capital for their survival in the market in competition with the giant multinational companies, which not only have the power of knowledge but also have huge investments in tangible assets (Jardon & Martos, 2012).

2.4 Concept of value added intellectual capital

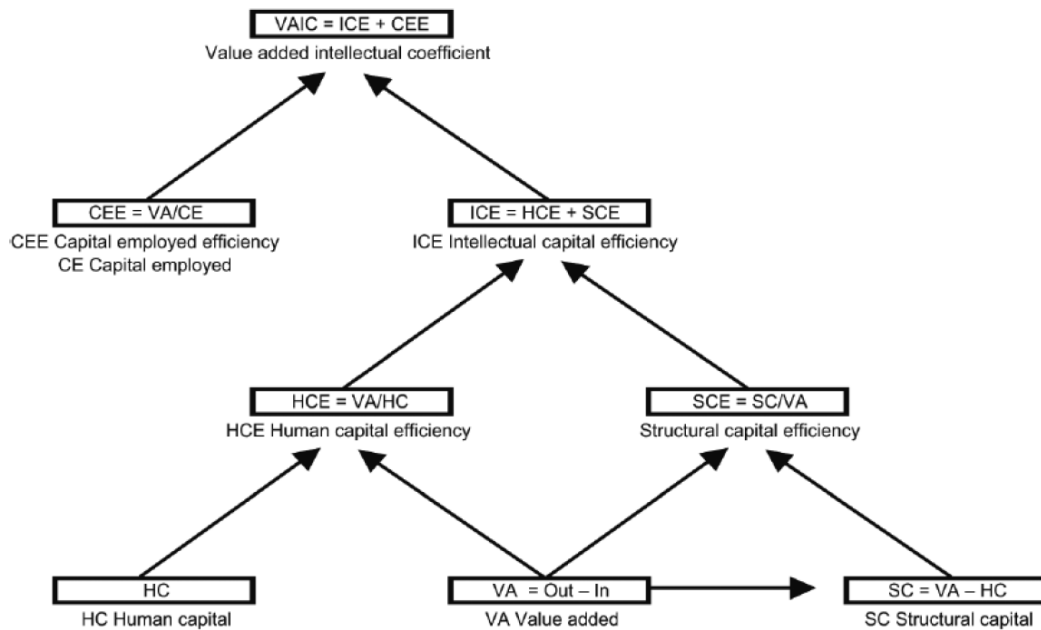
Value added intellectual capital (VAIC) has been the focus of researchers (Britto, Monetti, & Jr, 2014; Iazzolino & Laise, 2013; Joshi, Cahill, Sidhu, & Kansal, 2013) to find the importance of intellectual capital for the business firms. VAIC uses the audited information from annual statements about financial position of firms. VAIC provides the opportunity to incorporate all intangible assets of a firm and to combine them. It provides equal weight to all components in the equation (Shamsudin & Yian, 2013). VAIC also increases the reliability of the findings and discusses the long-term profitability element to find the role of value addition in a firm's performance (Maji & Goswami, 2016). The relationship found via VAIC is more reliable as the data is driven from the annual statements, which are audited by professional auditors, so the information collected is as accurate as possible (Britto, Monetti, & Lima, 2014).

The method of measuring IC using the financial statements was first developed by Pulic (1998). He wanted to develop a system which could calculate the intangible resources employed by the firms. He believed the firms should focus more on value creation rather than profitability only. This method determined the process of value addition with the help of the tangible as well as

intangible assets of the firms (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017). It combines the IC of the firm with the physical resources a firm has in the form of capital employed through the value addition process. The term 'value addition' introduced the concept of the corporate value of the firms, which gave a bigger aspect to the growth of organisations in the society. Pulic's (1998) research was a major milestone for the knowledge intense industries as his study provided a pathway to define the importance of knowledge and value creation. Annual statements of the firms can only provide the dollar amounts assigned to resources employed by the firm, but they do not provide information about the productivity levels attained by the resources. Pulic helped to develop the measures that can estimate productivity (Iazzolino & Laise, 2013).

For the purpose of measurement of VAIC, all data is first collected and sorted from the annual statements of the firms. Figure 2.1 explains the process of calculation of VAIC. The first calculation for VAIC is to find the value addition. Value addition is the gross profit of the firm, which is obtained by subtracting net purchases (in) from the net sales (out) of the company. Human capital is taken from the annual statements of the firm, which states the salary and wages of the firm's administrative staff. A firm with higher salaries and wages would indicate that the staff is more experienced, or the firm is valuing its staff higher than its competitors. It is an indicator of the greater human capital a firm has by investing in its skilled labour in the form of salaries and wages. Value for structural capital is then obtained by deducting human capital from value addition. All these calculations are then used to find out their respective efficiencies. These two efficiency levels (HCE and SCE) are then combined to find the IC efficiency (ICE) which is further added on to capital employed efficiency (CEE) to obtain the value of VAIC.

Figure 2.1 The VAIC concept



Source: Adopted from (Shamsudin & Yian, 2013)

2.5 The concept of financial reporting/financial performance

All public limited companies are required by law to publish their yearly annual reports. Large companies often issue their semi-annual, quarterly or even monthly reports to disclose a clear view of the financial realities to their stakeholders. Shareholders or future investors measure the performance of companies through the financial reports. The annual statement usually consists of two parts: annual operational costs incurred during the year (represented by the profit and loss account statement), and the financial position of the company at the time of publishing the annual statement (the balance sheet). A firm describes all its operational activities via the profit or loss statement (also known as income statement) during a particular period of time (normally once in a year). The annual statements also show the cash flow for the business, representing the ability of the management to manage liquidity for the business during the year as well as the change in equity to show the gain or loss for the shareholders of the company.

In other words, all the investment made by the shareholders and investors in tangible assets of the business is represented via various sections of the annual statements. However, the financial statements of a firm do not specifically explain the IC it possesses - or we can say that the annual statements do not show the investments made by the business in its intangible assets. The return on the investment made in fixed assets is also reflected through the income statement but the investment in IC is not shown anywhere in the annual statement. The annual statements are sometimes prepared by the people who are skilled in fabricating the statements to show their desired information to stakeholders. So, the annual statements somehow do not demonstrate the actual profile of the business, but, instead, they show the profile of the business which the accountants believe it should be (Mouritsen, 2000).

The reality may be entirely different, which is why the firms have different values on the balance sheet and show different pattern on the wall-boards of the stock exchange. A firm may show the value of its goodwill that it has earned during years or in the form of patents that the firm has which gives it a competitive edge over the others, but these values are not the real reflector of the IC the firm may have. Reporting IC has always been an issue ever since it got the attention of the management of business, even though some managers do want to report it to stakeholders to get the credit of their performance during the year. This practice can be a bit complicated as it may contradict the rules laid down by accounting governing bodies across the world (Nimtrakoon, 2015). The issue has been raised with the governing bodies and although accountings bodies have started the process of brainstorming to find a way to accommodate the reporting of IC, there has not been any significant success so far.

So, although the accounting bodies are making the utmost efforts to develop ways where inclusion of information related to amount of IC a firm will be made possible (Cleary, 2009), there is still a huge gap between what has already been done and what is required by the firms

and the accounting bodies. The importance of reporting IC needs to be dealt with by both the parties involved to make it successful. Companies in some countries have already started stating the value of IC they have while others are still trying to remove the gap. It is argued that one of the major reasons of such a gap is the accounting standards that do not specifically require reporting of any information related to IC (Nimtrakoon, 2015). As the growth in IC represents the value addition made by the skilled labour and the performance of management, companies are now showing more interest in disclosing their investment in intangible resources (Maaloul & Zéghal, 2015).

A distinct feature of reporting IC is that it represents the work done by those employees who are not a part of the company anymore. It is done by the compilation of knowledge that was contributed by them at the time of their employment in the company. In conventional accounting method of reporting, it is hardly possible to show the role played in companies' performance by those people who left the company (Roos & O'Connor, 2015). Recognition of the skillset and the value added by employees makes it easier for businesses to increase investment in their wages, training and development of deserving employees (Vidotto et al., 2017). Increased wages and enhanced skill levels are deemed to be the biggest motivators for employees and are very important for the growth of the company. Employees' contributions can be recognised by increasing their knowledge-based skills and decreasing the gap between the financial reporting and IC reporting (Melloni, 2015).

Researchers used different methods with different components to explain IC and found different results (Dzenopoljac et al., 2017; Iazzolino and Laise, 2013). There are many published research papers which enable the reader to understand the financial position of a business in terms of its IC (for example, see Lentjušenkova & Lapina, 2016; Carson, Ranzijn, Winefield, & Marsden, 2004; Agostini, Nosella, & Filippini, 2017). Studies conducted in past

used different ways to measure IC which makes it difficult to accept one specific way of measuring it (Shamsudin & Yian, 2013). The reason why different researchers measured it in different ways is that various firms in different countries adopted different ways for interpreting and reporting IC. The method used by different researchers to measure IC is widely reported outside the conventional methods of reporting business financials (Melloni, 2015).

In the absence of harmonised approaches to measuring and reporting IC, the value of IC is perceived by both firms and researchers with different significance. For this reason, competitors will not even realise the importance of skills possessed by the firms, and the competitors may be far behind in terms of performance management. This may be another reason why firms allow researchers to access information which is not publicly available. Most firms believe that their competitors cannot copy the strategies developed and adopted by them to get the same level of results. That is why as regards the future policies of the firms, the managers need to understand the capabilities of the workforce they have. Especially in the case of multinational companies, different methods needed to be used for evaluation of different sectors in different countries. So, the comparison of IC for different organisations becomes very difficult (Farahani & Ramezan, 2015). The concept of IC is not clear to firms, and they cannot measure it as there are no real monetary values attached to it.

To begin with, the first important question that needs to be answered is to find out the difference between the book value and the corporate value of the business (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017). The difference of these values mainly depends on the amount of value addition that a firm makes through its strategies. Value addition is the outcome of actions taken by the human capital which results in a firm's competitive advantage in the industry and causes the difference between the financial performance and the corporate value of the firms (Sardo

& Serrasqueiro, 2017). It is very hard to measure the value added by the workers in different manufacturing businesses as it is purely an attributive aspect of the product.

The value addition process, thus, in reality, is a process that provides an extra edge to the product over the products produced by the competitors. As it is an invisible phenomenon, firms are unable to attach any measuring method to describe it. In other words, managers feel that the value added by IC is simply not measurable. In order to identify the value added by the workers, managers need to assign a monetary value to such additions. The management in such companies believe that the companies can only build their development based on the knowledge it has gathered over the years. But not all the knowledge gathered by a firm can be used in creating value. For this reason, the idea of value addition shrinks to that part of knowledge which adds a real contribution in attaining better profits and, thus, can be deemed as the IC for the firm (Shamsudin & Yian, 2013).

Over the years, investment pattern in firms have changed, but businesses are yet to decide how much investment should be made in knowledge. These decisions mostly vary between sectors, and observations taken from one sector cannot be implemented in the other (Villalonga & Amit, 2006). Businesses in developing countries survive mainly on the basis of IC as not all the strategies from developed nations can work for them. Developing countries have not been the point of interest for researchers (Nimtrakoon, 2015), and most of the existing research work has focused on firms in developed countries. As IC has recently attracted attention from researchers, there has been a growing awareness about the importance of reporting IC. However, success in terms of incorporating the concepts of IC in the financial statements of firms is still a long way ahead (Dumay, 2016).

The data collected through surveys can help firms to decide about the future growth of their product. Firms can either increase or decrease their investment made in different sections to

adjust to their future market expectations. History has shown that companies that have achieved multiple growth are those where the management considers the value of customers' feedback in making future decisions. Managers at the companies which are reporting IC use the information to prepare a feedback system back to its customers. These firms have managed to win the trust of the parties concerned with such reporting. The disclosure of IC is being built in a way to win trust by passing on the good news while hiding that which may affect the corporate value of the firm (Melloni, 2015).

Countries like Japan, Germany and Hong Kong allocated resources at the government level but could not achieve the desired output (Dumay, 2016). It was felt that the focus of the managers in these countries was only to understand how the reporting of IC will benefit the companies, rather than looking at the broader aspect of the same. On the other hand, developing countries have different issues related to their IC. A lack of opportunities for employment in developing countries forces human capital to move to other countries for a better future. Many people leave their country for better educational studies in developed countries and stay there on a permanent basis, again for availing themselves of better avenues of life. It is argued that the quality of leadership is crucial for creating opportunities and reversing the process of brain drain (Bontis, 2004). Realizing the importance of intellectual man power, most developing countries have now started focusing on the importance of IC.

Companies started to disclose their intangible assets in the annual statements to show the importance of their employees. Such reporting has seen the decline in the brain drain for most of the developed countries. Although the initiative for research into reporting IC was taken in the developed countries (Bontis, 2004), Malaysia is considered to be the leader amongst the developing countries for investigating the importance of IC and to start reporting it to the stakeholders (Ting & Lean, 2009). Even though the research in this area has increased over the

last two decades, there is still a gap in the research. Performance analysis in Malaysian businesses points to the importance of research in this area in developing countries. Researchers are constantly trying to decrease the gap, and research is now being conducted in developing countries. There is a need of extensive research for IC, especially in the emerging economies of Asia and Africa (Khalique, Bontis, Shaari, & Isa, 2015). The last decade has seen many researchers focusing on these countries. India is one of the leading economies of the region; however, Wang (2004) believes that the concept of IC is still in the earliest stages in the Indian economy. In Malaysia, the government has recently started gathering information of values addition made by IC in the economy (Muhammad & Ismail, 2009). Pakistan has a lack of research as well, especially in the area of small and medium enterprises (Khalique, Bontis, Shaari, & Isa, 2015).

Developing countries are still very much behind in reporting the influence of IC in their reporting systems. They still have a long way to go in terms of adopting these measures (Cleary, 2009). For the developing countries, reporting IC is also very important to know a firm's competitive advantage over other firms, which are either not using the valuable information at all or are not good in using this information in formulating future plans (Shamsudin & Yian, 2013), especially for the companies which do not have the potential investment in tangible assets required to compete in the market. Such companies have to rely on their employees' skills in order to stay in the market. The workers use their skills to overcome the disadvantage the firm may have by creating new methods of production to achieve higher efficiencies (Jardon & Martos, 2012). This is why it has become more accustomed in the developing countries to gather information and concentrate more on IC. Knowledge is being compiled electronically, and firms in developing countries will eventually take over their counterparts in the developed countries (Edvinsson, 2000). This author found that the reason behind the failure of firms in developed nation was due to failure of its top management to compile the data in

order to get benefit from the skilled workers. Firms that have failed have a large amount of employee turnover, which ultimately resulted in a downfall in production. Edvinsson (2000) further suggested that the leaders in developing countries have started giving importance to the compilation of knowledge. This focus on building IC will eventually see the growth in most companies, especially in the manufacturing sector.

Intellectual capital is being reported by the companies indirectly as there is no method so far to disclose it in financial statements. Companies are trying to disclose it but not in a proper way. This is where the researchers need to focus on. While IC is not disclosed in its purest form, the components of IC are still present in the balance sheet. These components are identified by the researchers, but the companies are still reluctant to disclose it properly, or they tend to hide relevant information. One of the main reasons is that companies are scared to determine the value of their IC as it will expose their secret resources to their competitors. A competitor may target the most important part of IC, its human capital, and may cause damage to a company. Such information is only shared by the management, and then it is management's decision to disclose it if they believe that some monetary benefit will be associated with the disclosure. The information provided in the disclosure must be within the time period relevant to the information if it is to make any impact on the monetary side of the net worth of the business (Dumay, 2016).

As stated earlier, one of the major issues that reporting IC is facing is the lack of interest shown by the accounting bodies. The accounting standards do not allow all intangible values to be incorporated in the financial statements. There is a need to find a new way of incorporating IC, which is now being investigated. Researchers are endeavouring to find ways to incorporate values of intangibles by using management accounting techniques (Novas, Alves, & Sousa, 2017). The new term "*accountingisation*" has been introduced by researchers (Chiucchi &

Dumay, 2015). Managers are now trying to study the value creation caused by IC, rather than measuring and reporting IC. Organisations are utilizing the knowledge gathered in the past for their competitive advantage (Farahani & Ramezan, 2015). Research in the past was criticised by accountants as even though the human capital is taken from the annual statements of the firms, it is not treated as an expense. The researchers treat all operational expenses related to training and development as an investment, which is contradictory to the current practices in accounting. Auditors of the firms can encourage firms to disclose information related to IC and can use their skill to pass this on to stakeholders using the easiest possible methods (Forte, Tucker, Matonti, & Nicolò, 2017).

2.6 Relationships between intellectual capital and financial performance

As discussed in Section 2.3, companies in developing countries perceived the importance of IC and started reporting its components. At this stage, the reporting has not become part of the main financial statements and is being added in the form of disclosure. This information, however, is not directly presented to stakeholders and has to be accessed through the management. Even though firms are somehow aware of the concept, the concept is still very vague and there is no clear definition as to how the intangible resources are being reported to shareholders (Maji & Goswami, 2016). The managers then decide which information needs to be passed to stakeholders in order to avoid any unnecessary competition from its rivals. Managers do believe that the policies cannot be imitated by the competitors, but they can damage the components of IC, especially the skilled workforce that the company has. This has caused conflict between different schools of thought over the past years. Some managers wanted to use the knowledge of IC only to facilitate the decision making for the betterment of the company's future. On the contrary, some managers want to report it to shareholders so that

they must know the worth of their business including the IC, described in terms of money (Ferenhof, Durst, Bialecki, & Selig, 2015).

Skilled people use their knowledge to show results to the real owners of the businesses in the way they want to (He et al., 2009). Performance and success of the firm depends on those who are not the actual investors of the business. Things can get very complex as the shareholders have to rely on the information provided by the board about the performance of the top management. The decision of hiring people with knowledge of the industry is always crucial, and choosing the right people for the right job may help in improving investment in people in the shape of IC (Berezinets, Garanina, & Ilina, 2016). Shareholders in developing countries have now shown their increased confidence in the skillsets of people who have played a role in the growth of the businesses, and companies now show increased spending on hiring new people and have actually increased the amount of investment in all components of IC, especially the human capital (Vidotto, Ferenhof, Selig, & Bastos, 2017).

The increased spending in IC has shown results. Companies have not only increased production but also the quality of goods manufactured over the years. Studies have shown that intangibly rich firms have produced more than their counterparts and helped maximise shareholders' worth (Jordao & Almeida, 2017). Companies that provide better structural facilities and policies for their human capital have been observed to have improved financial performance. These firms do not have to face the problem of financial insolvency as the labour performs better with the friendly policies (Bae, Kang, & Wang, 2011). However, the increased spending on the resources must not be without any proper analysis. Companies need to identify and fully utilise IC which will lead to increased profits as well as contribute towards maximizing their corporate value (Kasarova, Yovogan, R., & K., 2011).

2.6.1 The importance of human capital for financial performance

Prior research reveals that the companies which fail to identify the right areas for investment tend to fail even though they have made heavy investments in their projects (Handzic, Durmic, Kraljic, & Kraljic, 2016). Past research has also shown that the IC components are the major contributors towards production. These elements are now equally important as compared to investment made in the fixed assets in the past. The investment in tangible assets has now become complimentary with the investment made in intangible resources. Shareholders are now keener in their investments in the tangible assets, because more than half of the value is created by IC (Low, Samkin, & Li, 2015). Especially for the manufacturing sectors, the relationship of components of IC with firms' performance is found to be significant. In the case of developing countries where most firms do not have the capacity to invest in resources, the labour takes over the process and helps to remove any road blocks.

With years of experience on their side, experienced employees learn to create new methods for production and reduce the dependency of a business on heavy investments in tangible assets (Agostini, Nosella, & Filippini, 2017). Intellectual capital is a phenomenon of interaction and complementarities, meaning that a resource's productivity may improve through investments in other resources. Businesses cannot only invest in one component of IC and ignore the importance of others (Bontis & Cabrita, 2008). Equal attention should be given to other components of IC, especially the structural capital, the relational capital and the capital employed by the business. Intellectual capital helps management in formulating, planning and executing its strategies (Massingham & Tam, 2015). A perfect mixture of investment yields higher profits and increases the corporate value for the firms, which is reflected by the increased share price in the stock market.

A lot depends on the ability of the top management to identify the areas where the investments should be increased. The managers are also responsible for identifying the right resources to gain benefit from their skillset. Studies have shown that not only the knowledge possessed by the company matters on its own but also the ability to benefit from it. Organisations can not only rely on hiring people with relevant knowledge but also must make procedures to utilise their knowledge for further improvements (Berezinets, Garanina, & Ilina, 2016). Hiring a skilled worker is not enough; the placement of the skilled worker matters the most, and it depends on the ability of the managers to get the maximum benefit out of the skilled workers, having the right people to decide about the placements shows results over the years. Firms tend to change the pattern of their investments in people and other intangible resources. Such changes in IC force changes in company policies as well (Giuliani, 2015).

Even though two firms may be in the same industry, the culture of the firm is important. A top performer in one firm may not be able to perform at all in the next role he is offered in a different firm. Knowledge may vary for the same type of firms operating in two different cultures, and hiring people with relevant experience may or may not add value due to this reason (Berezinets, Garanina, & Ilina, 2016). A firm may hire someone with no knowledge at all for a particular post which involves a process that is only owned by the firm. The competitors of the firm either do not possess that ability or the firm has the sole rights to operate in that particular area (Wyatt & Frick, 2010). Investment in human capital is higher for such firms as compared to the firms which are using the traditional methods of production. The employee hired may have the relevant education but not the training for the role that he is hired. The firms then have to train the worker from scratch, which results in increases costs associated with the components of IC. In such cases, the knowledge about the particular process is determined as the most important part of long-term profit. An organisation's success depends

on how the day-to-day operations are handled with precisions and accuracy (Hamzah & Ismail, 2008).

2.6.1.1 The role of training and development

Top management in developing countries are mostly reluctant to change the methods that have been in place for years. This is the reason why the researchers in these countries have always struggled to convince businesses to spend money on research and development (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). It is hard for management and labour to move away from their traditional methods and trust the results produced by researchers either from the same country or from the other parts of the world (Jardon & Martos, 2012). The reason is that the growth of businesses in developed countries is associated with the level of spending in procedural improvements. Countries are shifting from capital intensive to knowledge-based economies. However, the importance of knowledge is yet to be recognised in the developing countries (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011).

Many firms have increased the intensity of their research to find the factors of production affected by the components of IC (Maaloul & Zéghal, 2015), and this is why organisations are spending more resources in the measurement of IC (Chiucchi & Dumay, 2015). It is an ongoing challenge for researchers to examine the importance of IC in relation to corporate value. The major area of focus now is to link the knowledge of managers about IC with the training and development of the workers in firms. In the case of large organisations, managers or supervisors are the ones who normally get work-related training.

Most of the trainings conducted are related to specific areas of the operations (Wyatt & Frick, 2010) to transit up-to-date knowledge to improve the efficiency of the employees. The investment in training and development is only justified if the knowledge is compiled and shared with the workers across the business. There is still an ongoing research to find out the

relation between the knowledge of managers about their employees and the actual knowledge of workers (Vidotto, Ferenhof, Selig, & Bastos, 2017). The output related to investments made in tangible assets is easier to identify whereas the investments in intangible assets is more complex. Investments in fixed assets are represented by the property, plant and equipment. The values of these assets are visible to shareholders of firms. On the other hand, the investment in human capital is reflected only from the increased amounts of monies being paid to the employees of the firms. While return on the plant assets can be seen as the increased level of units produced over the years, the real value added by the workers is often ignored.

More specifically, stakeholders can see an increased level of investment in intangible assets, especially in the form of salaries and wages but are unable to see any return on these through the financial statements (Wyatt & Frick, 2010). As it is hard to manage the investments in intangible assets, some organisations even fail to improve the performance after been able to measure IC (Massingham & Tam, 2015). Apart from its recognition and measurement issues, ownership of investments in IC is questioned by many researchers (Farahani & Ramezan, 2015; Low, Samkin, & Li, 2015; Maaloul & Zeghal, 2015). It is argued that the knowledge or the experience of any resource, particularly of the human capital, is not owned by the firm (Farahani & Ramezan, 2015).

2.6.2 Past studies of the intellectual capital and financial performance relationship

Sardo and Serrasqueiro (2017) conducted a study to find the importance of firms' ownership and IC for their financial performance and market value. They also studied the impact of the organisational structure on the market value of the firms. The study was conducted in the manufacturing sectors in 14 European countries from 2004 to 2015. The authors used Tobin Q for the measurement of the impact of the ownership structure on corporate value and the value

added intellectual capital method to measure the IC possessed by the selected firms. For the purpose of measurement of financial performance, the authors used return on assets as the proxy to show the long-term profitability of the firms. The study used the statistical data to represent the results for all the countries. The empirical results showed that the most important factor of IC is human capital, which has a significant impact on the financial performance of firms.

Human capital is also significant for the organisational structure of firms. Capital employed efficiency, which is another important element of the value added intellectual capital, was significant for the improvement of financial performance in the short term, whereas the third element, structural capital, was found important to determine the long-term profitability factor of the firms. One of the biggest limitations of this study was that it did not consider the variety of cultures in different countries, which may have affected the behaviour of labour involved in production as well as the behavioural changes of customers in these countries. The study also ignored the legal implications in these countries as the laws may differ in different countries.

Dzenopoljac et al. (2017) conducted a study to find the impact of IC on the corporate performance of firms. For the purpose of their study, the authors selected companies in Arab countries. They believed that the Arab countries lacked identifying the importance and indicators of IC. The authors studied the top 100 companies in the Arab region in relation to the levels of sales, profits and the market value. The authors studied the importance of the IC performance of the firms on the ranking of the firms in the market. They studied the market value performance of firms from 2011 to 2015. These authors conducted a regression analysis to find the relationship between the variables used and the value added intellectual capital of the firms. They were not satisfied with the results produced by their study, because the results were not clear as to what exactly affects the financial performance and the market value. The

results showed a mixed behaviour, where the human capital was the most important factor influencing the financial performance of firms, whereas the other two components of IC also had a positive impact on the financial performance of firms.

Forte et al. (2017) discussed the importance of the market-to-book value ratio for the firms. The authors related the ratio with the IC of selected firms. The relation between IC and the financial performance was discussed in-depth by the researchers. A total of 140 Italian companies were studied from 2009 to 2013. The study focused on the long-term profit of firms and used return on equity (ROE) as the proxy for the financial performance of the firms. They used the OLS method of regression to find their results. Their empirical findings showed that the size of firms does not have an impact on the financial performance of firms. All other elements of IC were found to have significantly impacted on the financial performance of the firms. The authors finally suggested that the market-to-book ratio may not reflect a realistic figure due to historical changes in the values of the book value and the market value of firms.

Agostini et al. (2017) found a relationship between the IC and the innovation process adopted by the small and medium sized enterprises. The data were selected from 150 small and medium enterprises from the manufacturing industry. Authors used the questionnaire method to collect the data. They used the cluster analyses test along with t-tests and found different results for different attributes of IC. Different SMEs were affected by different factors of IC with human capital and structural capital being the two main components of IC to have significantly impacted on the innovation processes adopted by firms. The companies were considering other factors as well but not to a great enough extent to develop new methods for improvement in manufacturing processes. This research has a limitation due to the data collection being from one industry only. The authors suggested that similar studies should be conducted for other industries and to find a correlation between the components of IC.

The financial performance of firms depends upon their ability to use their resources. There is no secret mix of mechanisms of IC as to which component is more important for firms (Agostini, Nosella, & Filippini, 2017). Florin et al. (2003) conducted research to find out the relationship between a firm's long-term profits and its IC. A similar study was conducted by Shamsudin and Yian (2013) to find the importance of IC in relation to the financial performance of the banks in Malaysia. The authors used the return on assets as the long-term financial performance indicator and related it to the IC of the banks using the value added intellectual capital approach. The study used data from nine commercial banks from Malaysia from 2005 to 2010. They also used another measure for the performance of profit along with return on assets; they measured the performance of long-term profit in terms of the return on equity. The major difference between the investment made in fixed assets and the investment made in equity is that the fixed assets may have a mixed investment structure by utilizing the investment made by shareholders while the equity only represents the investments made by the shareholders.

Khalique et al. (2015) conducted research into the importance of IC for the manufacturing sector of Pakistan. The authors used human capital, structural capital, social capital, technological capital and spiritual capital as the components of IC. The authors selected small and medium enterprises from the electronics sector in Pakistan. The study was quantitative in nature, and they used the longitudinal analysis of one sector instead of a cross-sectional selection. Data were collected through structured questionnaire. The study was limited to the small and medium firms operating in the Gujranwala and Gujrat regions only. The authors used a multiple regression model to find the results, and the results showed that the companies in their study did not show significance for human capital but that they did for other IC factors. The authors suggested discussing the results for human capital as the literature suggested that human capital is the most substantial part of IC. Given the limitations of the study, their results

cannot be generalised. In addition, the data collected through their questionnaires are not reliable due to the lack of understanding of questionnaire.

2.6.3 Intellectual capital leading to financial performance

Business firms that realised the importance of IC over the financial capital became successful in the long-run. Business firms relying only on financial capital may have been successful in the short-run but could not sustain it over a longer period (Wang, 2011). Different studies have been conducted on the empirical relationship of IC and a firm's financial performance using long-term profitability. Chen, Cheng and Hwang (2005) found that IC has a positive effect on a firm's market value and financial performance. Correspondingly, a number of studies have showed the significantly positive effect of IC on a firm's financial performance (Makki & Lodhi, 2008; Tayles, Pike, & Sofian, 2007; Ahangar, 2011; Bharati, 2010). Other researchers found that IC is directly related to the financial performance of a business (Edvinsson & Malone, 1997; Furman et al., 2002; Guthrie, 2001; Lev & Feng, 2001; Powell & Snellman, 2004; Stewart, 1997; Sveiby, 1997).

Ting and Lean (2009) conducted research for twenty financial and non-financial Malaysian institutions from 1999 to 2007. Using Spearman's correlation test, they used return on assets (ROA) as an indicator for financial performance, and its relationship with IC components was investigated using the value added intellectual coefficient method. The study was another milestone in highlighting the importance of skilled labour to the financial and non-financial sectors. It examined if IC had more effect on the manufacturing performance or with the services performance. The results again emphasised the importance of the skilled labour by showing that the importance of IC was found to be more or less the same for the service and non-service activities. These authors, however, suggested that the importance of IC was marginally higher for the manufacturing sector. This sector has to deploy the investments made

in plants and equipment, whereas the service sector does not have to have the heavy investments in the fixed assets. The major difference between the two sectors was the cost of the infrastructure involved in both. The investments made in the structural capital does not impact the performance of the employees for both the financial and non-financial sector. Results showed that two of the three components of IC (HCE and CEE) have a positive impact on financial performance. The implication is that if a firm invests in the development of its employees, the development of its processes is more likely to attract higher profits. On the other hand, if a firm has invested in fixed assets without linking it to the intangible assets, the firm may not get the desired returns. The study indicated that the third factor (SCE) had a negative impact on its long-term financial performance. However, they found that the overall the impact of VAIC on a firm's financial performance was significantly positive.

A study conducted by Chen, Cheng and Hwang, (2005) proved that the investments made in fixed assets must be carefully structured. Only a balanced investment between tangible and intangible or current and fixed assets may yield the desired results for a firm. Firms with the higher structural capital have higher return on their equity (Chen, Cheng, & Hwang, 2005). The same is true for the knowledge-intensive manufacturing firms. The firms that are purely related to the level of education of its employees depend heavily on the skillsets and the training and development of its workers. In a study conducted by Bramhandkar et al. (2007) on the manufacturers of pharmaceutical drugs, it was found that the firms that were performing better than the others were the firms which had the better educated and trained skilled labour. These authors also concluded that the relationship capital was not that important for drug manufacturing firms, this is because the product was not directly related to the loyalty of the customers who were consuming it. So, the authors concluded the relationship between relationship capital and return on equity was not established.

Another study was conducted into the financial sector's performance and the amount of intangible assets it has. The study was conducted by Nawaz & Haniffa (2017) to find the significance of IC on the financial performance of Islamic financial institutions in different countries. The authors measured the relationship between human capital efficiency, structural capital efficiency and the capital employed efficiency with firms' financial performance using the value added intellectual capital method. Data were taken from 64 different Islamic financial institutions and was divided into three different regions. Authors considered return on equity (ROE) ratio as the financial performance indicator for the selected firms. The authors emphasised the importance of educated and trained labour because the area of Islamic financial institutions involves people who have educational background in the Islamic financial system as well as the training in the area to perform better. The authors used two separate proxies for the financial performance and stated that the impact of IC should be measured separately on the return on assets and the return on equity. They suggested that the combined impact on the financial performance is a bit difficult to assess in knowledge-intensive firms. The same was the case in the Islamic financial institutions. They found a positive relationship between IC indicators and a firm's financial performance with HCE being the dominant component.

Bontis (1998) found a significant result between IC and a firm's financial performance through corporate profitability. Similarly, Belkaoui (2003) found that IC has a positive effect on a firm's financial performance. Gruian (2011) examined the relationship between IC components and firms' financial performance for Romanian firms. Return on equity was used as the proxy for the measurement of financial performance. The relationship between the financial performance and IC was found using the value added intellectual capital. He found that IC has a positive effect on a firm's financial performance in terms of return on equity. The author also found that physical capital is a strong determinant of measuring a firm's performance in the Romanian companies. Chen, Cheng and Hwang (2005) examined the relationship between IC,

market value and a firm's financial performance and found a significant positive effect of IC on market value and financial performance. Huang et al. (2007) observed that there is a significant positive correlation among the three dimensions of IC (human, structural and relational) and business performance, and also a positive correlation among these three capitals.

Bontis et al. (2000) found that the value of IC reported in terms of goodwill in manufacturing sector had almost doubled in a decade. Extensive research is now being conducted to find the relation between the components of IC and its transformation into value addition and its role in increasing the financial performance of an organisation (Jordao & Almeida, 2017). Intellectual capital has become a dominant source for many enterprises to gain a competitive advantage in their respective workplaces (Marr, Schiuma, & Neely, 2004). It strengthens a manufacturing firm's long-term competitiveness through positively affecting all performance indicators (Phusavat et al., 2011). Similarly, Chen, Cheng and Hwang (2005) found that IC has positive effect on a firm's market value and financial performance. Correspondingly, a number of studies showed the positive and significant effect of IC on a firm's financial performance (Makki & Lodhi, 2008; Tayles, Pike, & Sofian, 2007; Ahangar, 2011; Bharati, 2010). Pulic (1998) used all three efficiencies for IC to obtain the value of VAIC.

Bramhandkar et al. (2007) found a significant positive relationship between capital and return on assets as a part of their study measuring the impact of different components of IC on a firm's financial performance. Phusavat et al. (2011) used VAIC method to find the relationship between a firm's financial performance and the components of IC. Their study was conducted in the manufacturing sector in Thailand. Data collection was made from 11 entities listed on the Thailand Stock Exchange from 2006 to 2009. Empirical findings showed that VAIC has a positive impact on the financial performance of the firms. Phusavat et al. (2011) used ROA and ROE as the main indicators of financial performance along with revenue growth and employee

productivity. Some data were also collected through interviews, because not all the companies were showing the relevant data in their financial statements.

Britto, Monetti and Lima (2014) conducted research on the role of IC in the evaluation of profitability in tangible-intensive firms. They examined Brazilian firms from 2007 to 2011 to find the importance of an IC reporting system. The financial performance of the firms was measured through the return on invested capital of selected firms. Their study used the value added intellectual coefficient method to evaluate the financial performance of firms. Their findings suggest that IC has an inverse relationship with the market value of the firms. Firms with more investment in tangible assets showed lower levels of IC except for CEE which explains value as much as return on invested capital (ROIC). The study further suggested that IC does not influence market risk caused by the size and leverage of firms and does not explain ROIC.

Iazzolino et al. (2014) conducted research on Italian firms from different sectors. The authors found a relationship between economic value addition and the IC of firms. Data were taken for the year 2011 from six different sectors in Italy. They used the VAIC method with correlation analysis to find the importance of IC. They found that the economic value addition had no significant relationship with IC. It was concluded that the economic value addition is based purely on the financial theory, whereas the VAIC method had its main focus on the assessment of the IC efficiency of firms.

In another study, conducted by Iazzolino and Laise (2013), an effort was made to find the strengths and weaknesses of the VAIC method. They tried to relate the method of finding the relationship of IC with the accounting theory in practice. Authors tried to find a relationship between the financial performance of a firm and the components of IC. They used return on asset as the main indicator for financial performance and took human capital efficiency as the

indicator of IC. They found that the VAIC method does not modify or contradict the fundamentals of accounting and emphasised that firms should add a separate income statement showing the value addition by IC. They also suggested to add all components of IC while preparing the value added income statement.

Pal and Soriya (2012) conducted research on the pharmaceutical and textile industry of India. They tried to find the relationship of IC with financial performance as well as the market value of the firms. They used the VAIC method with correlation and OLS regressions models with panel data analysis. The authors used multiple proxies for the financial performance of the firms including return on assets, return on equity, asset turnover ratio, physical capacity and debt to equity ratio. They also separated the firms based on size, taking the log of net sales volume. The study suggested that there is a significant relationship between the financial performance of firms and the IC possessed by firms. However, the authors failed to find any relationship between the IC and the market value. Authors suggested that the sectors they had chosen may not have shown importance for the IC and that the real value of IC must be visible in knowledge intensive industries.

Maji and Goswami (2016) conducted a study into the relationship between the manufacturing sector and the service sector in Indian companies. They selected the steel manufacturing industry and the engineering sector for their study. Data were taken from 1999 to 2013 from the two sectors. Using the VAIC method, they tested the relationship between a sector's performance and three components of IC (HCE, SCE & CEE). Return on assets (ROA) was used as a financial performance indicator, and they found there is a significant relationship between ROA and the components of IC. However, the relationship between SCE and ROA was found to have the least significance. Jordao and Almeida (2017) examined the importance and effectiveness of IC and its components on the long-term financial performance of

knowledge-based firms in Latin America. Similar to the study conducted by Maji and Goswami (2016), the authors also used return on assets as one of the measures of the financial performance of firms.

Batt (2002) stated that high-skilled employees participate in efficient and effective decision making, which increases the employee's motivation and security and leads to higher returns. The study conducted by Chen, Cheng and Hwang, (2005) also found a positive association that the greater the human capital efficiency was, then the greater would be revenue generation. Ahangar (2011) found that relational capital has a positive association with employee productivity. Gittell et al. (2010) conducted a study to show the influence of relational capital on the productivity of employees, which results in higher profits. Empirical findings proved that a strong relationship between a business and its suppliers and customers motivated the employees and boosted their confidence in the work being done. Carmeli and Azeroual (2009) suggested that the relational capital is a major cause of variation in the revenue generation of firms. Hormiga et al. (2011) support this view, and they found that there was a positive link between relational capital and rapid revenue generation.

2.7 Summary of the chapter

Chapter Two highlighted the importance of IC for the short-term as well as the long-term financial performance of a company. The purpose of this study is to examine the impact of IC on a firm's short-term and long-term financial performance. This chapter covered IC from its emergence to the latest concepts developed based on the recent studies. With the help of key literature covered in the area of IC and financial performance, the chapter highlighted different concepts about the components of IC introduced in the past. Detailed discussions about three major components (human capital, structural capital and relational capital) was covered in the chapter. The chapter further covered various methods used in the past to determine the financial

performance of the firms. The area of financial reporting that is linked with the disclosure of IC was covered in the chapter. The gap between the existing financial reporting, which does not encourage any disclosure about the intangible assets, and the needs of the future, which accounting bodies are working hard to prepare rules for future financial reporting on IC, was also discussed.

The chapter further discovered the relationship between a firm's IC and its financial performance. A detailed discussion of the relationship between the components of IC for firms and their impact on financial performance, with a brief discussion about the training and development, was also covered in the chapter. The relevance of the current study to the past studies was also examined, and the gaps were highlighted where the current study will be helpful for the manufacturing industry in Pakistan.

Different studies have been conducted on intangible assets and firms' efficiency, but most of the studies found divergent results. Only a handful studies have been conducted to report on the relationship of IC in Pakistan (Massaro, Dumay, Garlatti, & Mas, 2018; Daud & Kaimenakis, 2007; Chen, Cheng and Hwang, 2005; Khalique et al., 2015) and the country still has a long way to go as compared to other developing countries in the region. Even though a lot of research work has been conducted in the past, it is still unclear which dimension is more important for reporting IC. Research in this area is still in its early stages in Pakistan, where only a few research studies have been conducted in recent years. The gap is still there to find the importance of IC for the manufacturing entities in Pakistan. Most of the companies in Pakistan are still not concerned about investing in intangible assets and are not reporting on their investment in intangible assets. These companies are losing the market share in the global economy due to which the exports of Pakistan are constantly declining. On the contrary, the imports of the country are on the rise as people are opting for imported finished goods. This is

impacting the economy of Pakistan with the negative balance of payment having its effect on the GDP growth rate.

This chapter provided all the concepts of IC and the base for the further discussions about the theories in relation to the importance of IC and the financial performance of the firms. Based on the discussion covered in this chapter, the next chapter will highlight various management, economic and financial theories that will provide the guidelines for the development of the hypotheses in the study. Discussions in the chapter related to the links of different components of financial capital with the short-term and long-term profit of the firms provides a foundation for the hypotheses, and the model development is covered in chapters four and chapter five.

Chapter Three: Theories

3.1 Introduction

It is perceived from chapter one and chapter two that IC has recently emerged as an innovative aspect of human resource management. While Chapter One has explained the purpose and background of this study, Chapter Two has explained the concepts, history, importance and effects of IC. The review of the literature suggests that researchers still need to explain the relationship of the competing as well as complimenting concepts of IC, the measurement basis for reporting of IC and the evaluation criteria for assessing the impact of IC on a firm's performance in different countries. Given the multiple realities of IC, this chapter aims to find relevant theories from the accounting, finance, management and psychology literature for outlining and explaining the ontology of this research and developing a foundation for the research methodology in the next chapter.

Previous studies on the topic of IC used stakeholder, agency and resources-based theories (Massaro, Dumay, & Bagnoli, 2017). These theories helped to understand the importance of reporting IC. This study also benefits from several theories, which will be briefly explained in this section. The study covers the importance of four major theories that researchers have used in the past. Section 3.2 provides a brief introduction for resource-based theory and is followed by the Section 3.3, which provides the details of another very important theory for the study of IC, which is stakeholder theory. Section 3.4 provides the history and importance of agency theory, and this is followed by the explanation of stewardship theory in Section 3.5. Section 3.6 covers a brief discussion about the relevancy and interdependency of theories with each other. The chapter ends with a summary and concluding remarks in Section 3.7.

3.2 Resource-based theory

One of the most important theories related to the importance of IC is the resource-based theory developed in the mid-1980s. This theory is based on four different concepts (Barney, Jay, & Clark, 2007). The essential concept behind resource-based theory is that businesses are concerned about the competitive advantage of firms over their competitors. This concept represents the secret within the procedures of firms that makes them unique as compared to all other firms within same industry. This very basic concept is followed in the manufacturing sector, where some businesses may have efficient labour with less technology deployed in the production. On the other hand, its competitors may have a very efficient production technology but not the required skilled labour to participate. In both cases, managers need to be able to manage their resources according to their constraints. This theory addresses the fundamental issue of managing the resources that a firm has in order to get the output that puts the organisation ahead of its competitors (Verbeke & Tung, 2012). Firms with lesser technology tend to follow their counterparts and may close the gap and catch up with the latest methods of technologies. But attaining technology is not the only solution to obtaining the optimum levels of productions. The success or failure of a firm depends on the utilisation of existing resources either with the latest technology or with the traditional methods of production. In other words, this theory puts the emphasis on people who can manage the operations, rather than the physical capital investment made by the shareholders (Barney, Jay, & Clark, 2007).

3.2.1 The evolution of resource-based theory

The concept of resource-based theory is believed to have originated from David Ricardo's theory of rent in the beginning of the nineteenth century. Ricardo treated land as the main source of production and distinguished different types of lands with respect to the level of fertility of the land (Wan et al., 2011). Initially, the concept about the utilisation of resources

did not receive sufficient attention from the managers of firms (Barney, Ketchen, & Wright, 2011). The utilisation of resources is mainly achieved by the managers who control the areas that are mainly affected by the revenue generation activities or by the departments which are considered as the cost centres for the firms (Barney, Jay, & Clark, 2007). These resources are predominantly used for enhancing the operational efficiencies of firms. This theory explains why different organisations have differences in profits despite that the investment levels of those firms are the same. Even though the size of the balance sheet is the same, the firms show a difference in productivity. This difference indicates that some firms are either not fully utilising their resources or that some firms are utilizing their resources better than their counterparts. It also explains the reason why a firm with an equal amount of investment has failed to attain the similar amounts of profit that the other firms have achieved. This theory helps businesses understand the hurdles that firms may face in proper utilisation of resources (Wan et al., 2011).

This theory has further been advanced with the exposure of the resource-based view and dynamic capabilities approach due to their use of the stagnant concepts of competitive advantage and firm's performance (Teece, Pisano, & Shuen, 1997; Helfat & Peteraf, 2003). The resource-based view was developed in previous studies (Nelson & Winter, 1982; Schumpeter, 1934). Their studies presented advanced ways of achieving competitive advantage for firms in which they described such resources which led towards innovative modes of work and value creation processes (Kor & Mahoney, 2005). Managers need to identify resources in the business and to link them together. Failure to create a link between the resources means that the firm does not own the resources, or the resources are wrongly identified, or the managers do not have the capability to relate one resource to the other. It is argued that the correlation between the resources is the most important part of the resource-based theory (Bromiley & Rau, 2016).

3.2.2 The importance of resource-based theory

An efficient operational procedure is very important for the businesses involved in the manufacturing sector. The desire to improve the operational procedures is created by the management. Managers are entrusted with responsibilities to carry out operations based on the skillset of the labour (Fama, 1980). Different managers may have different approach towards the allocation of resources. There is no rule of thumb for which approach should be followed in order to get the similar level of outputs. Some managers may have the skills to lead the team but may not have the ability to pass the knowledge across to their teams (Barney, Jay, & Clark, 2007). Similarly, some managers are good in managing people, but they may lack the desired skills to face the challenges of modern production methods. Managers who set high standards for their own performance always try to improve the operational activities. The smooth operational activities help businesses to attain more output and overcome the constraints that contribute to lower inputs.

Generally, firms that have skilled managers and labour outperform their competitors (Bromiley & Rau, 2016). Presumably, every firm has certain resources which are not properly utilised due to the lack of knowledge and expertise of the management. These resources are complimentary in nature to each other and would not attain any output if not mixed with other resources. It is the role of managers to link the available resources in the best possible way (Wan et al., 2011). Since its evolution, this theory has played a role for researchers in examining the importance of resource utilisation by firms. Initially, this theory was considered to be focusing on non-economic sectors. Due to this reason, the concepts of resource-based theory were not recognised by researchers in the initial stages (Wan, Hoskisson, Short, & Yiu, 2011). Resource-based theory seeks to explain whether or not firms fail to attain their desired output due to underutilisation of resources. Firms may have the resources available that can impact their

financial performance, but the management is unable to identify and use those resources (Verbeke & Tung, 2012).

A number of researchers argue that resource-based theory suggests enquiring into the competitive advantages a firm has in the industry (Verbeke & Tung, 2012; Wan et al., 2011; Barney et al., 2011). Although these studies explained resource-based theory in different ways, the core finding coming out from their explanation is that each company has some possible resources that are only associated with the firm and cannot be copied by others operating in the same industry (Bromiley & Rau, 2016). The resource-based theory explains the importance of value creation processes of firms. These systems are crucial for firms that are running their operations in different segments. The theory states that the basic value creating process does not only come from the industry dynamics but also consists of an enterprises' procedures and methods that lead towards distinctive grants of authentic resources (Peppard & Rylander, 2001; (Collis, David, & Montgomery, 1995 ; Barney J. , 1991).

Another important factor that provides the basis for the resource-based theory is the concept of demand and supply explained by Penrose (Penrose, 1959) According to this author, managers who are capable of forecasting the future demands for the products can manage their supply more efficiently, and, hence, they can utilise their resources in the best possible way (Barney, Jay, & Clark, 2007). The fourth element that played its role in the development of the resource-based theory is the concept of perfect competition in the market. A firm will be forced to use the maximum resources it has in order to surpass the competitors. If the resources are not matched, then the market may become autonomous in its nature and the prices then can be controlled by a single or a few firms, which does not benefit the general public (Barney, Jay, & Clark, 2007)

3.2.3 Criticism of resource-based theory

Resource-based theory explains that the allocation of resources must be optimised; however, it does not explain the methods with which such optimum levels can be achieved (Verbeke & Tung, 2012). Moreover, this theory does not satisfy the factors with which the performance of resources can be measure. Different researchers have used different indicators of performance measurement. While the majority of researchers chose performance as their main indicator, only a handful of researchers tried to find the advantage a firm has over its competitors. The critics also identified that most of the firms operating in the industry do not deviate greatly from the average profit being earned by all other firms. The advantage of having a ‘secret recipe’ for the business may be true in a very small number of firms but not in all cases (Bromiley & Rau, 2016).

Bromiley and Rau (2016) have a different view about resource-based theory. According to Bromiley and Rau (2016), not all firms operating in the industry hold such types of resources that give them a competitive advantage. These attributes are only associated with the high performing firms. The ownership of IC is different from the ownership of physical capital. In the case of IC, firms do not own some resources, but they can benefit from them during their stay with the company (Fama, 1980). These resources can easily move to other companies, which creates the issue of replication of the process. To avoid the replication of resources, managers need to develop such procedures that cannot be copied easily by their competitors. Hence, it comes down to the ability of the managers to either create such resources if the firm does not own any, or to identify and create a synergy between the resources to maximise the outputs. By doing so, the firms can compete not only with firms of the same size but also with firms that have invested more in business. These resources may include a company’s relations with its suppliers or retailers, who sell the company’s products. Creating and enforcing the

relationships with the suppliers, or in other words forward or backward integration, may add the value to customers (Hitt, Xu, & Carnes, 2016).

3.3 Stakeholder theory

Stakeholders are individuals, firms, environment or society at large who have a stake or interest in a reporting entity. The interest of a stakeholder in a firm may vary and change over time. Hence, businesses tend to keep monitoring the interests of stakeholders and put them in a continuous process for improvement (Verbeke & Tung, 2012). Similarly, different firms may have different stakeholders depending upon the nature of business and the society in which the firm operates⁴. Further, the stakeholders for one firm may not be the same for another firm even the firm exists in the same industry. More specifically, the term stakeholder is so vast that for some firms the definition of stakeholders may include the labour within the firm (Bae, Kang, & Wang, 2011). Stakeholders also include the suppliers that work for the company, but the most important stakeholders are the target market of the firm (Verbeke & Tung, 2012). Hence, a firm that considers the existence of stakeholders in all the decision making adds an additional value towards the society, especially those firms that treat the general public as their stakeholders for the purpose of advertising or treating public opinion as the basis of their product development. The purpose of considering stakeholder theory in this section is that some researchers have suggested understanding firms' profitability and IC in the light of stakeholder theory (Brower & Mahajan, 2013).

3.3.1 The evolution of stakeholder theory

The need for theory was felt when firms started receiving feedback from the general public who were not customers of the business but were somehow involved with the way the firms

⁴ Companies like KFC, COKE and Shell have suffered a lot due to riots in Pakistan against the parent countries of these products due to religious reasons.

were managed by the organisations. Major development for this theory was made in the mid-1980s by Freeman (1984), who introduced the theory as a basis of management decisions. Even though it became a popular topic among researchers after the publication of Freeman's book⁵, the discussions about its importance were missing from the initial research (Donaldson & Preston, 1995). Later on, the researchers removed this gap and the studies conducted in the last couple of decades became a very focal part of the decisions taken by management across the world (Mainardes, Alves, & Raposo, 2011). Stakeholder theory in the recent past has been extensively used by researchers (Friedman & Miles, 2006; Wolfe & Putler, 2002; Banerjee, Dasgupta, & Kim, 2009; Russo & Perrini, 2010). The theory has widely been discussed in the literature but has not been practiced widely by the managers in small and medium organisations (Russo & Perrini, 2010). Firms need to identify the stakeholders in order to increase their social responsibility towards society.

3.3.2 The importance of stakeholder theory

Stakeholder theory has been applied mainly in three different methods; these methods are different in nature (Donaldson & Preston, 1995). The first method is called the descriptive method, which has been used to describe the fundamental attributes of the firms, and to explain how firms operate through the decisions taken by the management and how these firms are influenced by the performance of other firms. The second method of stakeholder theory that has been used by the researchers is called instrumental (Donaldson & Preston, 1995). This type of research has linked the performance of firms with the decisions taken by the management to respond to stakeholders' interests. The third method is the normative approach (Donaldson & Preston, 1995), which is considered to be the most important aspect as it gauges the moral values of firms with their performance in the society, and decisions taken by the management

⁵ Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Boston, MA: Pitman

not only consider the objectives of the firms but also consider how it will affect those who are not directly linked with the profitability of the firms (Shamsudin & Yian, 2013).

Some researchers combined the three different methods of stakeholder theory and proposed some new approaches (Donaldson & Preston, 1995). The theory discussed the parties that can affect the decision making of the firms and divided these parties into two different groups. Those who somehow have a direct link with the performance of the party are called primary stakeholders, whereas those who do not have a direct link but are affected somehow by the decisions taken by the management are considered as secondary stakeholders (Mainardes, Alves, & Raposo, 2011). Secondary stakeholders also include different departments of the government; hence, the policies made by the management are greatly influenced by the laws prevailing in the country of operations (Donaldson & Preston, 1995).

3.3.3 The contribution of stakeholder theory

The core values of the country must always be considered as the laws may enforce things that are not allowed by either the religion or the history of the country in which the firm is operating. Another important part of the secondary stakeholders is the society in which the firm operates. The culture of the society also influences the decisions taken by the organisations as the impact of all decisions have a wider effect on the people who work with the company. These stakeholders are directly or indirectly affected by the decisions of the management. Due to changes in the economic conditions around the globe, many businesses are going through a transition. These transformations are in the form of mergers and acquisitions, which may have a positive impact on firms' performance but not all the mergers end up satisfying stakeholders' needs. Managers become stakeholders during these mergers as their own job security is in question. That is why managers put their job security as a priority over the interests of the

business. Any such merger between the two organisations is generally not welcomed by the stakeholders due to difference in norms and values.

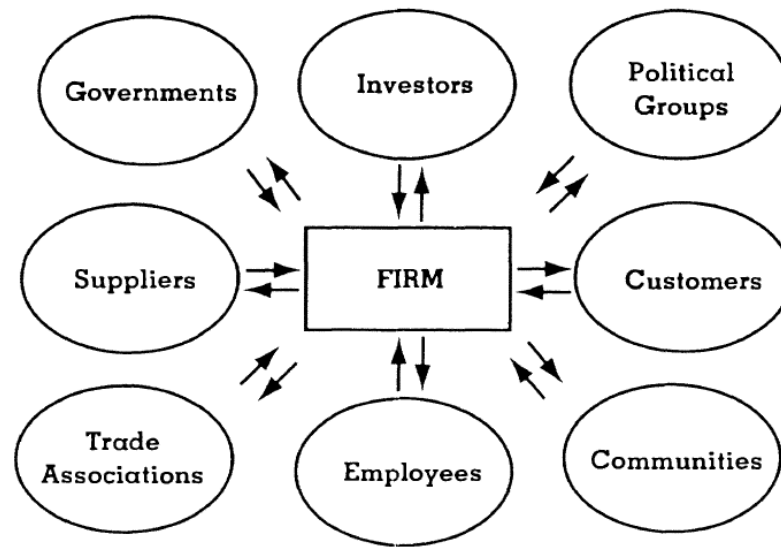
Stakeholders in society are also affected by the methods of reporting IC as they may not possess the ability required to understand the importance of IC disclosure (Forte, Tucker, Matonti, & Nicolò, 2017). As all firms are part of a society, and the workforce that firms have come from society itself, there is a social responsibility for firms to disclose the IC so as to explain the knowledge it has to perceive and meet the society's expectations. The general public, from the society, is unable to find the value added by the firm towards the economy and specifically towards the society itself. A common man is unable to find the values a firm adds towards its development through custom-made income statements and balance sheets. They need to understand through non-measurable disclosures to adjust their perception about the usefulness of a firm's existence for the public (Shamsudin & Yian, 2013). Firms are now more aware of their role to play for the society. The new trend is to attract stakeholders' attention through enhanced levels of corporate social responsibility (Russo & Perrini, 2010). Thus, the growth of the firms in terms of future profits and sustainability depends heavily on the perceptions of a firms' responsibility to satisfy the needs and requirements of primary as well as secondary stakeholders. In other words, the real journey towards corporate value starts after addressing the influences of all stakeholders affecting the decisions of firms (Mainardes, Alves, & Raposo, 2011)

Firms have become more aware of their social responsibility due to the increased awareness of stakeholders (Brower & Mahajan, 2013). However, it is hard for the managers to respond to the varied interest of stakeholders (Donaldson & Preston, 1995). For this reason, managers need to specify all stakeholders on the basis of priority of their expectations.

The concept of global warming has become highly debateable in the last couple of decades. It is critical to know and report how the manufacturing processes affects the atmosphere and public life in society (Mainardes, Alves, & Raposo, 2011). Nevertheless, the primary objective of a firm is to maximise profit by combining resources and utilizing skilled workers. There are complex tasks for managers to develop strategies, implementing policies and provide training to employees to achieve firms' objectives, profit maximisation for the firms and to contribute to society.

As explained by Donaldson and Peterson (1995), stakeholder theory works in both directions. Fig 3.1 shows the possible stakeholders of a firm and how the firms can benefit from their own stakeholders. In the beginning, the stakeholders were able to control the decisions taken by the management of large organisations, but over a period of time the firms have learned to take benefit from the stakeholder theory as well. Firms these days use the feedback from their stakeholders.

Figure 3. 1 Contrasting Model of the Corporation: The stakeholder model



Source: (Donaldson & Preston, 1995)

Knowledge compiled on the basis of feedback or on the needs of societies can help a firm to develop its structural capital and take better care of its stakeholders (Brower & Mahajan, 2013). Firms now encourage their customers to publish their feedback through various means, such as the firm's website and social media. Thus, new ways to control the social responsibility of a firm are rapidly emerging (Massaro, Dumay, & Bagnoli, 2017). Similarly, the feedback from suppliers and trade associations help a firm to improve their supply chain for the benefits of their long-term profitability. Finally, communications among employees can develop training for employees' long-term.

3.3.4 Challenges faced by firms

The major challenge for the managers is to identify stakeholders as many parties attempt to be shown as a stakeholder by filing law suits against the operations of the business (Phillips, Berman, Elms, & Cramer, 2010). In the past, firms ignored the cultural values of common people who were affected by the decisions taken by such companies. The trend has now

changed and societies around the world have become more aware about their rights and the areas that may affect their health as well as their social lifestyle. The public in the modern world does not allow firms to earn profits at the cost of suffering of the general public around them (Russo & Perrini, 2010).

The environment has recently become an important factor that influences business decisions. The business, however, should endeavour that their decisions are not compelled by the different stakeholders in order to justify their actions. The relationship between the business and the stakeholders must be of a working type and not be enforced (Russo & Perrini, 2010). Firms increase their relationship with suppliers when all the vendors attached to the firm like the idea of getting benefit by attaching themselves to these firms. Some stakeholders may have similar interests in the firm, and that similarity may encourage them to get together to form a group, which may work in favour of or against the business. Similarly, a similar group of stakeholders may have difference in their interests. In the latter case, the managers may face a greater challenge as they tend to fail to identify the real stakeholders. The decision then appears to be a matter of discretion for manager to choose which party qualifies as a stakeholder and which does not (Phillips, Berman, Elms, & Cramer, 2010). A manager may give more importance to one group of stakeholders over the other and, hence, may affect the future of the business. Firms have to depend on the interest of these parties before formulating any policy which may or may not end up favouring the policies formulated by the management to attain the firms' ultimate goals. So, the organisations end up treating the stakeholders as a part of the available resources, and stakeholder theory is merged with resource-based theory. All policies formed for resource utilisation then start depending upon the interest of stakeholders of the business (Mainardes, Alves, & Raposo, 2011).

3.3.5 Criticism of stakeholder theory

Stakeholder theory is somehow linked with resource-based theory: if the company gives importance to its stakeholders, it will focus more on its resources. In other words, the managers' bear in mind how their decisions of linking the existing resources will affect the general public that may be affected (Brower & Mahajan, 2013). Stakeholders try to influence the decision making of the management, and in some cases they do not allow the management to work freely. By doing so, they control the direction of the company's future growth, as the growth is affected due to unhealthy criticism which may have nothing to do with reality (Mainardes, Alves, & Raposo, 2011). The theory fails to explain how to measure the influence or how to link different stakeholders' interests with each other.

Stakeholder theory also does not imply the level of influence the stakeholders may have on managerial decisions. Stakeholder theory does not highlight the fact that the managers sometimes may not have autonomy to integrate the decisions that may have impact on different stakeholders (Phillips et. al., 2010). Moreover, the theory is mainly based on the assumption that the firms will consider the interests of all groups involved in the production process. It fails to link the performance of firms with the level of significance it gives to its environment (Mainardes, Alves, & Raposo, 2011). Furthermore, the theory does not have any scientific proven relationship with the IC performance of the firms. It also fails to identify the role of human capital, which is the most important component of IC, in formulating the strategies for business (Bae, Kang, & Wang, 2011). Moreover, stakeholder theory has mainly been observed in large businesses, especially multinational firms. The theory has not been practically implemented in the case of small- and medium-level organisations (Russo & Perrini, 2010). The firms operating in the developing countries do not have same investment capability as the firms in the developed countries. Prior research has not adequately addressed this issue.

3.4 Agency theory

Managers use their skills to transform the inputs into outputs through their operational efficiencies. The long-term aim of every firm is to protect the interest of shareholders and others. In the case of smaller organisations, the owners keep the control; however, when the business grows it becomes difficult to control a firm. In order to manage the increased workload due to business expansion, the owners decide to pass their powers to people with the necessary education and skills. This creates the owner-manager (principal-agent) relationship also popularly known as the agency relationship (Davis, Schoorman, & Donaldson, 1997). Agency theory explains the mutual trust, conflicting interests or agents and the control (governance) mechanisms to control agents.

Shareholders of the firms can study the performance of their competitors to find out the shortcomings in the abilities of their top management. The level of skilled workers the firm has can also be determined to decide if the business should hire experienced employees or to hire those who have education in the latest technology and then to train them. It will be easier for the top management to set the targets for them by following the trend in the industry.

3.4.1 The evolution of agency theory

Shareholders are the owners of the firms; however, the control over the operations of business is with the top management, especially the board of directors and the chief executive (Davis, Schoorman, & Donaldson, 1997). Agency theory was initially developed by Jensen and Meckling (1976), and it focussed on the importance of the role of the board of directors of firms in general and the role of the chief executive office in particular. Jensen and Meckling (1976) analysed various situations, explaining the financial performance of firms through the performance and incentives of top management. Every single resource of the business has a common goal to earn profit and maximise it over the years.

The decisions taken by the managers have proved the importance of top management for the long-term sustainability of the business (Davis, Schoorman, & Donaldson, 1997). There have been many incidents indicating that the performance of the chief executive can be linked with the failure of the business but cannot be directly linked with the growth of the business (Pepper & Gore, 2015). The growth of a business is in fact the combination of good decisions taken by the top management combined with the performance of the workforce of the business, and the human resources should also be capable of performing in the direction of the vision of the top management. Studies have shown that the firms that have invested highly in their workers have provided greater opportunities for the firms to grow, and such firms do not face liquidity issues (Bae, Kang, & Wang, 2011), especially in the case of manufacturing businesses, which are mainly run by the people who do not own them but are mainly involved in the planning. The plans are executed by the people who have knowledge and training about the production processes. The real efforts are made by these workers, who implement the strategies made by the managers.

It would be an interesting area of research if agency theory can be used to explain IC. The real owners of business are the shareholders, but they do not have the skills necessary for running the business. So, in order to run the business, shareholders choose the top management including the board of directors and chief executive. The selection of people who are capable of measuring their own performance as well as the performance of other managers in the board is very important for the long-term financial performance of the firms (Fama, 1980). These people then run the operations of the business as agents of the shareholders. This concept, where the governing body is different than the real owners of the business, is known as agency (Mustapha & Ahmad, 2011).

3.4.2 The importance of agency theory

The process of value addition is purely intangible, and the real value added by the workers is very hard to measure. So, the shareholders find it hard to gauge the performance of the workers. Shareholders are generally not aware of business fundamentals and do not get involved in day-to-day operations. So, they need to hire managers who have the skills, to act on behalf of shareholders. However, agency costs may be incurred to control agents. Having the right people for the right job is an expensive exercise. This causes an increase in agency costs as the managers need to work harder in order to assign the monetary value to the attribute addition to the product, also known as value addition (Sardo & Serrasqueiro, 2017). Due to governance issues in firms during the global financial crises (2007 – 2009), businesses are required to comply with strictly governance rules; stakeholders had no or little knowledge about what was happening behind the financial mechanisms of the firms. This also created the scope for research to come up with better approaches for the validation of agency theory (Pepper & Gore, 2015).

Agency theory has unveiled the truth that executives in powerful positions prioritise their own benefits (incentives, such as increased salary and bonuses). They do not take steps which can cause the loss of their investments in the companies (Giacosa, Ferraris, & Bresciani, 2017). They receive higher remuneration based on the assumption that higher amounts of salaries will force them to focus on the growth of shareholders' wealth in the business (Jassim, Dexter, & Sidhu, 1988). Top management were paid higher salaries even when the firms were forced to cut down on the labour due to increased costs of remuneration (Donaldson & Preston, 1995). Therefore, there is a continuous concern whether managers will spend on IC comprising of human capital.

Businesses now have executive committees, which normally comprise more than two executives responsible for the decisions. The top two members of the executive committee are often part of the board of directors as well, and, hence, they have more power in their hands (Pepper & Gore, 2015). With stock options being part of the remunerations, top executives may also be the owners of the business, and, hence, they can exercise their powers in decision making (Sundaramurthy & Lewis, 2003). The shareholders have to secure their interest in the businesses and need to impose more restrictions on the managers. However, given the charismatic and powerful positions of the top-level managers, researchers suspect the efficacy of the board to control the managers (Russo & Perrini, 2010).

Shareholders being the real owners of the business, vest powers and decide who will run their business by putting their trust in them. This leads to the concept of agency theory in the business and leads to increased operational costs associated with the business. These costs can be reduced if the owners of the firms are also capable of creating operational strategies (Mustapha & Ahmad, 2011). Overall, shareholders because of their remote location and lack of involvement in the operations of business, need to depend on the decisions of the top management (Russo & Perrini, 2010). If not self-interested individuals, managers get huge motivation when they are trusted by the shareholders and vest more powers and skills to utilise the resources of the business (Pepper & Gore, 2015).

Managers are generally people with high skillsets and with formal education and training within the scope of the business. If they feel that the shareholders do not trust them with their long-term targets and the ability to achieve them, they may only focus on the short-term profits of the firms and may be worried about the long-term sustainability of the firm in the industry (Sardo & Serrasqueiro, 2017).

Agency theory provides a solution to the problem and emphasises the importance of hiring of the right people for the right job. As the IC is very important for the financial growth of the firms, agency theory implies a suggestion regarding the disclosure of IC of the firms. Firms can treat managers as human capital, and the top management is involved in the decisions that determine the future earnings of the company (Fama, 1980). Moreover, firms which prioritise the wages of skilled labour during policy formulation perform better than those who do not. A high level of investment in human capital also indicates that the firms do not have liquidity issues and can invest in their labour as compared to those firms who face liquidity issues and do not possess the extra cash to invest in training and development of its workers (Bae, Kang, & Wang, 2011). Shareholders closely monitor the costs associated with the benefits of managers, especially after the financial crises that pushed the world economy into recession has been mainly blamed on the wrong decisions taken by the top management (Mustapha & Ahmad, 2011).

Shareholders are now keen to monitor the agency costs associated with the financial performance of the firms. They now understand that a person who does not have any stake in the business may not be able to look out for the interests of other stakeholders (Bendickson et al., 2016). The performance of managers is directly linked with the financial performance of the firms by the investors. Investors do not know the skillset of the labour force, rather they put their trust in the skills of their managers. The future long-term profitability represents the ability of the management to suitably employ the resources of the firms (Fama, 1980). Properly managed agency cost links the benefits of managers with the performance and profitability of the firms (Almazan, Chen, & Titman, 2017). This created a need to get top management involved as a stakeholder, i.e., when the profitability of the firm is significantly linked with the performance of the management (Khan, Kaleem, & Nazir, 2012).

It is argued that firms that do not give importance to the skills of its managers tend to lose the managers to their competitors (Fama, 1980). The loss of a manager costs much more to a business than losing a normal member of the workforce or skilled labour that is involved in the production method. Organisation can use different methods to retain an experienced manager or a worker by simply providing them the bonus or link to their performance using the reward system (Wasserman, 2006). In large-scale businesses, managers work on behalf of the shareholders to enhance the financial capital as well as the IC of firms. These businesses may face issues like a conflict of interest where the managers may prefer their own benefits over the goals of the business (Bendickson et al., 2016). To avoid such scenarios, top management is given extra leverage to overcome such hurdles and to manage the same for the workers at lower levels as well. Managers who have the ability to provide extra benefits to their employees can make them work with more passion and compassion as compared to managers facing an in-debited situation, where the first step to avoid expenses is to reduce the number of skilled people (Bae, Kang, & Wang, 2011).

In the case of the manufacturing businesses in Pakistan, firms invest in IC, especially human capital, without any proper investigation. Firms earning profits due to skilled labour started increasing their investments in human development and training with a focus on the short-term profits only. Consequently, most of the firms in Pakistan have shown an inability to convert the short-term profitability into long-run profitability (Khan, Kaleem, & Nazir, 2012)

Long-term stakeholders keep an eye on the firms' short-term profits as well as the long-term liabilities that the firms have created over the years. Employees of a firm which is facing insolvency due to higher levels of debts do not perform according to their skill levels. They compare their salaries with the salaries of similar labour in other firms, and these employees are more concerned about the redundancies which may result in a case of insolvency for a firm

in high debt (Bae, Kang, & Wang, 2011). On the other hand, if the managers are capable of passing on positivity based on their knowledge, the employees tend to achieve higher efficiencies. These factors influence the performance of employees and also affect the financial performance of firms (Almazan, Chen, & Titman, 2017). The best managers usually set high standards not only for themselves but also for employees working in the company. They compare their performance with their peers and are very much concerned with the satisfaction that they can gain from the employees working above or under them as managers. The ability of managers to outperform their peers or even the managers who are higher up in the hierarchy provides the chance for managers to decide about their future (Fama, 1980).

3.5 Stewardship theory

The surety that the managers have about their job security creates a sense of ownership in the managers and provides them the freedom to make decisions (Zahra et al., 2008). Stewardship theory explains the circumstances under which the managers are treated as stewards and not as the agents who act on behalf of the shareholders. When managers have a higher level of motivation, and they see themselves as an integral part of the organisation, they do not act as an agent but start acting as a steward (Davis et al., 1997). Every action taken by the managers is in favour of the business and it is hard to find any conflict of interest between the top management. The theory uses the word steward for the manager due to the fact that an agent may work against the interests of the shareholders, but a steward always puts the owners as priority and always keeps his own interest in line with the vision of the shareholders. Businesses with the steward type of management mostly perform better in terms of long-term profitability as compared to businesses which have agents serving as top executives (Davis et al., 2010).

3.5.1 The evolution of stewardship theory

Agency theory describes that the managers are appointed as agents of shareholders to steer the business. The behaviour of managers in family owned businesses is, however, a bit different where the overall strategy making may not be as proactive as compared to firms with non-family ownership structure (Zahra et al., 2008). Though there may be different advantages of family owned businesses, these businesses do face the same level of complex challenges. Family owned businesses depend heavily on the family members that have been chosen by the family putting trust in their skills. To address this different type of behaviour among managers Donaldson and Davis (1991) presented another theory which describes how the agents of the shareholders are treated as stewards, mainly in the family owned businesses.

3.5.2 The importance of stewardship theory

Stewardship culture in a business implies no conflicts between the managers and the shareholders and that both parties develop a level of mutual trust of each other which benefits the business. It is argued that this type of culture is mainly present in the family owned businesses where the managers are chosen within the family members to run the operations and do not face complications in implementing different tactics (Zahra et al., 2008).

Family members consider profitability as a measure of their firm's performance. Both the chief executive and the chairman from the family tend to improve the profitability of the firm but not as much as in the case where there is a mix of family and non-family members (Ozer, 2012). The special bonding between some family members can create synergies in favour of the business, and their personal interests are always put behind when taking long-term decisions for the business (Eddleston & Kellermanns, 2007). Businesses with family chief executives tend to perform better than a non-family chief executive. Managers who are appointed from the family are more motivated towards the achievement of goals set by the

family members. These managers consider themselves as the stewards of the firm and contribute their best efforts towards profit maximisation. The high motivation is generally derived from the social responsibility of the member working at the top position for the family (Zahra et al., 2008). Managers appointed from within the family concentrate more on the performance of the business whereas the non-family managers are more interested in their own vested interest in the business (Villalonga & Amit, 2006). However, senior members of the family business do not allow the next generation to participate in the decision making, which creates conflict between family members (Eddlestone & Kellermanns, 2007). Even though the senior members run the business for many years, it does not mean that the new generation does not have the skills to run it. The younger family members have learned the latest technologies and the art of innovation which reduces the operational costs for the business. Family-owned businesses still have agency costs, but due to the attitude of managers to act as stewards of the business the output provided by them is more as they tend to go above and beyond to find solutions for the businesses (Zahra et al., 2008).

Stewardship theory suggests that most of the decisions are made by the family members, which can prevent any outsider investing in the business. Members of the family support each other to gain maximum benefit out of their combined skills (Eddlestone & Kellermanns, 2007). A transparent way of decision making can result in healthier growth of the business for which the reporting system must be accountable to protect the investment of non-family members of the business (Gulzar & Wang, 2010). Family members are generally cohered around the idea floated by the founder of the business many decades ago, and they all have a desire to keep the dream alive (Zahra et al., 2008). These common goals create emotional attributes which reflect on the business performance as well. The rivalry among members of families sometimes is inevitable. The younger generations of the family try to prove their abilities over others, and in doing so may either benefit the family business or destroy it (Eddlestone & Kellermanns,

2007). Personal liking or disliking of each other among the family members reflects on the performance of the business. Not only that, the suggestions of the family members are to be addressed, but the importance of the business itself needs to be protected (Yasser, 2011). These personal choices must always be set aside when hiring the right people for human capital, and no one should be given priority based on their personal relations with the family members (Zahra et al., 2008).

3.6 Discussion of theories

All theories discussed in this chapter are important for measuring the managerial performance. The decisions made by the managers as agents of the shareholders are based on the resources that the shareholders' have allocated to them, keeping in view the impact that the outcome may have on the stakeholders. Good managers are always ahead of their competitors and are considered as the main ingredient for the success of businesses. Success is appreciated with higher remuneration paid to the managers (Barney, Jay, & Clark, 2007). The primary motive of any profit-making firm is to maximise its profit, but that cannot be achieved at the cost of stakeholders. Managers, therefore, have to be very careful in making decisions that may impact on the long-term profitability of a business. Managers are appointed as agents of the shareholders and the agency theory establishes the importance of the top management for the future growth of a business (Wasserman, 2006). Managers at the top level have the responsibility to utilise available resources in the best interest of those who have appointed them as the steward of the business. The fact that the managers were not giving due care about the stakeholders was the main reason for the evolution of stakeholder theory. The unethical practice of managers in the past alarmed different societies to force organisations to change the way they make policy (Donaldson & Preston, 1995), especially during the global financial crises in 2007, where the chief executives of major businesses in the United States failed to

prove that they cared about the businesses they were leading. Their actions raised questions about the relevancy and importance of agency theory (Pepper & Gore, 2015).

The two types of capital (financial and intellectual) are interdependent. A firm that does not utilise IC is not able to get the maximum benefit from its financial capital. Financial capital is an effective and important input because the development of IC takes place through the firm's budgeting processes. None of the capital types can get the work done at its own as it is the combination of both tangible and intangible assets of a company which gets the task completed (Jardon & Martos, 2012). Stakeholders usually judge the way a firm is using its resources, making an optimal mix of these resources determinant of the future growth of the business. In order to maximise the future profits of a firm, there must be appropriate planning to incorporate the level of its IC. The main purpose of this planning should be to enable all stakeholders to view the direction in which the company is heading.

Stakeholder theory is related to the performance of managers but is mainly used for the corporate governance model. The performance of the management is linked with stakeholder theory as the profit earned by the businesses is not directly linked with the decisions taken by the management with the intentions of incorporating the expectations of the stakeholders. Future profits for the organisations mainly depend on the level of flexibility managers can apply. A firm's goals are mostly linked with the level of constraints faced by managers. For this reason, a business needs to hire the right people and transform them into human capital for the firm. Nevertheless, the biggest internal stakeholder is the human capital of the firm, which is divided mainly into two categories. The first category involves the labour that is working directly with the operations of the business. The second category comprises of the top management involved directly in decision making. The growth of the business depends heavily on the future plans of the managers, whether they see themselves with the business in the long-

run or not (Fama, 1980). Organisations often suffer due to the difference of the future goals of managers, which may conflict with the goals of the business. Managers act as agents of the shareholders; therefore, they need to set their future targets in line with the shareholders in order to use their skills for the desired outcomes (Pepper & Gore, 2015). The actual profit earned in the long-run is mainly due to the consistency of the operations which are run by the workers in accordance with the policies formulated by the managers. Even though managers are treated as agents of the shareholders under agency theory, not all the managers really act as agents. Some managers may have their own agenda in the business and their policies may reflect their own set of interests. On the contrary, some managers may work harder than what is expected by the shareholders, and they try to utilise the resources in the best possible way without any personal interest (Davis, Schoorman, & Donaldson, 1997). Under certain scenarios the managers get emotionally involved with the progress of the business and put their reputations on the line. The emotional attachment with the business provides an extra opportunity for the growth of the business as the manager continues to build IC for the business (Wasserman, 2006). This is more evident in the family owned businesses, where the managers share the same long-term goals and build strategies that affect the long-term sustainability of the business rather than focusing on day-to-day operations (Zahra, Hayton, Neubaum, Dibrell, & Craig, 2008). In the case of family owned businesses, the lists of stakeholders stay mostly within the family. Managers in family owned businesses have a wider responsibility as they are acting as stewards, rather than the agents for the shareholders. So, the stakeholder theory links with the agency theory; also, the stakeholder theory is involved directly with the decision-making processes and indirectly with the profit earned by the business. Stewardship theory and agency theory both do not show how to link the interests of internal and external stakeholders as the managers are not able to incorporate the requirements of all stakeholders. Even though the internal stakeholders are known to the managers under stewardship theory, still the

complexity of their interest sometimes creates difficulties in decision making. Managers need to draw a line somewhere as the main criteria of their policies is to enable the business to earn profits, which should not be affected by the influence of stakeholders. In most of the cases, managers can only assume that they have incorporated stakeholders' concerns while making a long-term policy for the firm's operations. There is no proper way to measure the extent to which the businesses have incorporated and valued the importance of various stakeholders (Mainardes, Alves, & Raposo, 2011); stakeholder theory can only be based on pure assumptions and it is hard to establish its link with intellectual capital (Bae, Kang, & Wang, 2011). Stakeholder theory is not relevant for the businesses which are operating at a smaller level and do not have any legitimate stakeholders (Russo & Perrini, 2010). Most of the firms in developing countries operate at a smaller scale. These firms are not able to have any impact on global warming, air pollution and other issues in society. Further, stakeholder theory does not justify the ability of managers to influence policy making and assumes that a manager will always consider only the interests of stakeholders during policy making (Phillips, Berman, Elms, & Cramer, 2010).

Stewardship theory has the rigour to perceive the relationship between the IC and firms' performance. This theory is in contrast with agency theory, which describes that if an agent gets a chance he may use the resources of the company for his own benefit. In other words, the theory states that the managers will only work if there are strict control measures in place to monitor their performance (Donaldson & Davis, 1991). The long-run consequences of such an act by the agents can be very harmful for the business, which may end the life of the organisation (Davis, Schoorman, & Donaldson, 1997). Managers feel that they are not being trusted by the business and their performance level sometimes gets affected as well. This weakness of the business is covered under the stewardship theory, where the researchers tried to explain the relationship of managers and owners in a different way. The theory overcomes

the weaknesses of the agency theory, which emphasises the different visions among managers who run the operations of a firm. Different managers may have different sets of goals, which may create a conflict of interest between the top management. The difference can be seen in the family owned businesses where all family members are the shareholders of a firm and appoint the members of their family as the decision makers. The chances of disagreement are very rare between the members of the family as they share more or less the same goal (Zahra, Hayton, Neubaum, Dibrell, & Craig, 2008). But in some cases, the family member who owns the highest number of shares is appointed as the chief executive, and this does not allow the business to choose the right person for the job. Conflict sometimes arises with the third generation of ownership, and the research has shown that most of the businesses shut down during the third generation of the family (Eddlestone & Kellermanns, 2007). Stewardship theory is mainly applicable in a small-sized business as even the family owned business has to move away from the concept of stewardship when the business grows. The owner of the business normally has a large stock in the business, but when the business grows the ownership gradually declines (Wasserman, 2006).

Among all theories discussed in this chapter, the most relevant theories are the resourced-based theory, the stakeholder theory and the stewardship theory. These theories cover the essence of the reasons behind the introduction of IC in last few decades. These theories emphasise three areas which a firm has to focus on in order to attain the competitive advantage in the industry. Agency theory states that managers should be remunerated well to utilise the resources to expedite higher performance of the firm. Stakeholder theory focuses on the importance of different stakeholders who have diverse interests in business. Finally, agency theory emphasises the importance of management who work on behalf of shareholders. Summing up, these three theories combine the resources the firm has, the owners of these resources, people

who will be affected by the products produced by combining the resources, and the people who manage these resources.

3.7 Summary of the chapter

The chapter summarised important theories related to the factors involved in the performance of firms. Not all these can equally explain the factors of IC and their link with the growth of businesses. The scarcity of resources under the resource-based theory is critical to understand the importance of human capital managing these resources. It is further explained how the managers increase the wealth of the business within the given constraints and provide the optimum outputs for the shareholders. The chapter further explained how shareholders can successfully hire managers who meet the robust criteria for making decisions to meet the expectations of all major stakeholders of a firm, and how the managers use their skills acting either as agents or stewards of the business to utilise the resources in the best interest of the shareholders. The chapter elaborated on scenarios that different researchers observed during the past few decades and how different researchers have come up with different theories to identify certain issues in the business environment. The chapter concludes that all theories discussed are somehow relevant to each other and can explain the relationship between IC and a firm's financial performance. However, it is thought that the resource-based theory is the best theory that is related to IC. The major difference between the performances of competitors is mainly due to the ability of the managers to utilise the available resources and convert them into long-term profits for the business. In most cases, the managers working within the same cultures and within the same industry face similar constraints and challenges. Their ability to make decisions under these conditions with the available resources is what makes a firm rise above its competitors. The next chapter will highlight the research methods and will explain the data collection and model used in the study.

Chapter Four: The research model, hypotheses development and construct definition

4.1 Overview

Chapter two and chapter three discussed the literature relevant to IC and financial performance. This chapter provides an overview of the research model, hypotheses development, construct definition and their measurement. The chapter begins with an overview of the research model in Section 4.2. Hypotheses development is covered in Section 4.3, which is further divided into four subsections covering the relationship between the study variables. Section 4.3.1 covers the relationship between value added intellectual capital (VAIC) and long-term profit (LTP) followed by the relation of VAIC with short-term profit (STP). Sections 4.3.3 and 4.3.4 provides a brief discussion about the relationship between short-term and long-term profit and the mediating relationship of short-term profit between VAIC and long-term profit, respectively. Section 4.4 discussed the details of construct definition. This section is divided into three subsections where each section provides a brief description of each of the variables used in the study (VAIC, LTP and STP). The research model has been placed in Section 4.5 (Figure 4.1) and explains the components used in the model. Finally, the chapter ends with Section 4.6, providing the summary of the chapter.

4.2 An overview of the research model

Chapter three consisted of a discussion of different theories, including agency theory, stakeholder theory, resourced-based theory and stewardship theory that are related with firms' financial performances. Agency theory describes every manager as an agent who works on behalf of shareholders as the latter may not have the technical knowledge to run the business. Stewardship theory, however, determines the difference of family-owned businesses, where the managers are mostly the part of families. In stakeholder theory, firms consider that all

important stakeholders are the forces that the firms need to interact and manage to find future business opportunities and assess threats. For the purpose of this thesis, the resource-based theory (RBT) has been identified as the most important theory. A thorough discussion of RBT is made in chapter three, Section 3.2.

The major challenge of business in the world today is the scarcity of resources. A business, thus, has to depend on the ability of its management to make use of available resources and utilise them in the best possible way. The resource-based view covers the aspects of agency theory, stakeholder theory and stewardship theory by providing essential information that is required for the business to maintain its competitive advantage over others in the long-run (Zaini, Masrek, Sani, & Anwar, 2018). Based on the literature covered in chapter two and the importance of resources for a developing country like Pakistan, resource-based theory has more importance than the other theories discussed in Chapter Three.

The theoretical framework of this study is based on the guidelines provided by resource-based theory. The firms that utilise their resources better than their competitors tend to have better growth and can outperform their competitors (Bromiley & Rau, 2016). The theory explains the importance of utilisation of limited resources in relation to developing countries (Verbeke & Tung, 2012). The theory highlights the areas that a firm has mastery of and cannot be copied by the other businesses involved in similar production methods (Bromiley & Rau, 2016). Unlike developed countries, the resources are not in excess for the developing countries. Developing countries also face the issue of capital flight and brain drain (Bontis, 2004). The main focus of the resource-based theory is on the economic activities involved in the production process (Wan, Hoskisson, Short, & Yiu, 2011). So, it is more relevant to the current study as this study covers the manufacturing sector of Pakistan.

This section briefly covers the previous literature on IC and financial performance. For this purpose, various research papers published in academic journals were consulted, and these include, but are not limited to, the following journals: *Journal of Knowledge and Process Management*; *International Journal of Academic Research in Progressive Education and Development*; *Long Range Planning*; *American Journal of Business*; *Accounting, Auditing & Accountability Journal*; and *Journal of Intellectual Capital*.

Identifying the difference between IC and financial performance is challenging to specify because financial performance of a firm directly includes IC (Sardo & Serrasqueiro, 2017). In other words, financial performance and IC are complementary to each other, rather than causal (Murthy & Mouritsen, 2011). A firm may be focusing on the financial capital that it has invested in fixed assets. It may be considering the difference in the number of units being produced by the plant and the actual capacity of the plant. It may also be able to justify the level of production at its different areas of production (Bontis, Kew, & Richardson, 2000). But unlike financial capital, IC perishes if not properly utilised. Firms that do not benefit from the amount of IC they have tend to lose it to its competitors. The skilled labour of a firm tends more towards the mastery of its skills, and if they feel that their skills are not being properly utilised, they will move to a different firm (Bontis, Keow, & Richardson, 2000).

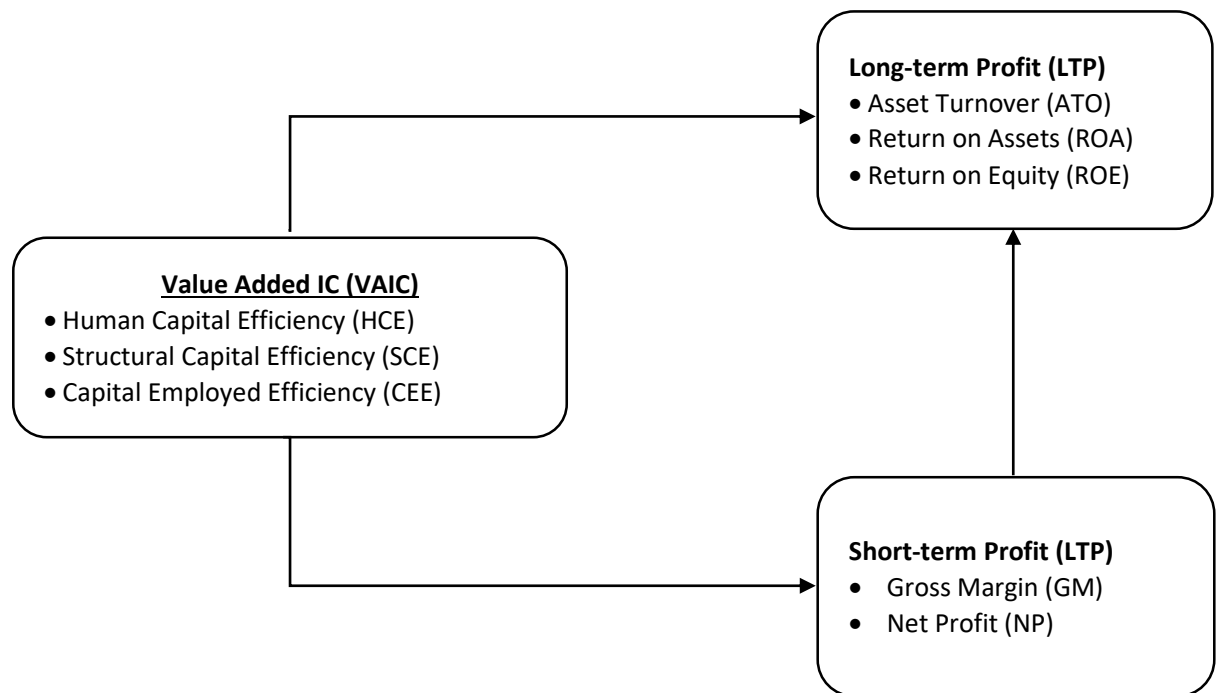
Huselid, Jackson and Schuler (1997) found that the return on assets of firms is positively associated with their human capital efficiency. One of the largest investments made by the shareholders is in the form of fixed assets. The shareholders consider it as a primary measure to find the return of the amount of capital they have invested in fixed assets. Hiring the right type of skilled labour is the only way to move forward. Thus, the competitive edge of a firm depends on how a firm utilises the resources as the competitors may have the same levels of investment in its fixed assets but may not have the same level of skill of its labour. Stakeholders

are mainly concerned with the long-term ability of the firm to earn profits and to remain operational. This can be judged by the history of return of ratio as if the ratio is showing an increased trend it predicts that the firm can survive in the long term as well. Figure 4.1 shows the relationships between value added intellectual capital, long-term profitability and short-term profitability.

The aim of this study is to find the relationship between IC and firms' financial performances in order to obtain this objective, and the research hypotheses were carefully developed. The same points were considered for the preparation of the research model, which tests the four-hypotheses covered in the study. As discussed in the previous chapters, the amount of research in relation to the manufacturing sector of Pakistan is very scarce. Further, the research was not conducted for the importance of short-term profit in relation to the long-term sustainability of the firms. This study is an attempt to cover that gap. Moreover, prior studies (Makki & Lodhi, 2008; Mir & Nishat, 2004) are mostly related to corporate governance and not specifically with the IC. So, there is a gap for research in this area as well, which this study intends to cover. For this study, the research model was developed from the studies conducted by Joshi, Cahill, Sidhu and Kansal (2013); Jordao and Almeida (2017); Nawaz and Haniffa (2017); Hillman (2005) and Phusavat et al. (2011). Joshi et al. (2013) conducted research into the importance of IC components and value added intellectual capital for the financial performance of the financial sector in Australia. They worked on the relationship of a firm's profitability due to its IC and treated return on assets as the proxy for financial performance. The research was on a very small-scale, with data from 2006 to 2008 analysed. The suggestions made by Jordao and Almeida (2017) was to consider the long-term profit along with the short-term profit. The authors emphasised the importance of the long-term profit to measure the impact of IC and its components on the firm's financial performance. In a study conducted on the firms from Thailand, Phusavat et al. (2011) measured the importance of IC for the financial performance

and corporate value of firms. The authors used the return on assets as a proxy to measure the financial performance of firms. The suggestion made by the authors was to conduct a study that can be used as a role model for businesses in the developing countries to start focusing on their intangible assets.

Figure 4. 1 The research model



Source: conceptualised and prepared for this doctoral study

The extant literature measured IC of the firms by using the VAIC (value-added intellectual capital) method (Chen, Cheng, & Hwang, 2005; Nazari & Herremans, 2007; Joshi et al., 2013; Iazzolino et al., 2014; Iazzolino et al., 2016; Nawaz & Hanifa, 2017). VAIC included three components: (i) human capital efficiency (HCE), (ii) structural capital efficiency (HCE), and (iii) capital employed efficiency (CEE).

In contrast, the long-term financial performance of firms was measured by (a) return-on-assets (ROA) (Nawaz et al., 2017; Sardo & Serrasqueiro, 2017), (b) return-on-equity (ROE) (Forte et al., 2017; Maditinos, 2011), and (c) return-on-capital-employed (ROCE) (Chen, Cheng, &

Hwang, 2005). The short-term profitability, however, included gross profit margin or gross margin (GM) as a proxy variable. The definitions and formulae for these components are described in Section 4.4.

4.3 Hypotheses development

4.3.1 Impact of institutional environment on firms' performance

At the time of independence, most of the businesses in the country were owned by the families. The importance of family business in Pakistan was first identified in 1960's. It was observed by the researchers that the business sector of the country was controlled by mostly 22 families (Gulzar & Wang, 2010). Later on, Zulfikar Ali Bhutto⁶ regime (1971-1977) nationalized all the private sector businesses with no power left within the families who actually started the business. A new era of privatization began during Nawaz Sharif government⁷ (1991 – 1993). Foreign direct investments depend on the consistency of the policies of the government in any country. World has observed a massive increase in the FDI since 1986 which has increased in developing nations with open trade policies (Anwar, 2002). Williamson (1999) believed that political instability results in inconsistent policies which were the major reason why the country has not progressed. Pakistan was not successful in attracting the foreign direct investment (FDI) due to its strict policies which were not removed only until 1990's. Import tariff was reduced from 271% to a mere 35% during the last decade of the last century. Country's policy shifted drastically from an import based economy to a country willing to focus on exports. Though the export to GP ratio is still not as healthy as the other countries in the region but the steady increase is a healthy sign for the future (Anwar, 2002). For the purpose of exports, the country depends heavily on its manufacturing sector. Given the fact that country is not rich in its

⁶ Prime Minister of Pakistan after separation of East Pakistan (now Bangla Desh)

⁷ First Tenure of Nawaz Shareef as prime minister from 1991 to 1993 (he became Prime Minister again in 1996 – 1999 and 2013 – April (2017)).

resources, it is the brains behind the processes that need to be utilized to get the optimum output from the limited inputs available.

These changes somehow pushed all business firms to rely more and more on their intellectual capital as the only stable factor for the firms was the resources that they have developed over the years. The ability of firms to absorb these shocks and to maintain their profits has shown the strengths of manufacturing firms in Pakistan in terms of their maintenance of intellectual capital.

4.3.2 The relationship between VAIC and long-term profit

Every business has the goal to survive in the long-run, and every decision is taken with the vision of expansion of the business. The businesses that have long-term vision tend to expand more as compared to those which are narrow-sighted and only take decisions to impact short-term successes (Lentjušenkova & Lapina, 2016). A successful business tends to focus more on the intellectual aspects rather than investing in tangible assets (Cariola et al., 2007). The connection between the tangible and intangible assets is what determines the future of the businesses (Novas et al., 2017). Often top management tend to invest in assets that can bring long-term rewards for the business and do not get obsolete in the short-run (Raheman et al., 2010). Management has to take care of the cash flow in the short-run and invest them successfully in order to transform them into future profits (Hassan et al., 2013).

Finance and management elements of IC are known to have been introduced in the mid-1960's, but researchers are still unable to find the solution as to whether a firm owns the intellectual skills of its employee or not (Carson, Ranzijn, Winefield, & Marsden, 2004). Some even suggested that the performance of a firm does not simply depend on the existence of IC but on the knowledge of how to exploit it (Agostini, Nosella, & Filippini, 2017), as by changing the structure of its labour force, a firm may indirectly affect the policies made by the firm which

were made with the knowledge of the capacity of its workers (Giuliani, 2015). So, it becomes hard for management to decide if a skilled worker has been the reason of their ability to earn profits in the past; top-management or a new employee who has the knowledge about the new technology will contribute its role in future profits. Even though the value added by the skilled worker is retained by the company, the company loses its advantage if the skilled labour joins their competitor (Bontis, Keow, & Richardson, 2000).

This leads the study to its first major hypothesis, to check the relationship between the value added intellectual capital and the long-term profit of the firm. This hypothesis is to test whether the firms with higher IC are more likely to earn long-term profitability. Therefore,

H1: Value-added intellectual capital (VAIC) has a positive and significant effect on the long-term profit of firms.

4.3.3 The Relationship between VAIC and short-term Profit

A very famous saying states that “take care of cents and dollar will take care of itself” (William Lowndes, 1652-1724). Even though long-term profits are more important for the firms, the transformation of long-term profits is only achieved by focusing on the short-term goals. A business sets smart goals for itself by investing in current assets which are important for the operational profits (Raheman et al., 2010). Businesses often pay less attention to short-term profits and fail to transform these into long-term profits. A major reason of such failures is the mismanagement of the huge cash flows that the business earns, which is misused by the shareholders (Hassan et al., 2013). A business needs skilled people to decide about the investments so that investment is made with the focus on the ability of the business to manage its running finances (Khan, Kaleem, & Nazir, 2012).

The importance of IC to earn short-term profits and convert them into long-term profit is not a secret anymore. Businesses are now focusing more on value addition, rather than just increasing the number of units produced by the workers. The quality has now overcome the quantity aspect of production, which is a reverse of the case in past (Agostini, Nosella, & Filippini, 2017). Macerinskien et al. (2011) found that IC increases a company's value addition capabilities through human capital which is its most influencing element of product quality. In other words, the firm can achieve the same or even higher levels of production by utilizing the same levels of inputs. This can be done if the management is supported by the knowledge that has been collected by the firm over the years through its IC reporting system (Shamsudin & Yian, 2013). By attaining production levels based on past data, the IC can have a significantly positive impact on firms' long-term as well as short-term profitability (Chu, Chan, & Wu, 2011). In particular, with the increase in corporate profitability, structural capital showed a growing trend in its significance.

Based on the above discussions, the second hypothesis examines the importance of the short-term profit as a result of the value-added intellectual capital. Therefore,

H2: Value-added intellectual capital has a positive and significant effect on the short-term profit of firms.

4.3.4 The relationship between short-term profit and long-term profit

To the best of the author of the current study's knowledge, no study has considered the short-term profitability of the firms in relation to the IC of the firms. Profitability has been considered to be a long-term indicator of a firm. This small gap is covered in the current study where the goal is to link the short-term profitability of a firm to the long-term sustainability of the business. Jordao and Almeida (2017) segregated their study into two parts, taking into

consideration short-term and long-term profitability indicators. Short-term indicators included gross margin (GP), operating profit (OP) and earnings before interest and tax (EBIT), while long-term indicators used were return on assets (ROA), return on equity (ROE) and return on invested capital (ROIC).

H3: Short-term profit has a positive and significant relationship on long-term profit

4.3.5 The mediating roles of short-term profit between VAIC and long-term profit

The importance of the short-term profits is often ignored by the business owners and the same is the case with most of the research in the past. Most previous studies (Sardo & Serrasqueiro, 2017; Nawaz & Haniffa, 2017; Maji & Goswami, 2016; Nimtrakoon, 2015) did not consider the short-term profitability of the firms. The main focus of researchers as well as the business owners has always been on the long-term profitability of firms. As discussed in Section 4.3.2, the cost of business can be failed if businesses did not relate short-term profits to the long-term. The transformation of short-term financial rewards was enjoyed by the shareholders rather than investing them in assets that can bring a constant return (Hassan et al., 2013). In addition, disputes between the managers and the shareholders often do not allow the business to grow. The managers being the skilled people often fail to prove the long-term benefits of their decisions to shareholders, and even though the business may have the right people to run the operations, such disputes do not allow the business to grow (Sardo & Serrasqueiro, 2017).

Profitability has been considered to be a long-term indicator for a firm. This gap is covered in the current study where the goal is to link the short-term profitability of the firm to the long-term sustainability of the firm.

The role played by the manufacturing sectors towards the exports of Pakistan is vital. Declining exports has been an issue with the economy of Pakistan. A negative balance of payments has affected the growth of the economy even though the GDP growth has been at its highest during the last couple of years. Firms with the policies to maximise the long-term profitability and equally consider the importance of the short-term profitability can be a major contributor for the growth of Pakistan (Massaro, Dumay, Garlatti, & Mas, 2018). This study is an attempt to cover the gap in the study regarding the importance of the short-term profit and how it is linked with the long-term sustainability of the firms. A similar study was conducted by Jordao and Almeida (2017), who studied the impact of financial performance on firms' profitability in Latin America.

This discussion created the last and the most important hypothesis, which is to test the impact of the short-term profit on the long-term profit of the firms. The hypothesis examines whether a firm's short-term profits mediate the relationship between VAIC and long-term profit. The more focus a firm has on the link between the short-term and long-term profit, the more competitive advantage it has to survive in the industry. As discussed above, this aspect has been least discussed in past studies and will be a real addition for future researchers who are willing to expand the studies on the importance of VAIC for the short-term profitability of firms.

H4: Short-term financial performance mediates between value-added intellectual capital and long-term financial performance.

4.4 Construct definition and measurement

For the purpose of this study, the conceptual work was inspired from studies conducted by various researchers (Joshi et al., 2013; Jordao and Almeida 2017; Nawaz and Haniffa 2017; Hillman 2005 and Phusavat et al., 2011). As mentioned above, the selection of variables and

the empirical relationships between dependent and independent constructs are formulated from a number of studies conducted in past (Jordao & Almeida 2017; Nawaz & Haniffa 2017; Tseng & Goo 2005; Daryaei, Pakdel, Easapour, & Khalafu 2011; Clarke, Sang, & Whiting 2010; Chen, Cheng, & Hwang 2005). These studies are closely linked with the current study, while the current study has added the importance of short-term profit and its link with long-term profits. This section will explain all the constructs used in the study in relation to the research work conducted in past. The section is divided into three major subsections: ‘long-term profit’, ‘short-term profit’ and ‘intellectual capital components’.

4.4.1 VAIC measurement

After the method introduced by Pulic (1998), researchers have extensively used the value added intellectual coefficient (VAIC) method in evaluating the relationship between IC and firms’ performance (Nimtrakoon, 2015). Pulic used resourced-based theory with the emphasis on the fact that the managers always base their decisions on the ability of their resources to attain highest productivity levels (Maji & Goswami, 2016). He introduced a method of calculating the coefficient of value addition (Shamsudin & Yian, 2013) and further developed the coefficients of three components of IC: human capital coefficient (HCE), structural capital coefficient (SCE) and capital employed coefficient (CEE). The equation developed by Pulic (1998) is described as

$$\textbf{Value Added Intellectual Capital} = \textbf{HCE} + \textbf{SCE} + \textbf{CEE} \quad (1)$$

Shamsudin and Yian (2013) argued that using the VAIC method, the results of different sectors can be compared, as the variables considered by the VAIC method are more or less similar for all firms. Results showed that the Malaysian banks that have higher growth and profitability are positively linked with IC.

Calculation of all these efficacies are covered below. It is worth mentioning that the VAIC calculates all aspects of IC including the investment in human capital, structural capital as well as the physical capital in form of capital employed.

Human capital efficiency and its measurement

Human capital is the process through which the business can transform the raw material into the finished goods (Wyatt & Frick, 2010). Shareholders are very much concerned with the measurement of this process. The process is necessary to complement the investment made by shareholders in fixed assets with the knowledge of workers (Vidotto et al., 2017). Shareholders want to know the efficiency levels of the processes in place to compare returns on their investments as compared to other businesses in the same industry. Lower efficiency can lead the shareholders to decide if they need to introduce the new techniques being used by similar businesses in the country (Agostini, Nosella, & Filippini, 2017). The knowledge acquired by human capital is transformed in the form of value addition made by the workers. The skill levels of the workers cannot be measured as the human capital is a pure attribute of the business and can only be measured in terms of efficiencies involved through the value addition (Olander, Laukkanen, & Heilmann, 2015).

Managers from the manufacturing industry have adopted some internal methods to identify the value added by each worker, through which these workers are rewarded on yearly basis (Chiucchi & Dumay, 2015). But the professional methods with which the efficiency of human capital can be measured were introduced by researchers (Nadeem, Gan, & Nguyen, 2017; Nawaz & Hanifa, 2017; Joshi et. al, 2013; Janosevic, Dzenopoljac, & Dimitrijevic, 2013) in the past. If the value added in the manufactured products is greater than the total investment in human capital, the firm will have a higher efficiency level. On the contrary, if the total amount of monies paid to workers is higher than the actual value addition made by them, the process

or the investment in human capital is considered to be inefficient. Higher efficiencies for the human capital will show that the firm has utilised its resources in the most efficient way possible. It will also indicate that the firm has attained economies of scale by achieving higher output with lesser inputs. On the other hand, lower efficiency levels may also indicate that the management has failed to identify the skillset of its employees and may not be taking full advantage of its workforce (Israelsen & Yonker, 2017). For the measurement of human capital efficiency, this study uses the same formula that has been used by studies in the recent past (Nadeem, Gan, & Nguyen, 2017; Nawaz & Hanifa, 2017; Joshi et al., 2013; Janosevic, Dzenopoljac, & Dimitrijevic, 2013):

$$\text{Human capital efficiency} = VA / HC \quad (2)$$

Structural capital efficiency and its measurement

Structural capital is the compliment of human capital, as the investment made in workers is combined with the investment made in the structure provided to the human workforce (Khalique et al., 2015). Structural capital provides the stage for the workers of the firm to perform their duties (Nawaz & Haniffa, 2017). Structural capital represents the total investment of the firm in all intangible assets including patents, copy rights and any other registered procedure in its name (Ting & Lean, 2009). The support that it provides to human capital is measured by the efficiency of knowledge compiled by the firms in the form of their hardware, data bases (Ting & Lean, 2009), intellectual property (Low, Samkin, & Li, 2015), and their routines with which they have obtained higher efficiencies in the past (Khalique et al., 2015). The efficiency of these components of structural capital is calculated by dividing the value of SC with value addition. The results indicate if the VA was more than the total investment made in the structural capital by the firm. This efficiency is indirectly related to human capital

efficiency as the calculation of value addition involves the efficiency of the skilled labour of the firm to transform its inputs into outputs. The study uses the same method to measure the structural capital efficiency used by various researchers in the past (Shamsudin & Yian, 2013; Joshi et. al 2013; Nadeem, Gan, & Nguyen, 2017; Hejazi, Ghanbari, & Alipour, 2016).

$$\text{Structural Capital efficiency} = SC / VA \quad (3)$$

Capital employed efficiency and its measurement

The first two efficiencies only consider the intangible resources of the firm. The third efficiency coefficient, however, considers all aspects including the actual investment of the shareholders in form of equity. Shareholders must be very concerned about the investments made in fixed assets as any imbalance may affect the performance of value added intellectual capital as a whole (Chen, Cheng, & Hwang, 2005). This method was introduced by Pulic (1998). The method emphasises the importance of the investment made by the shareholders in fixed assets. Excessive amount of investments in fixed assets can be alternatively used in other components of IC. The method followed in the study is similar to the one that was used by researchers (Shamsudin & Yian, 2013; Joshi et al., 2013; Maji & Goswami, 2016; Jordao & Almeida, 2017) in the past. A higher value for this ratio indicates that the firm has managed to attain higher value additions by lower levels of investment by shareholders in the form of capital. Firms with higher value of capital employed ratios will have more competitive edge than their competitors in the market.

$$\text{Capital Employed efficiency} = VA / CE \quad (4)$$

4.4.2 Long-term profit: Components and measurements

The ability to earn long-term profit is highly dependent on how the management treats its intangible resources as this is the only difference a firm has with its competitors regardless of the size of the investment (Hamzah & Ismail, 2008). A major goal of the firm is to benefit from its short-term successes and sustain its existence in the long-run. Firms make continuous efforts to earn and maximise profits, and a lot depends on the decisions taken by the management to operate within the resources allocated to various sectors of the business. A firm which is reactive in its decisions will be less productive as compared to a proactive firm. The firm which adjusts its decisions according to the conditions it is facing will show less stability in the decisions made by the management (Shakina, & Barajas, 2016). Studies have shown that the failure or success of a business in the long-run purely depends on the management's ability to utilise its resources in accordance to the conditions that it is going through. It is important that the decisions taken by the business must reflect the impact a business can have based on future predictions (Handzic, Durmic, Kraljic, & Kraljic, 2016). Firms which are more successful in planning their business for the long-run successfully develop an attitude in their workers towards their work and motivate them to learn new processes from the existing ones.

Return on assets (ROA) for long-term profitability

Many researchers have considered the return on assets ratio as the measure of performance of its management as well as the skilled workers a firm has. The ratio shows the firm's ability in terms of the profits it has earned in the long-run. The researchers used return on assets as the proxy for long-term profitability of the firm. The results found by the research also supported the claim that a firm's IC has a positive relationship with the return on assets of the firm. ROA examines the impact of management decisions in turning an organisation's income into profit and compares it with total assets (Maji & Goswami, 2016). It shows the percentage of total assets that has been returned to the shareholders in the form of pre-tax profit (Shamsudin & Yian, 2013). The ratio gives results without considering the size of the company's balance sheet and measures the financial performance of the firm (Nimtrakoon, 2015). Therefore, a company's size is not relevant for this ratio; rather, the results are based on the operational capacity of the firms.

The formula used for the calculation of Return on Assets is as follows:

$$\textbf{Return on Asset} = \textbf{Profit before Tax} / \textbf{Total Assets} \quad (5)$$

For the purpose of this study, we used equation 5 for the calculations. This factor determines the profit level of the business, is easy to compare and does not depend on the interest-based borrowing of the firms or the taxes being paid due to different size of the firm's profits (Jewell & Mankin, 2011). It, however, does take into consideration the interest charges that a firm has to pay on the borrowings made by the management. Higher interest charges will show lesser profit, which indicates the inability of the management to utilise IC, or the firm may not have the capacity at all. The profitability of the firm is dependent on the resources it has. As this ratio considers investment in fixed assets only, it shows the utilisation of tangible resources by

the management. A weaker ratio may indicate that the firm needs to focus more towards intangible assets and increase its efficiencies. Stronger results for this ratio indicates that the corporate value of the firm will improve if the firm has the ability to utilise its human capital, which combined with the other two independent variables will bring higher returns to the firm.

Return on equity (ROE) and long-term profitability

This ratio measures the performance of the management of a business to transform shareholders' money into profit through normal operations (Joshi, Cahill, Sidhu, & Kansal, 2013). It shows how well the funds of shareholders are being managed by the management, as it only involves the direct investments of the shareholders in the business and does not consider the liabilities created by the business (Shamsudin & Yian, 2013). It is obtained by dividing the net profit by the normal shareholder equity. This ratio is measured in terms of percentage, which makes it easier to compare businesses of different volume of investment. The formula used to calculate return on equity is as follows:

$$\text{Return on Equity} = \text{Profit before Tax} / \text{Shareholders' Equity} \quad (6)$$

Results of this ratio show the earnings against each dollar of investment by the shareholder in the business as equity (Teitelbaum, Macdonald, & Brown, 1996). It also shows the retained profits for the shareholders that were earned in previous years and increases in the net investment of shareholders in the business.

Assets turnover and long-term profitability

This ratio is calculated by dividing the net sales by the total fixed assets. It calculates the return on each dollar invested by the management in intangible assets of the firm in terms of sales. It shows the efficiency levels in the decisions made by the management for proper utilisation of

the funds at the end of a financial year. As discussed in the literature review, the decisions taken by the managers can impact the performance of the firms, especially when they fail to get benefit from the experience of their staff and could not convert the skilled labour into human capital for the business. The formula for ATO is as follows:

$$\textbf{Asset Turnover} = \textbf{Net Sales} / \textbf{Total Fixed Assets} \quad (7)$$

4.4.3 Short-term profit: Components and measurements

The main problem with organisations in the developing countries is that they have very limited resources which they can utilise. Most of the managers' focus is on the short-term profits in order to maintain the profitability of the firm via day-to-day operations (Shamsudin & Yian, 2013). The profits of these firms depend on how the management treat their short-term profits and analyse the impact of different components of the short-term profit on their day-to-day operations (Phusavat et al. 2011). Different methods are then used to create awareness among the labour about the actions that impact on the short-term profits through training and development (Berezinets, Garanina, & Ilina, 2016).

The following two subsections (4.4.3.1 and 4.4.3.2) explain the importance of two of the major components of short-term profit as covered in the literature review in Chapter Two.

Net profit margin for the short-term profitability

This is a very important ratio to determine the short-term profitability of the firm. It is obtained after deducting the cost of sales and the operational expenses of the firm. If the ratio is significantly lower than the gross profit of the firm, it is an indicator that the management is spending too much of its resources as operational costs and the decisions should be taken to cover any irrelevant expenses. A higher gross profit and a lower net profit margin ratio act as

an eye opener for investors and shareholders as to for the ability of the managers to run the business. The net profit margin is the profit earned by a firm during a given period of time (for the purpose of this study it will be taken as an annual profit before tax) expressed in percentage. It is calculated by dividing the net profit of the year by net sales of the firm multiplied by 100. It is defined as “A firm’s profit expressed as a percentage of its turnover or sales”⁸. The formula to measure the net profit margin is given below:

$$\text{Net Profit Margin} = (\text{Net Profit after Tax} / \text{Net Sales}) \times 100 \quad (8)$$

This ratio is determined after taking out all operational costs of an organisation from the gross margin of the firm, which indicates the efficiency of the managers to use its skilled labour. Organisations need to improve the knowledge of their workers as much as possible in order to keep the productivity at the same level (Vidotto, Ferenhof, Selig, & Bastos, 2017). This can be achieved by creating social association for the employees and diversity among co-workers (Agostini, Nosella, & Filippini, 2017). A happy worker can produce more with minimum costs involved (Ting & Lean, 2009), and on the contrary, an unhappy skilled worker may decide not to share his knowledge with his fellow workers. Such behaviour will not add anything to the firm’s financial value even though an organisation may have many skilled workers being reported as human capital (Massingham & Tam, 2015). Though the need for this concept was initially sensed in the 1970s (Jordao & Almeida, 2017), towards the end of the last century IC was considered as the main driver of a firm’s long-term profitability (Phusavat et al., 2011), but its importance is discussed more by researchers than by financial managers (Nimtrakoon, 2015).

⁸ Essential Economics. 2004, p209-209.
1/9p(<http://ezproxy.cqu.edu.au/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=26024664&site=eds-live&scope=site>)

Chen, Cheng and Hwang (2005) conducted a study to find the relationship between human capital and the profitability of firms in the Kingdom of Saudi Arabia and Venezuela. The study emphasised the importance of human capital in the growth of business. The findings of the study showed that even though these countries are very rich with natural resources, they have not worked on human capital efficiency for predictive utilisation of resources up to their capacity, resulting in less productivity. The authors concluded that higher efficiency human capital is positively associated with the higher return of the firm. According to Bontis (1998), the firm having strong structural capital enables the employees to do new experiments, which may result in innovation and better outcomes. Teruel & Solano (2007) is of the view that higher revenues are generated by managing the investment in structural capital and vice versa.

Gross profit margin for the short-term profitability

This is the easiest and the first indicator of a firm's financial performance. As is clear from the name of the ratio, this is a raw estimate of the firm's profit after deducting the cost of the goods it has sold during a financial year. Similar to the net profit margin ratio, this ratio is also expressed as percentage of total revenues generated by the firm in the form of sales during a financial year. A higher percentage in this ratio indicates that the business has very good relations with its suppliers, who are supplying raw material at competitive rates. It is also an appreciation for the sales team as well as the market condition of the goods manufactured by the business. The formula used to calculate this ratio is given below:

$$\textbf{Gross Margin} = (\textbf{Gross Profit/ Net Sales}) \times 100 \quad (9)$$

For the purpose of this study, this ratio is termed as the value addition made by the skilled workers of the firm. In other words, it is the simple transformation of the goods from their raw form into the final goods which are sold to the end-user. The value addition by a worker is an

important factor for the short-term profit of the firm. A manager trained by the organisation, or a worker who has gained experience after years of working may leave the organisation at any time taking the skill that has contributed towards the profits of the firm in past (Low, Samkin, & Li, 2015), and this may lead an organisation to lower profits as a consequence, which may also lead the stakeholders to believe that the amount of investment in intangible resources was misleading due to the decrease in short-term profits. (Maaloul & Zéghal, 2015).

4.5 Summary of the chapter

The most important part of this study is its focus on the methods with which the IC of firms is measured. The firms may have the capacity and investment in intangible assets but may not be aware of it. The development of a model that can help managers to identify their strengths in terms of human capital combined with the structural capital and supported by the capital employed can really make a difference. This chapter showed the areas which can be identified as the sources for the IC and the components of measurement of financial performance for the firms. The methods developed in the chapter are consistent with the extant literature. Based on the importance of each important factor affecting the financial performance of the firms, three different hypotheses were developed on the basis of the literature review covered in chapter two and chapter three. This chapter also introduced the research model and explained the components used in the model. The next chapter covers the research methods used in this chapter in accordance with the combined discussions covered in chapters two, three and four.

Chapter Five: Research Methodology

5.1 Overview

Chapter four provided the base for the research model and created the hypotheses with the help of the literature covered in chapter two and chapter three. The chapter also provided the details about the construct definition and briefly explained all variables and their importance related to this study. Chapter five discusses the methodology used to find the results and the methods of selection and collection of data. Section 5.2 explains the type of research conducted in this study along with the research paradigm adopted. Section 5.3 provides the details about the selection of the corporation for the study followed by the method of collection of data in Section 5.4. A brief description about the method used for the analysis of the data is explained in Section 5.5, with the explanation about PLS-SEM method being in Sections 5.6, 5.7 and 5.8. The chapter ends with a summary in Section 5.9.

5.2 Research paradigm

The paradigm selected guides the researcher in philosophical assumptions about the research and in the selection of tools, instruments, participants, and methods used in the study (Ponterotto J. , 2005). Different topics have been discussed with different approaches by the researchers in the areas of social and behavioural sciences (Yilmiz, 2013). A research can be quantitative⁹ or qualitative¹⁰ in nature depending upon the nature of the study. The selection of quantitative or qualitative research or even the mix of these two has been a constant part of the discussion among researchers for over a century (Onwuegbuzie & Leech, 2005). The major difference between these two is the approach of the researcher. The link between the historical findings of a similar kind of research and the areas that are to be explored in the current research

⁹ It can be defined as research that explains phenomena according to numerical data which are analysed by means of mathematically - based methods, especially statistics (Yilmiz, 2013).

¹⁰ The collection of extensive data on many variables over an extended period of time, in a naturalistic setting, in order to gain insights not possible using other types of research (Yilmiz, 2013).

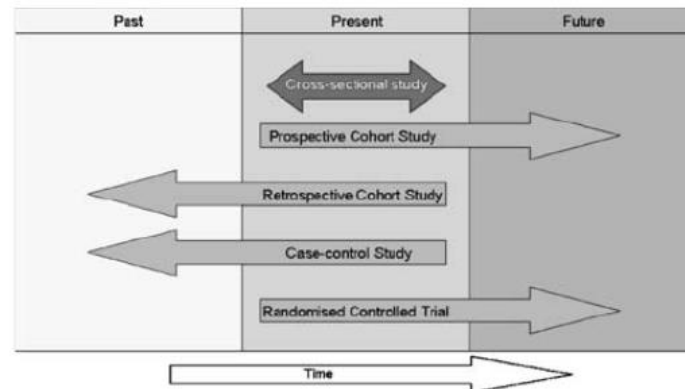
determines the type of research that can be used. Most times, research work to enhance the empirical work conducted in the past chooses the qualitative research method. In this type of research, the study is conducted in relation to the context of some basic research that has already been conducted. Qualitative research, on the other hand, provides an opportunity to the researcher to mould into the situation and come up with unique results based on the experiences of the people involved in the study (Krauss, 2005).

The nature of this study is involved with the long-term and the short-term profitability of the firms in relation to the amount of IC a firm has. Qualitative research can be of three types which are positivism, interpretive and critical (Ponterotto J. , 2005). The research paradigm for this study is known as a positivism paradigm. Positivism is true knowledge which is based on experience of the senses and can be obtained by observation and experiment (Mohd Noor, 2008). Positivism is generally used to assume the reality which is objectively given in the data and can be described and identified by instrumental measurement or properties which are independent. Positivism is used to test the theory or data which we have collected from different sources, and it helps to increase the predictive understandings of phenomena. In positivism the relation between the dependent and independent variables are tested (Ponterotto J. G., 2005). The positivism paradigm deals with the analysis of the relationship among variables based on some empirical data where the empirical results do not vary much from the previous researches (Krauss, 2005). The purpose of the study is to examine the association between the IC dimensions and firms' financial performance both in the short and long-run. As discussed in Chapter Two, this topic has been the focus of researchers for the last few decades and has been applied in various parts of the world. The results found in this type of research paradigm must be closely related to the results of previous research. In the case where the results of a study vary to a great extent, the theory may need to be revised (Krauss, 2005).

A study that is conducted to find the impact of certain facts, with a proposed outcome, is normally conducted using cross-sectional data (Levin, 2006). One of the benefits of using cross-sectional data is that this type of data is easily collected and is not time consuming to collect, either. The relevancy of the data collected from the total population is easy to be established based on the observation of the researcher and the irrelevant information is easily avoided. In other words, the results obtained by using this type of data are used to accept or reject the hypotheses of the study in relation with the studies conducted in the past. It is also helpful when there are several variables being used and they have a complex relationship with each other. One of the biggest advantage of using cross-sectional data is that this type of data is not limited to any specific research and can be used for multiple research studies.

Apart from the benefits, there are some disadvantages of using cross-sectional data as well. The data collected is very limited and is not open for different experiments. The results obtained by using the cross-sectional data depend on various factors including the time of the study, the culture of the country where the study is being conducted and even on the evidence collected in the past studies (Levin, 2006). Another disadvantage is that the data collected at a certain point of time may not reflect the outcomes that are required based on the hypotheses. So, the data may not provide a clear or an accurate description of the desired outputs.

Figure 5. 1 Timeline for Cross Sectional Study



Adopted from (Levin, 2006)

5.3 Sample Selection

The importance of the manufacturing sector was covered in chapter one under Section 1.1. Further the importance of the manufacturing sector for the economic growth of Pakistan was covered in Section 1.2. The purpose of the study was to analyse the importance of IC for the manufacturing sector of Pakistan. As the study is quantitative in its nature, so the target is to collect the most relevant data from the secondary sources. Due to the secondary source of the data, the study did not involve any direct interaction with any management or representatives of the companies in the study. Therefore, ethical permission was not required, as per the rules of the university. All public listed companies in Pakistan are registered with the Pakistan Stock Exchange, which was previously known as the Karachi Stock Exchange¹¹. For the purpose of this study all firms in the study are registered with the Pakistan Stock Exchange.

The study focuses, then, on the manufacturing sector businesses registered on the Pakistan Stock Exchange. Appendix C provides the detail about the companies selected for the study. The first column provides the sector or the industry of the firm. The second column provides

¹¹ The Karachi Stock Exchange was initially incorporated in March 1949 and in the beginning of 2016 three stock exchanges (Karachi Stock Exchange, Lahore Stock Exchange and Islamabad Stock Exchange) in Pakistan were merged to form the Pakistan Stock Exchange.

the registered address of the company along with the website address. The third column provides a brief company profile, with revenue and profit descriptions along with the number of shares and the high and low value of the shares during the year. It also provides the average number of employees working with the company in 2016.

5.4 Sources of data

The purpose of the study is to find the impact of IC on the short-term as well as the long-term profit of the firms. For this purpose, the cross-sectional data were collected from the websites of the selected companies listed on Pakistan Stock Exchange. The period covered under the study was from 2012 to 2016 as most of firms were either closed or merged into other firms after the Global Financial Crisis of 2007 and were not in profit for the next few years. For the purpose of research, the first consideration was to collect data from all manufacturing entities on the Pakistan Stock Exchange. All firms are public limited companies and the data are available for the general public. The first criteria for data selection was to select manufacturing companies earning a profit in 2016. A total of 132 firms met these initial criteria. After selecting the companies, the availability of data was checked on the websites of these companies for the years in the study (2012, 2013, 2014, 2015 and 2016). As the study's aim involved checking the profitability of the firms, all companies which suffered losses during any of the years were removed from the list. The final number was reduced to 24 companies for which the data were available, and the companies were in profit throughout these years. Further, the data were converted into averages for the variables used in the study. Table 5.1 explains the criteria of selection for the companies from the total population of companies registered on the Pakistan Stock Exchange.

Table 5. 1 Selection Criteria

Total Sectors in Pakistan Stock Exchange	35
Listed Companies	573
Manufacturing companies	141
Profit Making Companies in 2016	132
Profit Making Companies (2012 – 2016)	24
Final Sample for Study	24

5.5 Methods of analysis of data

Structural equation modelling (SEM) is a second-generation multivariate statistical tool that is used to analyse the structural relationships among endogenous and exogenous variables (Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014). It is also called simultaneous equation model because it runs multiple dependent and multiple independent variables simultaneously, while the ordinary and other regression models are unable to do this. There are two categories of SEM: the first one is the covariance-based (CB-SEM), and the second one is the variance-based partial least squares (PLS-SEM) approach (Lowry & Gaskin, 2014).

Even though both methods have the same root, the previous literature about management research has been dominated by the CB-SEM approach (Baumgartner & Pieters, 2003). Presently, the PLS-SEM approach has expanded the scope of research in the field of management studies due to its distinctive features over CB-SEM (Hair, Ringle, & Sarstedt, 2011). PLS-SEM is a cause-effect modelling approach that is used to maximise the explained variance of an endogenous latent construct and this is opposite to the objective of CB-SEM's,

of reproducing the theoretical covariance matrix, rather than focusing on explained variance (Hair, Ringle, & Sarstedt, 2011). PLS-SEM is a permissive modelling technique of SEM that requires no assumptions about the normality of the data (Vinzi, Trinchera, & Amato, 2010). That is why PLS-SEM is a good alternative of CB-SEM when the above mentioned conditions are present (Bacon, 1999; Wong, 2013). The present study uses the PLS-SEM technique for the data analysis as PLS-SEM is suitable for a small sample size (Makki & Lodhi, 2014).

PLS-SEM was originally developed in the middle of the 1960s, but until the 2000s there was a lack of advanced and easy to use PLS path modelling software that easily differentiated PLS regression and PLS-SEM (Wong, 2013) and it took twenty years for the technique to get the attention of researchers (Hair, Ringle, & Sarstedt, 2011). PLS-SEM is also the combination of factor analysis and multiple regression analysis that has been used to analyse the structural relationship between the measured variables and latent constructs (Bollen, 2011). With the latent variables, it has become a quasi-standard in investigating complex causal relationships in business and social research. This method is preferred by scholars, as they considered the multiple and interconnected dependency in a single analysis.

PLS-SEM is the combination of two models (Tenenhaus, Vinzia, Chatelin, & Lauro, 2005): the structural model (inner model) and the measurement model (outer model). The structural model, or inner model, explains the relationship between exogenous¹² and endogenous¹³ latent variables¹⁴, whereas, the measurement model, or outer model, shows the association between the latent variables and observed¹⁵ or manifest indicators. Normally, there are two different

¹² Exogenous variables are also called independent variables, and this term is used to describe latent constructs that do not have any structural path relationships pointing at them.

¹³ Endogenous variables are also called dependent variables, and this term describes latent target constructs in the structural model that are explained by other constructs via structural model relationship.

¹⁴ Endogenous variables are also called dependent variables, and this term describes latent target constructs in the structural model that are explained by other constructs via structural model relationship.

¹⁵ Observed indicators are also called manifest indicators, and they can be measured directly; they act as indicators for any underlying latent variables.

approaches to measure the unobserved or latent constructs: the first is the reflective measurement model and the second is the formative measurement model. The reflective measurement model is also called the effect indicators model because indicators are reflecting the underlying construct (MacKenzie, Podsakoff, & Jarvis, 2005) and the causality direction is going from the latent construct to the indicators (Wong, 2013).

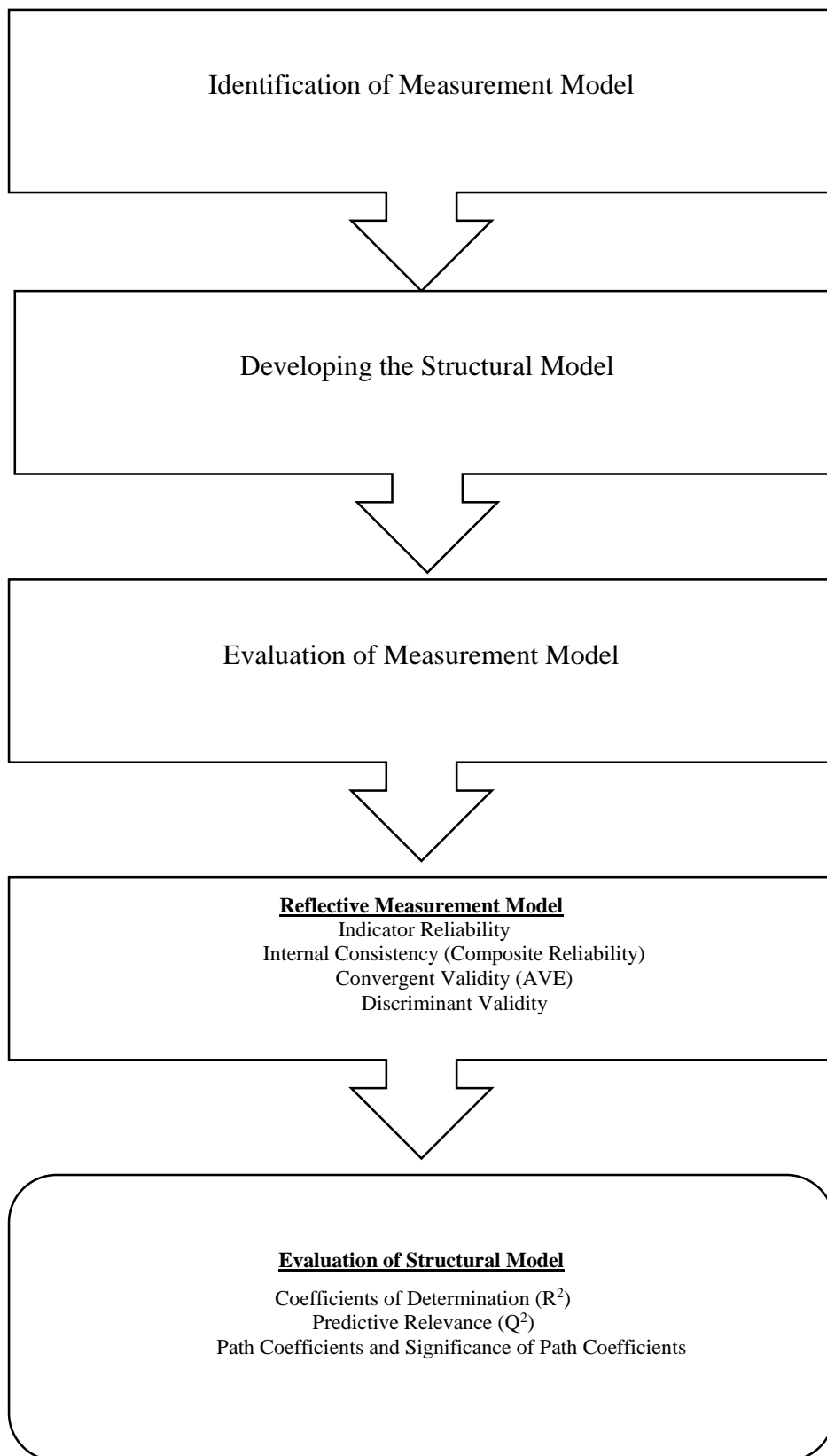
In the reflective measurement model, indicators are interchangeable or replaceable and are highly correlated. On the contrary, in the formative measurement model, the indicators cause the construct, and the single headed arrow move from indicators to the latent construct (Petter, Straub, & Rai, 2007). The sense of the latent construct is derived from the joint influence of the indicators and may have positive, negative or even no correlation among themselves (Haenlein & Kaplan, 2004). While the insignificant, and low factor loading (> 0.40) indicators of the reflective measurement model are easily dismissed (Haenlein & Kaplan, 2004), indicators/items for a formative model cannot be removed without a solid reason or justification because it leads to the issue of content validity. It is important for the researchers to distinguish between the reflective and formative measurement models to avoid any misspecification of the model. CB-SEM covers only the reflective measurement model and uses AMOS, LISREL, EQS, and MPlus (Wong, 2013), whereas, PLS-SEM covers both reflective and formative items and is carried out by using Smart PLS, Warp PLS, Visual PLS and PLS-Graph. In this study, we have used the reflective measurement model and analysis has been carried out using Smart PLS 3.0.

5.6 Assessing outcomes of the PLS-SEM model

The process starts with identification of the measurement model followed by the development of the structural model. Then the major steps follow, which are the evaluation of measurement and the structural model. For the purpose of this study, only the reflective measurement model

was used. The model below represents the flow chart for the valuation of data through PLS-SEM.

Table 5. 2 PLS-SEM Flow Chart



5.7 Evaluation of the reflective measurement model

In order to evaluate the data, the difference between the formative and reflective method must be established. Major difference between the formative and reflective method is to test the data for its composite reliability and convergent validity (Hair J. F., Sarstedt, Hopkins, & Kuppelwieser, 2014). The reflective measurement model provides the association between the observed indicator and the unobserved construct. The main aim to evaluate the measurement model is to authenticate the measurement of the observed indicators; either they are measured properly or not. It is very important for the results obtained via reflective model to exclude the involvement of formative indicators. After separating the formative indicators, we assess the validity and reliability of the indicators and their relevant constructs. Different criteria have been applied to evaluate the reflective and formative measurement models.

Studies assume that each latent construct should be explained with substantial indicators. To test the significance of each indicator, this thesis assesses its reliability, and this is a first step to evaluating the reflective measurement model. Indicators reliability is examined through outer loading of the reflective measurement model. It is suggested that outer loading should be greater than 0.7 in a confirmatory study and greater than 0.4 in an explanatory study (Chin, 1998; Hair et al., 2011; Hulland, 1999).

5.7.1 Internal consistency (composite reliability)

Internal consistency, or the composite reliability (CR), of a construct is the sense of measuring to what extent the manifest (observed indicators) are measuring the latent construct (Hair et al., 2012a). For the evaluation of internal consistency, or CR, two approaches have been recommended. The first is the Cronbach's alpha, which is considered as a traditional measure of internal consistency. Secondly, modern literature has suggested that CR should be used to assess the construct reliability (Hair, Sarstedt, Ringle, & Mena, 2012 b). The reliability of

indicators is arranged and all indicators involved are not considered to be equally consistent (Hair J. F., Sarstedt, Hopkins, & Kuppelwieser, 2014). It is recommended that the value of Cronbach's alpha and CR should be greater than 0.7 in confirmatory-factor analysis and greater than 0.6 in explanatory study (Chin, 1998; Götz et al., 2010; Hair et al., 2012a).

5.7.2 Convergent validity and average variance extracted (AVE)

Convergent validity provides the value of the latent variable related to the variance in the measurement error (Sarstedt, Ringle, Smith, Reams, & Hair, 2014). It examines the level to which latent construct converges in its manifest. The results of this validation are explained according to the levels of variation (Sarstedt, Ringle, Smith, Reams, & Hair, 2014). Convergent validity is measured through average variance extracted (AVE) of all the indicators attached with each construct. A value of 0.5 or higher of AVE indicates that there is a significant degree of convergent validity, and any value lower than 0.5 indicates that the error is greater than the construct (Chin, 1998; Götz et al., 2010; Hair et al., 2012a).

5.7.3 Discriminant validity

Discriminant validity decides empirically the degree to which each latent construct in the model differs from the other, both in terms of construct correlation and in terms of how the assigned indicators differ from other indicators of the model (Sarstedt, Ringle, Smith, Reams, & Hair, 2014). The relation of a particular latent variable is greater with the indicators as compared to the variation with the indicators of other latent variables used in the model (Urbach & Ahlemann, 2010). There are two methods used to measure the difference between the constructs used in the model. The first one is called Fornell and Larcker criteria and is used for the assessment of the construct. On the other hand, the measurement of indicator level cross loading measurement method is used. (Hair, Hult, Ringle, & Sarstedt, 2016).

5.8 Evaluation of the structural model

After the satisfactory evaluation of the quality of the measurement model, the assessment of the structural model begins. A structural model shows relationships between the exogenous and endogenous constructs and is evaluated based on several criteria, including the standardised path coefficients and its significance levels through t -values and p -values, and the assessment of the value of coefficient of determination (R^2).

5.8.1 Path coefficients and the significance of path coefficients

The value of path coefficients is used to assess the strength of relationship among the endogenous and exogenous constructs. Chin (1998) suggested that the value of path coefficients should be around 0.2 or greater to consider a meaningful relationship between constructs and 0.3 or above for an ideal relationship. However, a lower value of path coefficient does not indicate that it is invalid relationship (Brown & Chin, 2004; Dibbern & Chin, 2005). For a path coefficient to be significant (Chin, 1998), the t -value of greater than 1.96 and the p -value of less than 0.05 were considered.

5.8.2 Coefficients of determination (R^2)

The magnitude of R^2 for endogenous constructs is an important measure to assess the explanation power of the dependent construct(s) in a structural model. This is because the main objective of the PLS-SEM approach is to maximise the explanatory power of the endogenous latent constructs. The range of the R^2 value is between 0 and 1, but a higher value indicates a higher degree of predictive accuracy with statistical significance.

5.9 Summary of the chapter

This chapter covered the data selection method used for the study. It explained the selection criteria used for the selection of companies. It also provides a detailed profile of the companies along with the data collections methods used for the study. The chapter also described the research method used in the study and provided the flow chart for the data analysis technique used for this research. The chapter concluded with the limitations of the PLS-SEM technique used. The chapter provides the base for the reader to understand the discussions in Chapter Six, which will discuss hypothesis development as well as the research model.

Chapter 6: Results

6.1 Introduction

This chapter presents the results. For the purpose of this study, the partial least square method is used to assess the structural equation model (PLS-SEM). This method combines the structural and the measurement model together. The first one is also known as the inner model, which determines the relationship between independent and dependent variables in relation to the structural relationship with each other. On the other hand, the second model, which is also known as the outer model, determines the relationship between the values for experiential pointers. In PLS-SEM, the model is divided into reflective and formative measurements. In this study, the constructs are reflective measures, that is, the indicators reflect the construct and the causality directions moves from the construct to the indicators. As the values of the indicators reflect the value of the constructs, the measurement model is called the reflective model (Mackenzie et al., 2005; Wong, 2013).

This chapter is divided into five sections. Section 6.2 presents the results of PLS-SEM in three major stages: internal consistency, convergent validity, and discriminant validity. It covers the results related to these models according to the details provided in Chapter Three. Section 6.3 discusses the findings and results of the structural model. Section 6.4 exhibits the goodness to fit (GoF) model of the study. Section 6.5 explains the results of the hypotheses results under two different categories: main affects and mediating affects. The chapter ends with discussion of the limitations in Section 6.6 and the chapter summary in Section 6.7.

6.2 Evaluation of the measurement model

6.2.1 Internal consistency/reliability

The value for internal consistency, or composite reliability (CR), determines the confidence level of the model used to provide similar results for different tests conducted. It shows the confidence level of the indicators as well as the measurement model. The value is measured with the help of composite reliability value and the Cronbach's alpha value. Internal consistency is traditionally measured by the alpha value, whereas the construct reliability is measured by the value of the construct reliability (Hair, Sarstedt, Ringle, & Mena, 2012 b). The values are between 0 and 1, and any value above 0.7 is considered to be acceptable (Hair et al., 2011; Hulland 1999; Chin, 1998; Götz et al., 2010; Hair et al., 2012a). For the reliability, the minimum value that is accepted is more than 0.5, and any result will be rejected if the value is under 0.5. So, the rule of thumb is that the results for the level of internal consistency or reliability is directly proportional to the value of the construct reliability. Table 6.1 shows the Cronbach's alpha and CR values of the reflective constructs. These values are higher than the threshold levels, i.e., 0.7, confirming that the constructs have met the reliability or internal consistency requirements.

Table 6. 1 Results of the Cronbach's alpha and composite reliability tests

<i>Constructs</i>	<i>Cronbach's Alpha</i>	<i>Composite Reliability (CR)</i>
Value-Added Intellectual Capacity (VAIC)	0.954	0.970
Long-term profit	0.965	0.977
Short-term profit	0.951	0.976

6.2.2 Convergent validity

According to Hair et al. (2014), a latent construct should explain more than 50% of its indicators' variance. Any value less than 0.5 indicates that the variance between the measurements of indicators is more than the variance in the construct itself (Chin, 1998; Gotz et al., 2010; Hair et al., 2012a). Convergent validity is also ensured by examining the factor loading. An indicator's factor loading should be greater than 0.5, ideally over 0.7, and any value below 0.4 should always be eliminated (Hair et al., 2014).

The average variance extracted (AVE) is another way to ensure convergent validity of a latent construct, and the recommended value is 0.5 or 50% of the variance of its indicators. Results in Table 6.2 show that the factor (item/indicator) loadings are over 0.5, with statistically significant results (t -values ≥ 1.96), and AVE for each latent construct is also over 0.5, suggesting an acceptable level of convergent validity of all latent constructs.

6.2.3 Discriminant validity

After successfully examining the indicators' reliability, internal consistency and convergent validity of the reflective measurement model, the next step is to examine the discriminant validity of the latent constructs. Discriminant validity is also a variance but is different from the variance presented above (Sarstedt, Ringle, Smith, Reams, & Hair, 2014). The discriminant validity confirms the validity of the factor loading used in the model. Two approaches are commonly used in the literature to examine the discriminant validity: Fornell and Larcker criteria and cross loading. While the first one is used in construct level assessment, the second test is used to measure the indicator level assessment. However, both tests demonstrate how different/distinctive the constructs are.

Table 6.3 reports the Fornell-Larcker criterion. Fornell and Larcker (1981) suggested that the square root of average variance extracted (AVE) of each construct can be used to assess discriminant validity, and this value should be greater than the coefficient of correlation values between two latent constructs. The diagonal values in Table 6.3 show the square root of AVEs. The results show that the square root of AVEs of VAIC, long-term profit and short-term profit are higher than their coefficient of correlations.

Table 6. 2 Factor loading and AVEs

<i>Constructs</i>	<i>Indicators</i>	<i>Factor Loading</i>	<i>t-values</i>	<i>AVE</i>
VAIC	CEE	0.960	69.330	0.915
	HCE	0.939	35.156	
	SCE	0.971	86.769	
Long-term profit	ATO	0.937	39.127	0.935
	ROA	0.981	153.621	
	ROE	0.981	168.404	
Short-term profit	GM	0.982	224.269	0.953
	NPM	0.970	58.233	

Table 6. 3 Discriminant validity (Fornell and Larcker criterion)

<i>Constructs</i>	<i>Long-term Profit</i>	<i>Short-term Profit</i>	<i>VAIC</i>
Long-term Profit	0.967		
Short-term Profit	0.862	0.976	
VAIC	0.939	0.657	0.957

Table 6.4 shows the cross-loadings, the second way to assess the discriminant validity. According to this criterion, it is recommended that an indicator should have higher loading on

its own construct as compared to other constructs in model (Hair et al., 2014) Overall, the results in Table 6.3 and Table 6.4 show that discriminant validity has been established.

Table 6. 4 Results of the cross-loading

<i>Constructs</i>	<i>Indicators</i>	<i>VAIC</i>	<i>Long-term Profit</i>	<i>Short-term Profit</i>
<i>VAIC</i>	CEE	0.975	0.960	0.777
	HCE	0.939	0.778	0.386
	SCE	0.971	0.911	0.652
<i>Long-term Profit</i>	ATO	0.937	0.991	0.642
	ROA	0.864	0.981	0.940
	ROE	0.874	0.981	0.911
<i>Short-term Profit</i>	GM	0.746	0.913	0.982
	NPM	0.506	0.750	0.970

6.3 Evaluation of the structural model

The assessment of multicollinearity is not a requirement when the model is based on reflective constructs (Hair et al., 2014). Thus, the structural model assessment phase includes the examination of the path coefficients and their level of significance, including the t-values and coefficients of determination (R^2). Figure 6.1 shows the structural model with path coefficients and R^2 , including the factor loadings. Figure 6.2 shows the bootstrapping test results with 2000 samples (t-values) of the path coefficients.

Overall, the models demonstrate that the path coefficients are positive and statistically significant. The indicators' path coefficients are also positive and significant. The coefficient of determination (R^2) for long-term profit and short-term profit are 0.988 and 0.431, implying

that 98.8% variance of the long-term profit can be explained by its independent variables, VAIC and short-term profit, and that 43.1% variance of the short-term profit can be explained by its independent variable, VAIC. The values are also statically significant. The level of R^2 depends upon the discipline of the research, in some disciplines 0.2 is even considered as a high value, such as consumer behaviour. However, it varies in the field of management and marketing, where R^2 values of 0.25, 0.5 and 0.75 for the endogenous latent constructs can be used as the rule of thumb to be treated as weak, moderate and strong, respectively (Hair, Ringle, & Sarstedt, 2011). Thus, the values of the coefficient of determination (R^2) demonstrate that the model has reasonably good predictive ability.

Figure 6. 1 The structural model

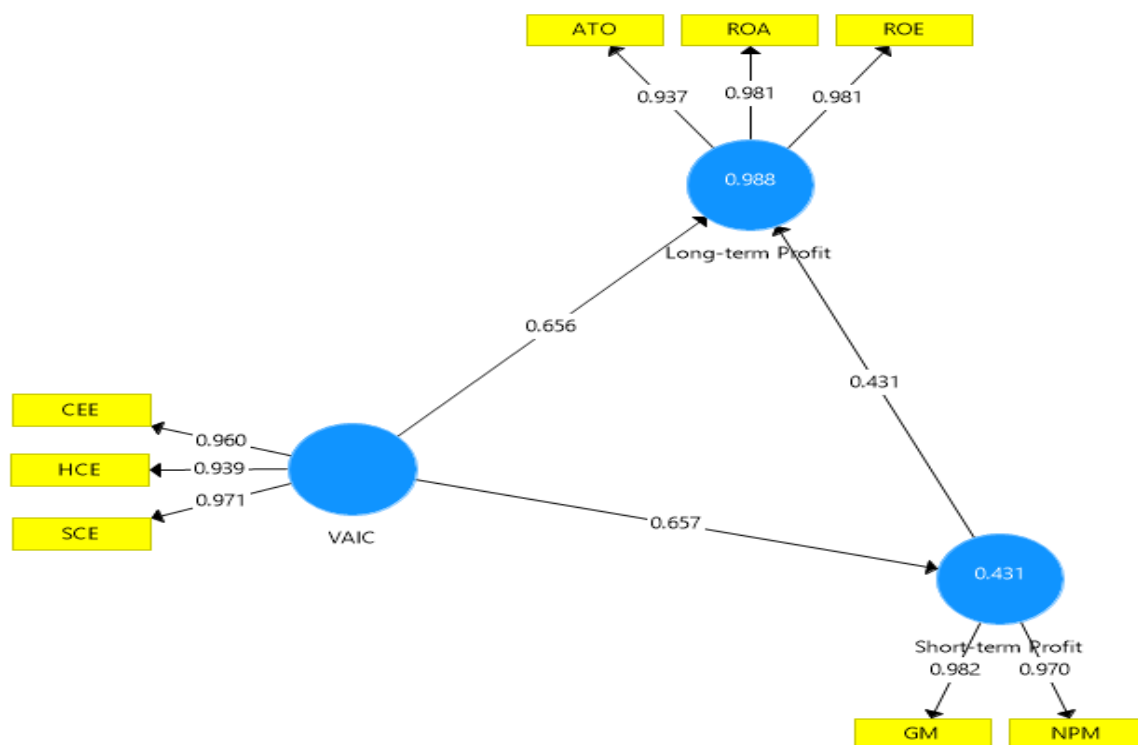
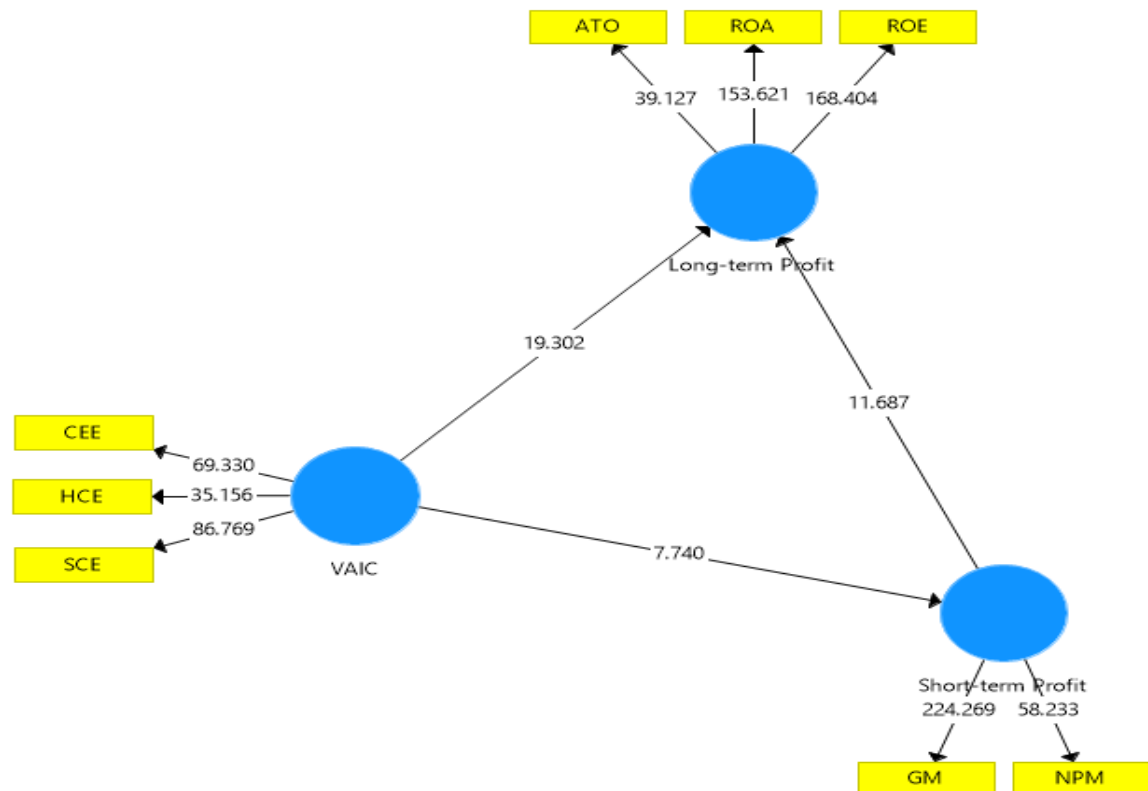


Figure 6. 2 The bootstrapping test results (t-values)



6.4 Goodness-of-fit (GoF)

A goodness-of-fit is not required for a PLS-SEM model as the purpose of a PLS-SEM model is to predict the causality, and the coefficient of determination (R^2) is also enough to determine GoF for a PLS-SEM model (Abdillah 2009). GoF is the geometric mean of the average communality (outer model) and average R^2 (inner model). Thus,

$$GoF = \sqrt{\text{communality} \times \overline{R^2}} = 0.813.$$

A GoF value of over 0.36 is considered adequate in the areas of social and behavioural sciences (Wetzels et al., 2009). The GoF for the model is 0.813, which indicates a very good global fit of the model.

6.5 Hypothesis test results

6.5.1 Main effects

The standardised path coefficients within PLS-SEM determine the main causal effects between latent constructs. The values of path coefficients range between -1 and $+1$, and a value close to $+1$ within an acceptable significant level indicates a strong causal relationship. The bootstrapping approach with 2000 sub-samples was considered to find the significance level, and for this purpose both t -values (> 1.96) and p -values ($< .05$) are considered by following several studies (Cohen 1992; Chin 1998; Hair et al., 2014). Figure 6.2 shows the t -values of the path model. Table 6.5 shows the hypotheses test results (main effects).

Table 6. 5 Hypothesis test results (main effects)

<i>Hypotheses</i>	<i>Path Coefficients</i>	<i>t-values</i>	<i>p-values</i>	<i>Result</i>
H1: VAIC has a positive and significant relationship with long-term profit	0.656	19.132	< .001	Accepted
H2: VAIC has a positive and significant relationship with short-term profit	0.657	7.597	< .001	Accepted
H3: Short-term profit has a positive and significant relationship with long-term profit	0.431	11.026	< .001	Accepted

Results presented in table 6.5 also show the importance of resource-based theory as the management in manufacturing industries have successfully managed to utilise resources in the most efficient way. The resources of the firms have positive impact on the short-term as well as the long-term profits. As explained in chapter three, the resource-based theory relates the ability of the firms' top management with the utilisation of profit which is proved by the results that the firms can maintain their profits in the long run with the efficiency and consistency of the procedures placed by the decision makers of these firms.

6.5.2 Mediating effects

A mediation effect occurs when a construct intervenes between two other constructs in a model. The theoretical model and the empirical model (Figure 6.1) shows that the construct, short-term profit, mediates between VAIC and long-term profit (Hair et al., 2014). Table 6.6 shows the mediation test results.

Table 6. 6 Mediation test results

Hypothesis	Direct effect	Indirect effect	Result
H4: Short-term profit mediates between the value-added intellectual capital and long-term financial performance of firms.	$\beta = 0.656$, t -value 19.132, p -value < .001	$\beta = 0.283$, t -value 7.685, p -value < .001	Partial Mediation Effect

Overall, the test results show that all the four hypotheses are accepted; particularly, the results also demonstrate that short-term profit partially mediates the relationship between VAIC and long-term profit for the sampled corporations in Pakistan.

6.6 Summary of the chapter

This chapter was a continuity of chapter four and five: the conceptual part was covered in chapter four, and a detailed discussion about the method used in the study was covered in chapter five. This chapter combined the contents covered in both chapters and presented the results found with the help of the analysis. It related the results for the PLS-SEM method with the introduction covered in chapter five. All hypotheses were tested using the PLS-SEM model, following the model developed in chapter four. The chapter proved the importance of human capital for the financial growth of the manufacturing sector in Pakistan. It further showed that even if the firms have not performed due to the lack of ability of top management, the human capital has played its role in the growth of the business. The results found in the chapter confirmed the hypothesis developed and proved the significance of the IC for the short-term as well as the long-term profitability of the firms selected for the study.

Chapter 7: Discussion and conclusions

7.1 Introduction

The purpose of this study was to examine the association between intellectual capital (IC) and financial performance of firms in the manufacturing industry in Pakistan. The previous six chapters explained the relevant concepts, theories, hypotheses and research methods used in this study and then the findings of the study. This chapter provides an overview of the present research and the contribution of the study. The chapter discusses the limitations of the study and ends with policy implications and suggestions for future research.

7.2 An overview of conceptual and theoretical underpinnings

This study is undertaken in the context of manufacturing sector of Pakistan. Similar to any other developing country the manufacturing sector in Pakistan is highly dependent on its skilled employees. With the introduction of technology-intensive manufacturing processes, the labour needs to be trained to upskill in order to catch up with the advanced processes introduced in production. Manufacturing sector in Pakistan has gone through different phases acknowledging the importance of IC (Asghar, 2019). The importance of IC however has not attracted enormous attention from researchers. Research conducted in last fifteen years mostly focused on the knowledge-based sector, not on the manufacturing sector in Pakistan (Chiucchi & Montemari, 2016). The review of literature suggests that businesses achieve optimum levels of outputs by combining the human capital (skilled labour) with the structural capital (data compiled over the years on the basis of management experiences) and with the relationship capital (competitive edge over other producers in the market). These three elements together constitute the factors of intellectual capital for business firms. Top management of firms are closely monitored by shareholders to assess the ability of managers to utilise these major and other less

popular components of intellectual capital (social capital, technological capital and spiritual capital).

Business firms realised the importance of value addition produced by the factors of intellectual capital, especially the human capital. Constant training of employees is now common in business firms across the world. Employees are also aware of the importance of training and relevant education as it increased their knowledge and keeps them up to date with the latest technologies being introduced in production (Lentjusenкова & Lapina, 2016). These value additions provide an opportunity to business to produce a quality product and gain competitive edge over other produces in the industry (Vidotto, Ferenhof, Selig, & Bastos, 2017). Managers realised the importance of intellectual capital as well and started incorporating the value addition in the annual statements (Wyatt & Frick, 2010).

For the purpose of this study, four different theories conventionally used in accounting, finance, economics and/or management literature were reviewed in chapter 3. While resource-based theory, agency theory, stakeholder theory and stewardship theory are somewhat related to each other and hence can be treated as complimentary (Verbeke & Tung, 2012). The present study initially discussed the contrasting features of these theories to understand which theory fits well into the research paradigm to explain the relationship of intellectual capital with varying firm characteristics.

Agency theory explains the owner-manager (alternatively known as principal-agent) relationship. As shareholders do not get involved in the operation of day-to-day business, agency theory seeks to explain how top-level managers discharge their responsibilities taking decisions to manage funds and expedite performance of a firm. It is argued that shareholders impose restrictions on managers who are in full control of organisational funds and their performance is linked with the growth of business (Russo & Perrini, 2010). As agency theory

mainly focusses on the decisions and performance of top-level managers including the chief executive of the business, employee skill and performance are not specifically explained in this theory. Since employee skill and performance are inbuilt in the notion of IC, agency theory has not been used in this study.

Stakeholder theory seeks to consider two types of stakeholders, such as primary stakeholders (predominantly shareholders and debt providers) without whose continuous participation and support a firm may not be able to survive, and secondary stakeholders who are not engaged in transactions with a firm and hence are not critical for the survival of a firm. There are other assumptions of stakeholder theory. This theory has two branches, such as ethical (moral or normative branch) and managerial (positive) branch. While ethical branch suggests considering both primary and secondary stakeholders, the managerial branch does focus on the participation and interests of primary (influential or powerful) stakeholders. Although ethical branch (normative branch) suggests that managers meet the legitimate expectations of all stakeholders including employees, there is a lack of empirical observations and tests to validate the normative perspective of ethical branch (Donaldson & Preston, 1995). Given the conditions, stakeholder theory has not been considered in this study to explain the managerial decisions impacting upon the enhancement employee knowledge and skill that are considered the components of IC and expected to impact upon the financial performance of firms.

Another theory which was discussed but not used in the study is stewardship theory. Steward theory overcomes the weaknesses of agency theory which justifies that managers as rational (self-interested) individuals prioritise their own benefits. Stewardship theory introduces the family members as the top decision makers of a firm. Family members always put the interests of the family ahead of their personal interests in the growth of a business. Further, this theory explains that the growth of the firm is in fact the growth of all the individuals whether they are

involved in decision making or not. This theory has not been applied in this study for a limitation that it focusses on managerial ethics and accountability but does not specifically focus on employee skill and other intangibles in firms. Family members are not bound to have all the expert people required to do the job properly.

Finally, the theory that has been selected to be closely linked with the current study is the resource-based theory. Resource-based theory provides the basic guidelines for the theoretical framework of this study. Long-term profits of firms are subject to better utilisation of resources which can also enable a business to outperform its competitors (Bromiley & Rau, 2016). Developing countries do not enjoy an abundance of resources like developed countries. Developing countries can only rely on skilled labour but face the issue of brain drain due to lower remunerations (Bontis, 2004). For this reason, financial performance of firms in developing countries directly relies on the performance of IC. A firm investing in fixed assets can check its performance by counting the number of units produced or by assessing the level of production in different departments to check the level of returns for shareholders. Unlike financial capital, the measurement of IC can be very difficult. The investment made in IC can be hard to measure as it is related with the performance of non-tangible assets. As argued by Wan et al. (2011), resource-based theory is one of the oldest theories being studied in the area of management /economics with its roots going back to David Ricardo's theory of rent. Under Ricardo's theory, land was considered as the main factor of production and the theory discusses how the firms can attain different economies of scale using the same piece of land. The same concept is applied in the firms involved in the manufacturing sector, where the plant or the machinery is considered as the main factor of production. Firms utilise the skills of their employees to get maximum output from the same plant to attain higher production of levels (Barney, Jay, & Clark, 2007). This theory is the most closely related to the current study. As found in the review of literature, firms in developing countries struggle with retaining skilled

labour in the country and face the brain drain, where skilled labour moves to developed countries to pursue better career opportunities. However, firms somewhat become successful by investing more in human capital to get benefit by converting short-term profit into long-term success for firms. Resource-based theory is useful to researchers to examine the competitive advantage of firms within the manufacturing sector of a country like Pakistan. In reality, the survival and growth of a firm depends on its ability to combine its various resources to outputs in the long-run (Hitt, Xu, & Carnes, 2016) . Resource-based theory was developed to explain the relationship between the resources and this theory links the tangible resources with the intangible and tries to find a perfect mix which can boost the performance of firms (Wan, Hoskisson, Short, & Yiu, 2011). Resource-based theory explains the ability of managers to utilise limited resources to gain a competitive edge over their counterparts through introducing the latest methods of production. Especially, the investment made in human capital provides the competitive edge over the other firms in the industry. The long-term success of the firm is dependent upon how the management combines the tangible resources with the intangible resources to attain the highest possible levels of efficiencies.

7.3 Discussion of research methods and findings

The purpose of this study was to examine the association between intellectual capital and financial performance of selected firms in the manufacturing sector in Pakistan. The IC is considered in this study to have impact on both short-run and long-run profit performance of firms and resulting value addition to firms. Relevantly, three main hypotheses were developed and tested empirically based upon five years' data (2012 to 2016) collected from published annual reports of twenty four firms listed on Pakistan Stock Exchange. A number of accounting ratios, such as asset turnover, return on asset, and return on equity to measure the long-term

financial performance whereas gross margin and net profit margin were used to measure short-term performance of firms.

The study is quantitative in its nature using the statistical technique to analyse the research findings. Simultaneous equation model is used for the purpose of this study by using PLS-SEM. The PLS-SEM method has become very famous among researchers in recent past (Hair, Hult, Ringle, & Sarstedt, 2016) because it is very lenient in considering the normality of data (Vinzi, Trinchera, & Amato, 2010). PLS-SEM method is also considered to be best technique for a study consisting of small sample size (Makki & Lodhi, 2014). The technique combines multiple regression with factor analysis to link variables with latent constructs (Bollen, 2011).

The first hypothesis of the study was developed on the basis of an assumption that the long-term profit of a firm depends on the performance of IC. The success of a business depends on the long-term vision of managers. Depending upon the nature of the business, managers must have the leverage to decide if they need to invest more in intangible assets as compared to fixed assets (Cariola et al., 2007). Ownership of IC, however, is still under question as the firms are still somewhat reluctant to invest in it, especially in developing countries (Carson, Ranzijn, Winefield, & Marsden, 2004). The empirical findings on the first hypothesis confirm that there is a significant positive relation between the components of IC and financial performance of firms.

The second hypothesis was developed for testing the relationship of IC with the short-term profit performance of firms. This hypothesis tested the ability of firms to earn short-term profits and utilise them for the long-term sustainability of the firms. This hypothesis was important to prove that the firms that fail to invest short-term profits or misuse them, fail to get benefit in the long-run. Businesses maintain the quality of goods, rather than the quantity, to be able to continue their operations and enable shareholders to survive in the market (Agostini, Nosella,

& Filippini, 2017). Empirical findings for the second hypothesis show that there is a positive and significant relationship between the IC and short-term profit performance of selected firms.

The third hypothesis tested the relationship between the short-term and long-term profit of firms. Previous studies considered profit as the long-term phenomenon only and did not focus on the importance of IC for short-term profit. This study is an attempt to fill the gap for the manufacturing firms in Pakistan. As discussed in the data selection portion of this study, only a small number of firms qualified for the study as they could not maintain the profitability levels throughout the years of the study (2012 to 2016). This demonstrates the importance of and confirms the third hypothesis that short-term profit has a significant importance for the firms' long-term profits.

As previously discussed, shareholders are more concerned with the long-term sustainability of firms and do not worry about day-to-day operations. However, the results of this study prove that the short-term profit performance is vital for firms to be able to maintain their operations and to earn profit in the long-run. Further, this study developed a mediating hypothesis to determine the mediating affect that short-term profit has between the IC and long-term profit of firms. The empirical findings of the meditating hypothesis prove that the short-term profit performance of firms has a partial mediating effect between the IC and long-term profit of firms.

The empirical results of this study are consistent with the studies of Firer and Williams (2003), Gan and Saleh (2008), Bontis and Cabrita (2008) and Clark et al. (2011). The study also showed the importance of human capital for organisational financial performance. The results prove that the human capital efficiency is a highly significant component of IC, because its t-value is higher than the capital employed efficiency. These results are also consistent with the studies of Joshi et al. (2013), Makki (2006) and Clark et al. (2011). The results of this study indicate

that the value creation of Pakistani manufacturing firms listed on the Pakistan Stock Exchange mainly depends on the human capital. The reason is that as firms in developing countries lack investments in tangible resources, they have to rely greatly on the skills of their employees, especially in the manufacturing sector. Further, the study, based upon the findings on selected sample from Pakistan, indicates that firms that enrich and empower their labour tend to achieve more, and it is suggested that firms that invest more in training and development of their labour will result in greater financial performance.

7.4 Contribution of study

This study contributes to the literature in a number of ways. Manufacturing industry has long been an influential sector in the economy of Pakistan. While there is a variety of manufacturing firms in Pakistan, prior research mainly focused on the textile enterprises (Tahir & Anuar, 2016; Asad, 2012) or on the financial sector (Shaari, Khalique, & Isa, 2011; Ul Rehman, Ilyas, & Ur Rehman, 2011) in Pakistan. As intellectual capital has been emerging as an interesting area of research in developed countries, this area has not attracted immense attention for undertaking studies on firms in underdeveloped and developing countries. As a consequence, this study finds no substantial studies on IC in Pakistan. Therefore, the foremost contribution of this study is that it fills in the research gap by examining the association between intellectual capital and financial performance of the manufacturing firms listed on the Pakistan Stock Exchange.

The study makes a methodological contribution towards the existing knowledge as well. It examined the impact of IC on firms' long-term financial performance by studying the importance of short-term profitability as well. The importance of operational efficiencies for a firm to transform its short-term profits into long-term profits is very important. Firms those focus on their short-term profits only, lose their grip on the long-term success. Such firms only

worry about the day-to-day survival of their business and are not able to satisfy shareholders' long-term expectations. Further, the study proved that firms which only focus on short-term profits fail to attract the attention of stakeholders who can contribute towards future expansion of the business through investment.

The third contribution of the study is theoretical. Conventional theories such as agency theory, stakeholder theory and stewardship theories predominantly used in accounting, finance and management literature mainly focus on the managers' positivist (self-interest driven) or legitimate roles in shaping and achieving organisational performance. Intangibles, such as employee knowledge and skill that construct substantial component of human capital are not primarily and empirically tested and validated by using these theories. The present study uses the resource-based theory to perceive and explain the connectivity of various components of IC and their simultaneous effects on organisational performance

Finally, the study provides a message that with better management of human capital along with other components of IC, the workforce can play a positive role towards the financial growth of business. The study also proves that the achievement of a greater level of IC is not possible without the support from managers who are either directly engaged with the skilled labour or are part of policy formation for firms.

7.5 Limitations of the study

This study used quantitative research methods and secondary data only. Due to a lack of time and resources, no questionnaire was developed for collecting data. Another constraint of the study was the unavailability of data. Despite various visits, the data for most of the firms were not available beyond 5 years. One of the reasons for unavailability of data is that listed firms in Pakistan are only required to keep 3 years of data on their websites. However, it was not possible to collect data from some listed manufacturing firms that were either not operational

(or delisted) during the years of the study or, surprisingly, had not maintained their data with the stock exchange prior to the merger of the three stock exchanges of Pakistan to form the Pakistan Stock Exchange.

Another limitation of the study is inherited with the use of the PLS-SEM method. Besides all its advantages discussed in Chapter Five (Section 5.5), it is important to be aware that PLS-SEM is not suitable for all types of statistical analysis (Hair J. F., Sarstedt, Hopkins, & Kuppelwieser, 2014), and it may not work for complex statistical models or when the variables are not evident (Lowry & Gaskin, 2014). Further, the PLS-SEM method may not provide good results if there is a weak link between the dependent and independent proxies used in the study (Gentle, Härdle, & Mori, 2010).

In addition, the study uses the results obtained through ratio analysis and the VAIC method, which have their own implications. Ratios used in the study may not be a good measure for the financial performance of firms. VAIC is also calculated from the values given in the financial statements that represent the data from the past years. VAIC is considered an important tool to measure the performance of firms in the past, but it cannot be considered reliable to predict the future performance of firms (Sardo & Serrasqueiro, 2017). One of the weakest points is that human capital is measured based on the amount of salaries and wages paid to employees. Assigning a value to the human capital with consideration of several other costs associated with the employees might be problematic. These costs may include the investment made in training and development, and bonuses and commissions paid to staff involved in the decision making for firms. Further, although the amounts of salaries are associated with the human capital, the results based upon the size of firms may be different. It can be difficult to compare the performance of employees who are highly paid (such as employees in large firms) with the

performance of employees who are not highly paid (such as employees in small and medium-sized firms).

7.6 Policy implications and suggestions for future research

This study has policy implications for manufacturing firms and researchers. Most of investment made in intellectual capital by manufacturing businesses in Pakistan is without any proper guideline (Khan, Kaleem, & Nazir, 2012). This is the main reason that the firms that earn short term profits are not able to sustain the profitability in long-run. The sample size of only twenty four manufacturing businesses for this study also indicates that firms in Pakistan manufacturing industry is struggling to maintain their profitability. There is a need of proper investigation into the area of intellectual capital in Pakistan to enable businesses maintain their competitive edge in the industry.

This study provides opportunities for future researchers to explore the impact of decisions taken by the firms and convert losses into profits. Furthermore, guidelines can be provided for business firms to remove inconsistency in decision making, which may have hindered firms from earning consistent profits or exposed them to losses. It can also provide strategies for firms of similar nature in other developing countries to maintain profit levels. The study can also be used as a benchmark to examine specific sectors (e.g. cement, textile, automobile, etc.). Methodology of the study can also be helpful for the service sector, including banks, hospitals and restaurants.

In addition, this study has suggestions for the owners of manufacturing firms in Pakistan who are interested in finding the reasons for the success of competing firms in the same industry. Furthermore, it provides guidelines for all the sectors that are covered in the study as the study undertakes only the top performers from each sector. The study shows that if a company has

better internal control systems and organisational structure, it would lead to higher levels of IC, which is a significant tool for obtaining and sustaining competitive advantage.

As this study examined only those listed companies which have not declared any losses during the years in study, it is suggested for future studies to run two separate analyses: one with the companies that have shown mixed results (profits as well as losses), and a second one for the companies that have only shown losses, to find out the weaknesses in their operations. This will help companies to overcome their weaknesses and to convert them into strengths. This study can also be extended and combine with the values of corporate governance (CG). The combination of IC and CG will address the weaknesses of the present study in relation to the decision-making abilities of the top management. They can examine the reasons behind the low value found in this study for the capital employed efficiency and the asset turnover as well as the net profit margin values.

Future research can also be conducted on a larger scale with a comparison of firms from different countries selected from the developing world. The comparison of research findings will be useful when researchers consider the cultural values of different countries. Further, new variables, such as social capital, technological capital and spiritual capital can also be incorporated to improve the study into IC. In the same way that this study added short-term profit as the measure of financial performance, future studies can add different factors/proxies to analyse the firms' performance. The short-term profit proxy for this study included net profit margin and gross margin only; future studies can expand the proxies to add the impact of interest by examining how profit performance is impacted by the amount of borrowings so as to reflect the debt incurred by the management. The present study can also be expanded based on primary data collected through different stakeholders, including the skilled workers and the management of the business. This will help understanding of the importance of the relationship

between the employees and the top management. The above-mentioned ideas were raised in previous chapters of this study but due to lack of time and the complex nature of the study, the task was not achievable. Finally, future researchers may also undertake studies to examine the relationship between corporate governance and IC.

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Appendix

Appendix A: Descriptive Statistics

	Count	Mean	Median	S.D.	Minimum	Maximum
HCE	24	33.34783	27.57431	19.91273	8.911377	60.88123
SCE	24	0.952948	0.963712	0.033432	0.887784	0.983575
CEE	24	0.598002	0.705513	0.257622	0.232741	0.873864
VAIC	24	34.89878	29.27314	20.15894	10.04186	62.67254
ROA	24	0.197017	0.25516	0.119281	0.025311	0.326758
ROE	24	0.301819	0.358552	0.116862	0.108884	0.448891
ATO	24	1.348096	1.482503	0.654395	0.428272	2.145414
GM	24	0.258586	0.280593	0.099927	0.122468	0.387544
NPM	24	0.133511	0.122842	0.056335	0.057389	0.240481

Appendix B: Descriptive Statistics for Model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)
	Outer Loadings		
ATO <- Long-term Profit	0.937	0.935	0.025
CEE <- VAIC	0.960	0.960	0.014
GM <- Short-term Profit	0.982	0.983	0.004
HCE <- VAIC	0.939	0.935	0.027
NPM <- Short-term Profit	0.970	0.969	0.017
ROA <- Long-term Profit	0.981	0.981	0.006
ROE <- Long-term Profit	0.981	0.981	0.006
SCE <- VAIC	0.971	0.970	0.011
	Confidence Intervals		
Short-term Profit -> Long-term Profit	0.431	0.436	0.041
VAIC -> Long-term Profit	0.656	0.652	0.035
VAIC -> Short-term Profit	0.657	0.659	0.085
	Specific Indirect Effects		
VAIC -> Short-term Profit -> Long-term Profit	0.283	0.286	0.036
	Total Effects		
Short-term Profit -> Long-term Profit	0.431	0.436	0.041
VAIC -> Long-term Profit	0.939	0.938	0.021
VAIC -> Short-term Profit	0.657	0.659	0.085
	Outer Loading		
ATO <- Long-term Profit	0.937	0.935	0.025
CEE <- VAIC	0.960	0.960	0.014
GM <- Short-term Profit	0.982	0.983	0.004
HCE <- VAIC	0.939	0.935	0.027

NPM <- Short-term Profit	0.970	0.969	0.017
ROA <- Long-term Profit	0.981	0.981	0.006
ROE <- Long-term Profit	0.981	0.981	0.006
SCE <- VAIC	0.971	0.970	0.011
	Outer Weights		
ATO <- Long-term Profit	0.335	0.334	0.002
CEE <- VAIC	0.403	0.407	0.029
GM <- Short-term Profit	0.579	0.580	0.035
HCE <- VAIC	0.278	0.275	0.023
NPM <- Short-term Profit	0.444	0.443	0.028
ROA <- Long-term Profit	0.351	0.352	0.007
ROE <- Long-term Profit	0.349	0.349	0.006
SCE <- VAIC	0.363	0.363	0.012

Appendix C: Profile of Selected Companies

Number	Company Name	Corporate Profile
Pharma	Abbot Laboratories Pakistan Limited Opposite Radio Pakistan Transmission Centre, Hyderabad Road, Landhi, P.O. Box 7229, Karachi, Pakistan www.abbott.com.pk	Revenue >PKR 10 Million Profit < PKR 5 Million Number of shares: 97,900,302 Value of shares in PKR: High 984.90 Low 575.00 Avg. no. of employees: 1,445
Cement	Attock Cement (Pakistan) Limited D - 70, Block-4, Kehkashan-5 Clifton, Karachi-75600 www.attockcement.com	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 137,426,961 Value of shares in PKR: High 337.60 Low 155.00 Avg. no. of employees:

Chemical	Colgate Palmolive Pakistan Lakson Square, Building No.2, Sarwar Shaheed Road, Karachi http://colgate.com.pk/app/colgate/pk/	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 57,545,920 Value of shares in PKR: High 1,801.00 Low 1,412.00 Avg. no. of employees: 698
Paper	Cherat Packing Limited Modern Motors House Beaumont Road Karachi 75530 Pakistan www.gfg.com.pk	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 38,642,578 Value of shares in PKR: High 177.89 Low 87.98 Avg. no. of employees: 77
Textile	Crescent Textile Mills Ltd 45-A, Off: Zafar Ali Road, Gulberg-V, Lahore, Pakistan www.ctm.com.pk	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 80,000,000 Value of shares in PKR: High 36.21 Low 16.50 Avg. no. of employees: 5546
Cement	Dewan Cement Limited Block-A, 2nd Floor, Finance & Trade Centre, Shahrah-e-Faisal, Karachi, Pakistan. http://www.dewancement.com/	Revenue > PKR 10 Million Profit < PKR 5 Million Number of shares: 484,113,343 Value of shares in PKR: High 41.13 Low 10.40 Avg. no. of employees: 1405
Chemical	Dynea Pakistan Limited Office No. 406, Parsa Tower, Plot No. 31/1/A Block-6, P.E.C.H.S, Shahrah e Faisal Karachi- 75400	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 18,872,400 Value of shares in PKR: High 67.44 Low 32.30 Avg. no. of employees: Not Available
Pharma	Ferozsons Laboratories Limited 197-A, The Mall Rawalpindi-46000, Pakistan www.ferozsons-labs.com	Revenue > PKR 10 Million Profit < PKR 5 Million Number of shares: 30,186,841 Value of shares in PKR: High 1,298.00

		Low 701.62 Avg. no. of employees: 785
Cement	Flying Cement Company 103-Fazal Road, St. John Park, Lahore Cantt 54600 – Pakistan http://www.flyingcement.com/	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 176,000,000 Value of shares in PKR: High 17.27 Low 6.85 Avg. no. of employees: 250
Chemical	Ghani Gases Limited 10-N, Model Town, Lahore 54000, Pakistan https://www.ghaniglass.com/	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 138,881,571 Value of shares in PKR: High 27.40 Low 18.75 Avg. no. of employees: Not Available
Automobile	Ghandara Industries Limited F-3, Hub Chauki Road, S.I.T.E., Karachi http://gil.com.pk/	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 42,608,844 Value of shares in PKR: High 750.00 Low 298.56 Avg. no. of employees: 551
Automobile	General Tyre and Rubber Company H-23/2 Landhi Industrial Estate, Landhi, Karachi, Pakistan. http://www.gentipak.com/	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 101,611,125 Value of shares in PKR: High 319.50 Low 142.00 Avg. no. of employees: 2320
Automobile	Honda Atlas Cars 1-Mcleod Road, Lahore, Pakistan. www.honda.com.pk	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 142,800,000 Value of shares in PKR: High 688.00 Low 231.10 Avg. no. of employees: 951
Textile	Kohinoor Mills Limited 8th K.M. Manga Raiwind Road, District Kasur, Pakistan	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 50,911,011

	www.kohinoormills.com	Value of shares in PKR: High 688.00 Low 231.10 Avg. no. of employees:1671
Oil & Gas	Mari Gas Company 21, Mauve Area, 3rd Road G-10/4, Islamabad – 44000 www.mpcl.com.pk	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 121,275,000 Value of shares in PKR: High 1,475.00 Low 560.66 Avg. no. of employees: 254
Automobile	Millat Tractors Limited Sheikhupura Road, Distt. Sheikhupura, Pakistan. www.millat.com.pk	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 44,292,541 Value of shares in PKR: High 985.00 Low 460.00 Avg. no. of employees: 428
Food & Personal Care	National Foods Limited 12/CL-6 Claremont Road, Civil Lines, Karachi 75530, Pakistan. www.nfoods.com	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 124,328,229 Value of shares in PKR: High 401.98 Low 260.01 Avg. no. of employees:678
Oil & Gas	Oil & Gas Development Company OGDCL House, Plot No. 3, F-6/G-6, Blue Area,Jinnah Avenue, Islamabad, Pakistan www.ogdcl.com	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 4,300,928,400 Value of shares in PKR: High 171.05 Low 93.50 Avg. no. of employees: 10,403
Oil & Gas	Pakistan Oilfields Limited POL House, Morgah, Rawalpindi, Pakistan. www.pakoil.com.pk	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 283,855,104 Value of shares in PKR: High 570.00 Low 188.65 Avg. no. of employees: 770
Paper	Security Papers Limited	Revenue > PKR 10 Million

	Jinnah Avenue, Malir Halt, Karachi-75100, Pakistan http://www.security-papers.com/	Profit > PKR 5 Million Number of shares: 59,255,985 Value of shares in PKR: High 118.75 Low 81.30 Avg. no. of employees: Not Available
Pharma	Searl Pakistan Limited First Floor, NIC Building, Abbasi Shaheed Road, Karachi https://searlecompany.com/	Revenue > PKR 10 Million Profit < PKR 5 Million Number of shares: 212,425,272 Value of shares in PKR: High 674.88 Low 392.30 Avg. no. of employees: 1620
Food	Quice Food Industries WS7, Mezanine Floor, Madina Palace Faran Co-operative Housing Society, Dhoraji Colony, Karachi, Pakistan. http://quice.com.pk/	Revenue > PKR 10 Million Profit < PKR 5 Million Number of shares: 98,461,828 Value of shares in PKR: High 11.47 Low 6.04 Avg. no. of employees: Not Available
Electric	Singer Pakistan Limited Plot No. 39, Sector 19, Korangi Industrial Area Karachi. www.singer.com.pk	Revenue < PKR 10 Million Profit < PKR 5 Million Number of shares: 163,133,965 Value of shares in PKR: High 52.94 Low 18.90 Avg. no. of employees: 794
Electric	TPL Tracker 12th Floor, Centrepont, Off Shaeed e Millat Expressway Adjacent KPT Interchange, Karachi 74900, Pakistan www.tpltrakker.com	Revenue > PKR 10 Million Profit > PKR 5 Million Number of shares: 93,866,261 Value of shares in PKR: High 19.75 Low 9.57 Avg. no. of employees: Not Available