



A DISSERTATION

ON

Impact of Intellectual Capital on Firm's Financial Performance:

Testing of VAIC Model in Textile Industry of Pakistan

Submitted By:

Hassan Mobeen Alam
102
Doctorate of Philosophy

Submitted To:

Prof. Dr. Sikandar Khan

Declaration of Originality

I hereby declare that this thesis is purely my own effort and hard work. I acknowledge that published, unpublished, internet and other sources which I consulted during completion of this thesis are referenced properly.

Signature: _____

Date: _____

Acknowledgement

My work on this dissertation could not have been completed without the guidance of Allah Almighty Who is the most Beneficent and Merciful. He (Almighty) bestowed me courage, intellect, patience, and devotion to fulfil the dream of my mother who wanted me to be a researcher.

After Allah Almighty, I am highly thankful to my dedicated, sincere and talented supervisor Prof. Dr. Sikandar Khan for his precious guidance, motivational support and time which he provided me for the completion of this task. Without his compassionate stance and magnanimous encouragement, this work could not have been completed.

In addition, I would also like to thank my colleagues who provided me technical support in computation and verification of my analyses. Last but not the least, I am grateful to my parents and brothers whose prayers, patience, tolerance, co-operation and motivation assisted me a lot and provided me with the internal spirit to accomplish the task well in a defined manner.

Dedication

I cannot express the respect and gratitude that I have for my parents who helped me with their guidance and concern in the journey of my life. Without their love, devotion and wisdom, this work could not have been accomplished. I dedicate this dissertation to them and pray to Allah Almighty to bless them.

Abstract

Transformation from the age of industrialisation to the era of information technology has created the need for intellectual capital (IC), because in the current era knowledge is the key factor for the success of any organisation. Therefore, efficient management of IC has become a major source of competitive advantage for emerging economies. This study highlights the in-depth role and impact of value added intellectual capital efficiency (VAICTM) and its components on the financial performance of the Textile Sector of Pakistan. In order to measure the financial performance, two proxy measures, Return on Assets (ROA) and Return on Capital Employed (ROCE) were used. Data on Intellectual capital efficiency (ICE) and its components (Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE)) of 30 companies from the Textile Sector of Pakistan were used in this study. Pool and panel data analysis were used to examine the impact of ICE and its components on the financial performance of the textile sector. Findings of the study revealed that VAICTM and HCE showed positive significant effect on ROA, and CEE had the positive significant effect only on ROCE. Thus, financial authorities are required to play a key role in ensuring suitable management and disclosures of knowledge assets and sources of value creation of companies.

Table of Contents

Declaration of Originality	2
Acknowledgement	3
Dedication	4
Abstract	5
CHAPTER ONE: THE INTRODUCTION	10
1.1. Background	10
1.2. Purpose statement	13
1.3. Objectives	13
1.4. Significance of the study (Potential contribution)	14
1.5. Conceptual framework	16
1.6. Research questions and hypotheses	19
1.6.1. Research questions	19
1.6.2. Study hypotheses	19
1.7. Delimitation	20
1.8. Summary of the subsequent chapters	20
CHAPTER TWO: LITERATURE REVIEW	22
2.1. Intellectual Capital (IC)	22
2.2. Definitions of IC	23
2.3. Intellectual capital components	26
2.3.1. Human capital	26
2.3.2. Structural capital	30
2.3.3. Relational capital	34
2.4. Measuring intellectual capital	39
2.5. Intellectual capital and financial performance	48
2.6. Intellectual capital in the Textile Sector of Pakistan	50
2.7. Chapter Summary	52
CHAPTER THREE: METHODOLOGY	53
3.1. Research approaches	53
3.2. Research design	55
3.2.1. Population	55
3.2.2. Sampling	55
3.2.3. Data collection	56

3.3 Measurement of variables	56
3.3.1. Measure of value added intellectual capital efficiency (Independent Variable).....	56
3.3.2. Measure of financial performance (Dependent Variable).....	61
3.4. Econometric estimation model.....	62
CHAPTER FOUR: ANALYSIS AND RESULTS	68
4.1. Section 1	68
4.1.1. Company's information	68
4.1.2. Panel unit root test	68
4.2. Section 2 (full-sample)	70
4.2.1. Pooled Regression Model (without fixed effects)	70
4.2.2. Panel data model (with fixed effects).....	72
4.3. Section 3 (Sub-sample)	75
4.3.1. Pooled data time series model (Without fixed effects).....	75
4.3.2. Panel data model (with fixed effects).....	79
4.4. Chapter Summary	83
CHAPTER FIVE: DISCUSSION AND CONCLUSION	85
5.1. Summary of the study.....	85
5.2. Discussion on findings.....	88
5.3. Implications.....	90
5.4. Limitations	92
5.5. Future research.....	93
5.6. Conclusion.....	94
References	96
Bibliography.....	116
Appendix A	120

List of Figures

Figure 1: Conceptual Framework 1 18

Figure 2: Conceptual Framework 2 18

Figure 3: Graphical representation of VAIC™ 60

List of Tables

Table 1: Qualitative and Quantitative Research.....	54
Table 2: Unit root tests for full sample.....	69
Table 3: Model 1: Pooled regression for full sample.....	71
Table 4: Model 2: Pooled regression for full sample.....	72
Table 5: Model 3: Panel regression for full sample.....	73
Table 6: Model 4: Panel regression for full sample.....	74
Table 7: Model 5: Pooled regression for sub-sample (A).....	76
Table 8: Model 6: Pooled regression for sub-sample (B).....	77
Table 9: Model 7: Pooled regression for sub-sample (A).....	77
Table 10: Model 8: Pooled regression for sub-sample (B).....	79
Table 11: Model 9: Panel regression for sub-sample (A).....	80
Table 12: Model 10: Panel regression for sub-sample (B).....	80
Table 13: Model 11: Panel regression for sub-sample (A).....	81
Table 14: Model 12: Panel regression for sub-sample (B).....	82

CHAPTER ONE: THE INTRODUCTION

1.1. Background

In this globalised world, there is a tough competition among business companies to achieve the competitive advantage, and for gaining this advantage, these companies are trying to explore new ways to utilise their resources effectively (Luthy, 1998). That is why companies are trying to exploit and reallocate available resources (both tangible and intangible). However, initially, conventional physical assets were considered to be the dominant components for enhancing the performance of economic activity, but the current progression in the field of science, technology and most importantly knowledge based economy has increased the importance of intangible resources (Fu, 2003; Stewart, 1997; Cheng and Xie, 2001; Luthy, 1998). This shift in the pattern of intangible resources including: knowledge, expertise, skills, practices, and relations with the stakeholders, etc. can be collectively described as Intellectual Capital (IC) (Ahangar, 2011). Most of the firms have been shifting towards knowledge based economy, because knowledge based assets (intellectual capital) are the most important assets for the company to meet the requirements of emerging economies (Canibano et al., 2000; Ahangar, 2011; Stewart, 1997).

Growth in the emerging markets has raised the competition among economies, and new challenges like customer driven approach has shifted the focus of these markets from traditional approach of financial reforms, and from technological advancement to knowledge based economy (Steward, 1997). Similarly, Canibano et al. (2000) and Ahangar (2011) also stated that every organisation whether it is manufacturing, services, or retail has been changed into knowledge based economic institution. For many organisations, the intangible resources have become the secret of success, because these intangible resources owned by organisations are the basis of creating their value (Marr et al., 2003). Therefore, IC has

become a worthy asset for any organisation and management. Survival in the current economy is mandatory and for sustaining the economy, one of the three essential assets (natural resources, labour and knowledge) must be available. Among these three assets, knowledge is the only prominent asset that can be acquired for long term sustainability in economy (Neumann and Tome, 2005).

IC is basically an intangible asset for an organisation which could act as the main source of getting an advantageous edge. According to Owen (2001), investment in intangible assets is very important in order to survive in the global economy. The labour intensive sectors like textile industry must be changed to the knowledge based production (Owen, 2001) as it is the most influential sector for any economy (Lundy, 2005). This sector is not only dominant because of its sub-industrial units, but also because of its immense contribution to the development of agriculture sector (Malik and Saqib, 1989).

Davis (2009) explained that companies must manage IC that ultimately affects the financial performance of the business. Many companies are now realising the value of emerging IC for their progress, growth, and monetary achievement in future, whereas a few of them are actively analysing and briefing IC with their stakeholders. IC is characterised as a chain of interlinked similar abstracts that are being applied in many researches (Beattie and Thomson, 2007).

Sveiby (1997) and Kamath (2008) explained the different components of IC as internal capital, external capital, and employee's competence. Internal capital (structural capital) includes all the intangible items that have higher value than the physical assets, including the firm's information system, procedures, concepts, and corporate culture (Petty and Guthrie, 2000; Sveiby, 1997; Wong and Gardner, 2005). This type of resource is usually developed by employees of the firm; however, this sort of resource cannot be eradicated from the company

even when employees leave the organisation (Roos et al., 1997; Petty and Guthrie, 2000). External capital (relational capital) is an intangible resource that deals with the external relationships of the company (customers, distribution channels, and brand building). Finally, employee's competence (human capital) can be elaborated as the availability of human resources (i.e. their motivation, training, education and culture) within the company (Tan et al., 2007). This sort of human capital cannot be owned by the company, because these are the assets which go home after completing their tasks (Ordóñez de Pablos, 2002).

Numerous studies have been conducted in the Pakistani context that measure IC and firm performance relationship, (Makki and Lodhi, 2008; Makki et al., 2009) but other sectors which contribute towards the economic growth of Pakistan were ignored by the researchers. According to Economic Survey of Pakistan (2008), textile sector provides 39 % of the total employment opportunities, 53.8 % of the total exports and 46 % of manufacturing directly or indirectly and ultimately, this sector is contributing 8.5% to the GDP of Pakistan. Therefore, the present study aims to examine the relationship of IC with firm's financial performance in the Textile Industry of Pakistan.

The financial recession all over the world has affected developing countries like Pakistan. This shows a huge decrease in exports due to less value addition, low quality brands, less production and delayed shipments (Economic Survey of Pakistan, 2008). All these problems seem to be financial problems, but financial support was not enough for the development of any sector. Therefore, the study is aiming to discuss IC, as transformation from the age of industrialisation to the era of information has created the need for IC. Hence, in the current era, success is based on knowledge (Stewart, 1997). Textile sector is considered to be the backbone of the economy in Pakistan and it is a major contributor to GDP, export and employment opportunities to a huge proportion of the population (Economic Survey of Pakistan, 2008).

1.2. Purpose statement

Stewart (1997) and Bontis (2000) emphasised the importance of IC, which is intangible in nature, and provides information to the investors and stakeholders for making profound decisions on investment, where emphasis has been made on IC disclosure in financial statement (Bontis, 2002). Pakistan is a growing economy and its textile sector is one of the major contributors to its economic growth. Unfortunately, very few studies have been conducted on the textile sector and the contribution of its intangibles on its growth is largely ignored. Hence, this quantitative study aims to empirically examine the impact of IC and its components on the financial performance (FP) of this sector using value added intellectual capital (VAICTM) model approach. The financial measures i.e. return on capital employed (ROCE) and return on assets (ROA) are used as measurement indicators for the performance of a firm.

1.3. Objectives

The objectives of this study are as follows:

- To examine the impact of intellectual capital efficiency (ICE) on the financial performance of the textile sector.
- To examine the impact of the components of ICE (human capital efficiency (HCE), structural capital efficiency (SCE), capital employed efficiency (CEE)) on the financial performance of the textile sector.
- To test the applicability of VAICTM model developed by Pulic in 1998 on the Textile Sector of Pakistan.
- To facilitate the policy makers in identifying such intangible components that immensely contribute towards the financial performance of the firm.

1.4. Significance of the study (Potential contribution)

The growing stages in the field of IC have inspired the potential scholars to make significant theoretical, methodological, and empirical contribution (Guthrie et al., 2004). The current research intends to make a significant empirical and theoretical contribution in the following ways:

- a) The evolutionary transition in organisational reliance on intangible assets rather tangible assets has set grounds for the significance of the studies with their focus on the IC (Kannan and Aulbur 2004; Augier and Teece, 2005). Initially, conventional physical assets were considered to be the dominant components for enhancing the performance of economic activity but the current progression in the field of science, technology and most importantly knowledge based economy is increasing the importance of intangible resources (Fu, 2003; Stewart, 1997; Cheng and Xie, 2001; Luthy, 1998). This study will facilitate the organisations to understand better the use of IC in order to enhance their value based performance. It can also be appreciated for encompassing all the three variants of IC for wider and deeper understanding of IC and thus the study is a potential contribution to the empirical literature of management and finance. In addition, a study like this has a valuable contribution to the body of knowledge as it focuses on the developing countries where the corporate professionals are more concerned with the tangible assets and pay no heed towards the intangible assets. Furthermore, least research has been found in the context of developing countries like Pakistan (Makki and Lodhi, 2008; Bharathi, 2010), so this fact encourages examining the IC and FP relationship specifically in the Textile Industry of Pakistan.

- b)** Textile Sector of Pakistan is immensely contributing to the development of Pakistani economy. According to Economic Survey of Pakistan (2008-09), the textile industry contributed 8.5% to the total GDP of Pakistan. It is further discussed by Iqbal et al., (2010) that Pakistan's textile industry is one of the key driving force which is contributing more than 60% to the total exports and 46% to the total output of the country. Although some of the studies have addressed this issue in the context of banking sector and LSE-25 index companies of Pakistan (Makki and Lodhi, 2008; Bharathi, 2010), but I could not find any study which would have addressed this issue in the context of textile industry in Pakistan. Moreover, textile and garment exports of developing countries have emerged as steadily growing industry (e.g., Gereffi, 1999; Joshi, 2002, Nam et al., 2010). Since Pakistan is considered to be a labour abundant country and textile industry as labour intensive (Owen, 2001), so this situation raises the importance of textile sector in country's manufacturing value added intellectual capital efficiency. Furthermore, IC is important for business world because IC and its components have significant effect on business performance (Makki, Suleiman, Lodhi and Rohra, 2009; Vergauwen, Roberts and Vandemaele, 2009). Given the above scenario, this study intends to determine the effects of IC on FP of textile sector of Pakistan. This would help the policy makers to understand the absolute importance of IC and relative importance of components of IC in case of a labour intensive industry of a labour abundant economy.
- c)** Most of the previous researches investigating the impact of IC on firm's financial performance have used net profits, return on asset, employees' productivity, growth in sales, and return on equity etc. as proxy measures of financial performance. None of them used ROCE as dependent variable. ROCE is a comprehensive measure of

effectiveness of management in generating profits with its total equity and borrowed investment. Hence, this study will be an attempt to bridge this gap.

1.5. Conceptual framework

IC has become a centre of attention for the business world in terms of increasing value creation, enhancing business performance, and creating firm competitiveness. It is important for an organisation to equally grow physical capital and IC for long term sustainability. The existence of intangible resources plays an integral role in underpinning the organisational success (Wiig, 1997). Pulic (2004) also emphasises that firms should invest on their IC in the same way as they invest on their financial or physical capital. According to Lonqvist and Markova (2006), IC is a significant source of increasing the firm performance which consists of different sources of value. These sources of value are the main components of IC that are human capital, structural capital, and relational capital (Edvinsson and Malone, 1997; Lynn and Dallimore, 2002; Van Buren, 1999).

Pulic (1998) introduced the concept of value added intellectual capital (VAICTM) which is a technique of measuring IC. Many studies have used this VAICTM model to empirically investigate the effect of IC and its components on firm financial performance (i.e. Tan et al., 2007; Shiu, 2006 a, b; Chen, Cheng and Hwang, 2005). Nazari and Herremans (2007) asserted that VAICTM is the most appropriate method for measuring IC for a statistical analysis. The key reason behind this phenomenon is the availability of financial data. They further argued that using more complex method to gather and process data may imperil the collection process itself. The use of VAICTM model is very popular among researchers even in contemporary studies e.g. Kamath (2008) and Ting and Lean (2009) have used this model in their studies.

The purpose of this study is to determine the effect of IC or its components on the financial performance of the firm. Two models have been developed in order to achieve the aim of the study. Model 1 is developed to examine the effect of IC based on VAICTM model on the financial performance of the firm. Theorists and researchers have reported various proxies of firms' financial performance e.g. ROI (Russo & Fouts, 1997; Hunton, Lippincott, & Reck, 2003; Sarumpaet, 2005), ROE (Najibullah, 2005; Griffin & Mahon, 1997; Calisir et al., 2010), EPS (Bragdon & Marlin, 1972; Blackburn, Doran, & Shrader, 1994;), ROA (Muhammad & Ismail, 2009; Najibullah, 2005; Zeghal & Maaloul, 2010; Ahangar, 2011; Bektas & Kaymak, 2009; Makni, Francoeur, & Bellavance, 2009), and ROCE (Cameron and Trivedi (1990); Haynes, Thompson & Wright, 2000; HO, 2003). However, ROA and ROCE are most frequently reported measures of financial performance in literature. Although few studies have used ROCE as proxy measure of financial performance but in the previous literature it is the most neglected proxy measure of financial performance. Furthermore, I could not find the use of ROCE as proxy measure of financial performance along with VAICTM model specifically in the context of Pakistan. So, this study would be an attempt to investigate the reasons that why ROCE is not used widely in previous studies.

The second model uses the three components of IC i.e. human capital, structural capital and relational capital as independent variables and firm financial performance as dependent variable. Many studies have examined the effect of components of IC on financial performance and reported mixed results. A number of studies found positive significant effect of IC on the financial performance (Chen, Cheng and Hwang, 2005; Makki and Lodhi, 2008; Tayles, Pike and Sofian, 2007; Ahangar, 2011; Bharati, 2010), whereas Ting & Lean (2009) found a non-significant negative effect of IC component such as SCE on ROA. Further, Firer and Williams (2003) examined the relationship between IC and traditional measures of firm performance (ROA, ROE) and failed to find any relationship.

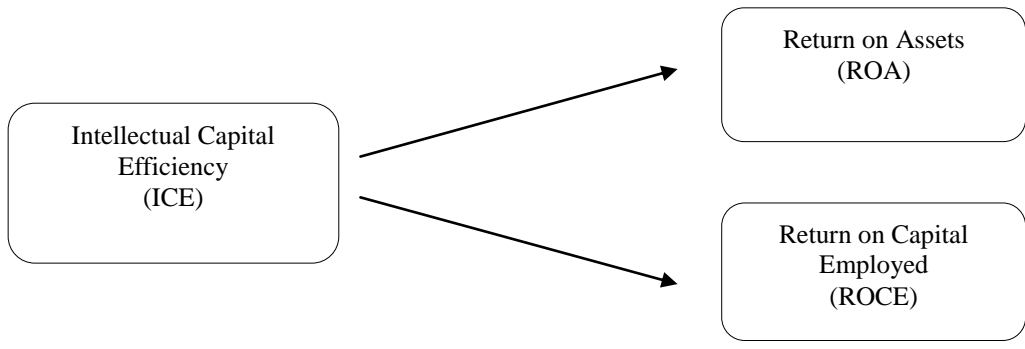


Figure 2: Conceptual Framework 1

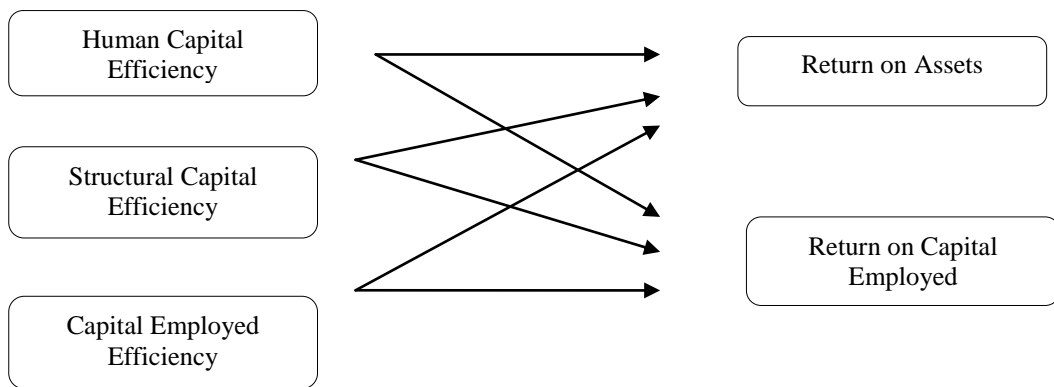


Figure 1: Conceptual Framework 2

1.6. Research questions and hypotheses

1.6.1. Research questions

Following research questions are needed to be answered from this research study.

- 1) Does value added intellectual capital efficiency (measured through the total efficiency of its components) has an impact on the financial performance of the textile sector of Pakistan?
- 2) Does each of the components of IC affect the financial performance of the Textile Sector of Pakistan?
- 3) Which of the two proxy measures of FP: ROA and ROCE, receive the higher effect of IC and each of its components?

1.6.2. Study hypotheses

- **H_{1a}**: There is a significant effect of value added intellectual capital efficiency (VAICTM) on return on asset (ROA).
- **H_{2a}**: There is a significant effect of value added intellectual capital efficiency (VAICTM) on return on capital employed (ROCE).
- **H_{3a}**: There is a significant effect of human capital efficiency (HCE) on return on assets (ROA).
- **H_{4a}**: There is a significant effect of capital employed efficiency (CEE) on return on assets (ROA).
- **H_{5a}**: There is a significant effect of structural capital efficiency (SCE) on return on assets (ROA).
- **H_{6a}**: There is a significant effect of human capital efficiency (HCE) on return on capital employed (ROCE).

- **H_{7a}**: There is a significant effect of capital employed efficiency (CEE) on return on capital employed (ROCE).
- **H_{8a}**: There is a significant effect of structural capital efficiency (SCE) on return on capital employed (ROCE).

1.7. Delimitation

The focus of the present study is on empirically examining the effect of IC or its components on firm's financial performance. The research is confined only to the textile industry of Pakistan and data have been collected from the companies listed in Lahore Stock Exchange of Pakistan. So, the study can be applicable in those firms which have similar socio, economic and political environment. The research uses "value added intellectual capital (VAICTM)" model proposed by Pulic (1998) to measure IC. Furthermore, the model is bound to examine only the financial performance of the textile firms, whereas the non-financial performance (i.e. Research & development and advertising campaigns) is not included in the scope of the study. Moreover, financial performance is measured on the basis of two proxy variable i.e. ROA and ROCE and the study did not include other proxy measures of financial performance for example return on investment (ROI), return on equity (ROE) and net profit margin (NPM) etc.

1.8. Summary of the subsequent chapters

The rest of the study is organised as follows:

Chapter 2 is the Literature Review of relevant, empirical and theoretical studies that explain the role of ICE in value creation, components of ICE, the relationship of IC and the firm's financial performance and the Textile Sector of Pakistan.

Chapter 3 discusses the Methodology to explain the role of research design, issues of data collection and analysis.

Chapter 4 presents and discusses the empirical findings of study on the basis of fixed effects panel data and pooled data regression analysis in case of 30 companies of textile sector of Pakistan. The same analysis has been conducted in case of two sub-samples of these companies in order to test whether the results are robust to the changes in sample size.

Chapter 5 summarises and concludes the study and highlights the limitation of the study. Further, the future research directions are presented at the end of the chapter.

CHAPTER TWO: LITERATURE REVIEW

This chapter deals with a detailed review of the literature on the role of ICE as a source of value creation, components of ICE, firm's financial performance, and on the textile sector of Pakistan. The literature provides in-depth knowledge on IC, its advantages and disadvantages, and different measurement models of IC which were previously used by researchers. Furthermore, this chapter also includes a comprehensive discussion focusing on the components of ICE i.e. HCE, SCE and CEE. Moreover, a detailed overview has been given on the textile Sector of Pakistan and the financial performance of the textile firms.

2.1. Intellectual Capital (IC)

The modern economy has been transformed from traditional management to knowledge based management economy, where IC is emerging as a key indicator of the continuous progression of contemporary knowledge based economy (Stewart, 1997). Similarly, Luthy (1998) explained that IC is a vital source of value addition for any company which ultimately results in increasing the profits of that organisation and this intangible asset also plays a significant role in enhancing the production of the goods and services of the company. Nirmal et al. (2004) discussed that progressive organisations gain IC by attaining knowledgeable human resource.

The term IC was introduced by a well-known economist John Kenneth Galbraith in 1969 (Bontis, 1998). Later, Drucker (1993) expounded this term by highlighting the contemporary business publications of the post-scholars (Bontis, 1996a & 1996b). Afterwards, this lexis immensely became the key domain for chief knowledge officer who is responsible to help the organisation in maximising its return on investment in knowledge such as people, process and IC (Bontis, 2000). Furthermore, Neumann and Tome (2005) discussed that a competitive

economy consists of three major assets which include cheap labour, natural resources and extensive knowledge, and a company should acquire at least one of the assets which have been mentioned above in order to gain competitive edge. He further stated that extensive knowledge performs a crucial role as it uplifts the economy for a long period. The evolution of IC management was divided into three phases. The first phase was introduced by Hiroyuki-Itami 1980 which was published in 1987 when he significantly contributed by exploring intangible assets in the corporate performance. The second phase started in 1986 when David Teece concluded that the significant indicator of value creation is the resource based strategy which includes the technological innovation (Sullivan, 2000). Sveiby (1997) discussed that the value of the organisation is based on the human intellect and human knowledge and it was the third phase of IC management revolution. Numerous researchers are now defining IC as a term that is representative of the intangible assets of the organisation and it is also the main source of getting competitive edge (Stewart, 1997; Bontis, 2001).

Intangible assets are considered to be the most sustainable assets for an organisation which become the major source of differentiation in terms of goods and services (Teece, 2002). It is further discussed in the study of Williamson (1985) that IC bolsters the process of continuous learning and also helps in developing modern methodologies which can make an organisation more competitive in the market.

2.2. Definitions of IC

The term IC does not have any generalised definition. However, a number of definitions have been presented in different studies. Brooking (1996) gave an eloquent definition of this term as “intellectual capital is used to integrate the intangible assets which enable the company to function properly”. Although in 1997, Stewart presented a laconic definition of IC that it is ‘packaged useful knowledge’. He deemed that IC includes firm’s processes, technical

knowledge, patents, human skills, and information about customers, suppliers and stakeholders.

Edvinsson and Malone (1997) explained that the knowledge which can be converted into value is termed as IC. According to Edvinsson and Malone (1997), the knowledge of expertise that can be the cause of value addition is described as IC. They were also of the view that the difference between the book value and market value is also termed as IC. Stewart (1997) explained that the information, immaterial property and expertise that can be combined together in building worth were stated as IC. Moore (1996) defined IC as the combination of customer capital, innovation capital and organisational capital. In 19th century, IC was considered as valuable knowledge, integration of intangible assets and packaged useful knowledge. This is further elaborated in the 20th century where different authors defined this term in a more lucid way. In the report of Chartered Institute of Management and Accountants (CIMA, 2001), IC is explained as the acquisition of competitive improvement through the implementation of knowledge, practical experience, competent skills, good relations, and technical expertise. It is further stated by Makki and Lodhi (2008) that the expertise governed by the individuals or the company that directs it towards the competitive edge is called IC. International Federation of Accountants (IFAC) has defined IC as a valued asset that should be obtained by the company to take competitive advantage (Chen, 2008; Schiuma and Lerro, 2008). Furthermore, IC enfolds both resources (structural capital and relational capital) that are present at a specific time with some specific direction and IC directs them to relate intellectuals with material resources for the achievement of a company goal (Chen, 2008).

Vargas-Hernandez stated (2010) that IC is just like a 'brand new tennis ball-fuzzy but with a lot of bounce'. One of the companies, Skandia Insurance (1998), defined IC as 'the enriched

information, practical expertise, technological innovation, customer relations and hands on expertise that can be a source of advancement in the market’.

There are ambiguities about the view, how IC can be differentiated from abstract, intangible asset or intellectual wealth. There is no hard and fast definition of intangible as per the guidelines of Meritum (2002) and in a broader sense; the same word is used as noun with the same meaning. Another view is that IC can also be regarded as the assets that can be showed in the financial balance sheet. Intellectual property can be described as an immaterial property like patents, copyrights and trademarks because all these assets can be shown as assets in the formal financial balance sheet. A company never detains the processes that are necessary for gaining success but the evaluation of intellectual property is important to find out what is owned by the company. In addition, it is also stated that IC is something that is immaterial and resultantly increases the worth of company gradually (Ahangar, 2011). Simchon define IC as an immaterial and insubstantial asset which include patents, practices, and capacity of the individuals and their networks (Ahangar, 2011).

It is widely discussed in the literature that IC is basically a composition of three major things: relational capital, human capital and structural capital (Stewart, 1997; Nazari and Herremans, 2007; Bontis, 2002; Lynn, 1998; Edvinsson and Sullivan, 1996). The above-mentioned classification of intangible assets gives a wide spectrum of IC in the form of technical knowledge, human skills, technological advancement, goal orientation, long term relationships, and experiences that can become a major source of competitive advantage for an organisation (Tayles et al., 2007). Different scholars like Stewart (1997) stated that IC is the combination of information, knowledge, competencies and skills of workers that can differentiate the companies and provide them significant position in their respective sectors. Human capital is the most influential component of IC that represents the employees’ professional competencies, motivational level, leadership abilities, and value addition

processes (Halim, 2010). Hence, this study is also focusing on the three components of IC including human capital, structural capital, and relational capital which are further elaborated in literature.

2.3. Intellectual capital components

IC can be deducted from the knowledge conversion procedure. Roos and Roos (1997) described that IC is an extended term which can frequently be divided in a number of components, among which the most generalised varieties of IC are human capital, structural capital, and relational capital (Sveiby, 1997).

2.3.1. Human capital

Ahangar (2011) described human capital as ownership of expertise, understanding, and experiences, etc. that has a significant authority in a company. He further explained that human capital is very essential and highly demanded asset for the company because it is the only capital that fulfils the needs of the customers regarding goods and services by using their expertise, abilities, capabilities, potentials, efficiencies, and effectiveness (Ahangar, 2011). In the last ten years, the proportion of human capital has been significantly increased, but still no standard benchmark has been developed for estimating the worth, capacity, and efficiency of the human capital which can be accounted in the balance sheet (Stewart, 1997).

Nazari and Herremans (2007) briefly described the studies of different scholars that were conducted on human capital. According to Becker (1964), 'the cost invested on an individual in the form of education, expertise, skills, and abilities only builds up the individual rather than some material or financially worthy asset and the reason behind this may be that individual capabilities cannot be stolen by someone'. In the same way, Roos et al. (1998) explained that human capital cannot be associated with the assets of the company because as the individuals move the asset moves. Bontis (1998) is of the view that the worth of the

human capital can be identified on the basis of the need to bring an organised change in the company. The main mental capacity of the individuals in the company, according to Bontis (1998), is the valued human capital.

Moreover, Stewart (1997) argued that human capital is a capability of the individuals to convince their customers by providing practical solutions. He added that huge data exists on this distinctive area for conducting numerous researches, but a problem that makes everything stick with it is the characteristic cost of individual (Stewart, 1997). In accordance with the statement of Stewart (1997), Roos and Roos (1997), this can clearly be viewed that the individuals cannot be owned, but can be acquired within the organisation. Similarly, Stewart (1997) also questioned that, how can human capital efficiently be utilised for the benefit of the related parties? Ahangar (2011) answered that Stewart's question, that focusing on the efficient management of expertise in today corporate world is beneficiary to the stake holder's profit and in this way, human capital can be utilised effectively.

In 1960, Gary Becker, who was also awarded with a Nobel Prize in 1992 in the field of economics, realised the value of human expertise. He was of the view that human characteristics cannot be owned, but can be acquired for a specific period of time. Therefore, human asset is not a financial asset for the organisation (Becker, 1964). Human expertise can satisfy the company needs as well as the demands of the individuals on the basis of the acquired characteristics that an individual holds, so human capital has the potential to fulfill both types of requirements (McGregor et al., 2004). Human being as a resource has the flexibility of mobility from one company to another and the reason behind this is that the individual himself is the owner of his own attributes and human capital (Roos et al., 1998).

Stewart (1997) considered human capital as the core commencing stage from where the growth of the company begins. Bontis et al. (1999) pointed out that human capital is worthy

because it is the highlighted cause of improvement in the financial performance of a company. According to Bontis (2001), the employees of the company hold a unique set of expertise which cannot be articulated, but are the essentials for job requirement (Nelson and Winter, 1982).

A number of links aim to be connected in a predictable sequence in order to establish deep understanding of human capital. These links are needed by company for eliminating the involvement of externals, and also for increasing the company's progression. At this phase, Hudson (1993) described that human capital is based on the construct of four determinants: customs since birth, academics, exposure, and personal and professional characteristics. Human capital is significant because it is the main cause of progression, improvement, and managerial change. It doesn't matter whether this is achieved by converting a dream into reality, getting inspiration from phenomena, redesigning of old procedures, or polishing skills and abilities. The actual human capital is the absolute generosity of the participant of the company.

From the perspective of a resource based individual, Wright et al. (1994) contradict that time-balanced competitive advantage can be achieved through acquisition of human capital. The achievement is possible with the addition of value by the human capital that is matchless, absolutely appropriate, and compatible with the operations of the competitors. Such presentation of human capital as resource indulges immaterial values like outstanding abilities, unique expertise, emphasising both on the customer demands and the company procedures (Bontis, 2001).

Bontis (2004) described that human capital is based on expertise, academics, and capabilities of the human which are linked with the goals and objectives of the company. In clear terms, the intellectual individual of the nation is the actual richness. This richness is versatile and it

also contains the expertise required by the phenomena, rules, and regulations of the procedures (OECD, 2001). In the same context, Doraid (2000), describing the wealth of Arab States, has stated that the real wealth of the states is the individuals who are living there. Complementing this claim, Schultz stated that (UNESCO, 1991), the quarter of our worth is materially justified and the remaining is the proceedings of individuals as a part of human capital.

The empirical observation and quantification of human capital are tough questions. In response to this, a very sensitive as well as detailed quantification should be adopted that must observe the qualitative and quantitative measures of the human capital of the company (OECD, 2001). In simple words, it can be said that the human capital is the representation of expertise which the individuals hold within the company (Bontis et al., 2001). Rooset et al. (1997) stated that employees' capacity, characteristics, and level of response can be called IC. IC gives an opportunity to an individual to change the old, conventional systems and procedures with newer productive and solution oriented ones. Competency consists of the abilities and expertise an individual holds; whereas, attributes are the characteristics of the individual. Above all this, the individuals as employees are the most worthy assets of the company and it doesn't matter that they are not owned by the company.

Hudson (1993) described IC as the worth which an individual possesses and it includes the expertise, potential, capacity and competencies of an individual. Bontis (1998) is of the view that human capital is the capacity of the company to sort out the problem by using the expertise of its individuals or employees. Somehow, as an inverse bad factor, the shift of individuals (employees) as human capital is a huge loss for the company, and stands as an intimation of the upcoming future risk. However, it is also considered that some time employee turnover is also beneficial for an organization because it creates an opportunity to have a fresh pool of employees having advanced skills and knowledge, that can better replace

the old ones. Bontis (1999) explained human capital as the cause of improvement and progression for company.

According to O'Donnell et al. (2003), the connection of an individual with others is the most worthy immaterial value in the era of intellectualisation (Bontis, 1998; Edvinsson and Malone, 1997; Choo and Bontis, 2002; Stewart, 1997) that is the reason that human capital is deemed as the major basic investment of IC.

On the whole, the entire scenario is analysed on monetary terms worldwide where human capital is the vital driving force for competitive advantage on the economic position of the state (OECD, 1996). Human capital is worthy due to the main reason of progression, improvement, and managerial change. Bontis (2002) observed that human capital embodies such human factors like, intellect, abilities, and knowledge in the organisation as an employee, and takes it with him when he leaves the company and gives the organisation his distinctive character. Furthermore, the macroeconomic perspective is the major driving force of competitive advantage for the firm's affluence (OECD, 1999) and also for the foundation of strategic replenishment and innovation (Bontis, 1998).

The production of expertise and the sharing of expertise are the significant causes of balanced survival in this competitive era and on the other hand, all this depend on the choice of the individuals. In this way, if it is true that human capital is the core of the economic position of the company, it would not be wrong to say that the results are based on the willingness of the individuals.

2.3.2. Structural capital

Structural capital is defined as knowledge and expertise that remain within the company (Bontis, 1998). This capital includes the daily tasks, processes, rules and regulations and the databases. Furthermore, it also includes the elasticity of the organisation, the operating

procedures, presence of expertise and learning capacity of the company. A number of it are kept officially, and become the intellectual property right, officially authorised as a part of the company (Bontis, 1998).

Structural capital of a company includes the basic infrastructure and physical material which are helpful for the human capital. Structural capital consists of all the variants of the expertise of the depositories like the procedures, softcopy information houses, patents etc of a company (Nazari and Herremans, 2007). He further stated that structural capital is the property which remains within the organisation even if the employees go back home after their work.

As stated earlier that human capital cannot be owned, but only acquired, whereas structural capital is the company owned property and is utilised in the way as the company wants to use it efficiently or contrarily (Ahangar, 2011). He further added that structural capital can be multiplied, regenerated, and shared within and outside the boundaries of the company. Bontis (1999) divided structural capital into different subsections of structural capital. According to Bontis (1999), technical competency and the infrastructure are the components of structural capital. In technical term, it is described as the expertise that can be supportive in solving the problems faced by the company. However, the infrastructure is important to provide support in joining and rejoining of the available assets for the solution of problems and for the achievement of the goals of the company (Bontis, 1999).

Stewart (1997) defined structural capital as the property owned by the company but helpful for individual expertise of the company. Considering the example of Andersen and KPMG, companies are spending a lot for the acquisition of supportive and required expertise which is necessary for the daily business routine. Comparatively, organisation of those assets can gain progression, result and monetary benefit (Stewart, 1997).

Effective infrastructure helps the company to utilise and share the expertise in a well managed way. Stewart (1997) stated the example of McKinsey that a company needs to focus on its physical assets in order to fulfil the requirements of its customers efficiently and effectively. In accordance with the previously inherited system, the strategy is termed as, Push strategy which was typically in practice, but nowadays, it is the need of the hour to produce efficient results through structural capital management (Stewart, 1997)

In the view of some other researchers (Boisot, 2002; Ordonez de Pablos, 2004; Walsh and Ungson, 1991), structural capital can be defined as expertise depositories. All types of structural capital are useful and supportive towards the human capital, so this can be inferred that structural capital sources are beneficial on the basis of human capital. In this way, company owned its structural capital and did not acquire human capital (Ordonez de Pablos, 2004; Roos et al., 1998).

Above all, structural capital holds a separate individual worth as compared to human capital, and it doesn't matter whether the structural capital depends on human capital or not. This can be supported by the fact that patents do not exist and they come into existence by the effort and contribution of individuals as human capital, but after the patents exist, they are the property of the company not the individuals (Chen et al., 2004). The relationship or linkage of structural capital is based on human capital (Winter, 1987).

If the system of the company is so hard and fast that it does not allow opting any opportunity, this will decrease the chances of the company's progression (Nicolini, 1993) which resultantly creates an inefficient system and the organisation cannot perform accordingly and will not get the results which the company has the potential to produce. It is the conceptualisation of the structural capital that enables one to measure human capital invested in the company. The structural capital tools support to encode human capital investment for

the observation of human capital. They also help to measure the factors that are the cause of the minimisation of cost and maximisation of profit.

The structural capital of the company includes the rules, regulation, process, procedures that are being practised to perform the daily operations of the company smoothly. In accordance to this, the company can be evaluated on the, basis of balance maintenance of human investment, information about its rivals, customers, and modes of communication. Majorly, it includes the determinants which are mutually related to execute the operations of the company. These determinants vary from company to company on the basis of nature of its operations and objectives.

The flow of directions of the structural capital is the image of the movement of IC within the boundaries of the company. The core of the structural capital is the expertise that is hidden in the procedures of the company. The inside significance of the company is based on the infrastructure; whereas, the representative worth is based on the human capital. The measurement of human capital is like a rock to climb, but it can be done efficiently. All the processes and procedures as a part of structural capital can be encoded.

In order to secure the infrastructure of the company, it is important to realise the worth of structural capital. This will result in increasing the resources of the company. The infrastructural assets of the company can be characterised within the technical determinants and the structural capacities. The technical determinants include the expertise and potentials present internally in the company which are significant for performing the daily routine tasks of the company. The physical infrastructure consists of the capacity to produce new capabilities by linking the core competencies of the company that can be utilised for better outcomes (Henderson and Cockburn, 1994). Research in this area will enlighten the

characteristics that will be lastingly advantageous for the company; besides, it also discovers some valued sources of infrastructural capital (Bontis, 2001).

According to Roos et al. (1998), structural capital consists of the company's rules and regulations, standard procedures, and all the resources other than the human resource. He added that the capital which remains within the organisation is called structural capital of the company. It is the inner and outer value of the company which builds the future worth of the company (Bontis, 1998). If the organisation has tough infrastructural capital, it will enable and allow the individuals to adopt latest techniques and to do experiments for the improvements and advancements. Structural capital is a different type of interaction that enables us to measure IC. Structural capital is the image of the capacity of the company to avail the opportunities and to overcome the weaknesses of the company.

Halim (2010) also emphasises the importance of structural capital for the company. He believed that structural capital includes what happens among the people, how the people are connected within the company, and what stays when the employee leaves the company (Halim, 2010). As further observed by Halim (2010), structural capital is a stock of knowledge that is owned by the firm and includes corporate culture, information technology and explicit knowledge, product innovation, process optimisation, and innovation among others.

2.3.3. Relational capital

The third significant element of IC is relational or customer capital which plays vital role in strengthening the relationship of the company with its customers, rivalries, vendors and with all other related involved authorities (Bontis, 1999). He further elaborated that making a better estimation of the customer's demands and aligning it with the vendor's demands helps in achieving leadership place in the market. Similarly, the research conducted by Ahangar

(2011) has discussed that relational capital is termed as the relations of the company with its vendors, customers, and other parties involved in the business circle. He also suggested that the worth of such capital can be estimated by the market value or market image of the company (Ahangar, 2011).

Nazari and Herremans (2007) noticed the value of customer capital and discussed that the most valued and essential part of the relational capital is its customer capital. In addition to this, Nazari and Herremans (2007) described that the construction and expansion of relational capital increase the capability of a company. Stewart (1997) argues that customer capital is basically an immaterial asset that can be controlled up to some extent, regardless of the fact that some of the companies hold it. According to Stewart (1997), customer capital is a mutually generated asset by both parties (company and customer) in order to create mutual benefits for one another. Marti (2001) elaborated that relational capital is the capability of the company to communicate with its current consumer and potential customers with the aim to enhance its goodwill through expanding the other two components of IC i.e. human and structural capital.

Customer capital is considered as one of the major influential categories of relational capital and it presents the market image of the company. Still there is no comprehensive definition of market orientation, (Bontis et al., 2000) but Kohli and Jaworski (1990) elaborated market orientation as market expansion, distribution, and as strategies which are developed by an organisation on the basis of its current and future customer needs. Also, some of the few elements including balanced score card (Kaplan and Norton, 1992), consumer and potential customer, (Bontis, 1998; Bontis et al., 2000; Saint-Onge, 1996) and relational capital (Bontis and Fitzenz, 2002) are considered to be important linkages in conceptualising learning for the company (Armstrong and Foley, 2003; Dewhurst and Navarro, 2004; Senge, 1992; Bontis et al., 2002).

According to the study of Bontis (2001), it is viewed that the information of market channels, customer and vendor relationships, and comprehensive understanding of governmental or influential bodies are the main elements of relational capital. The stress managing authorities do not realise that they can be controlled by the knowledgeable customer and vendors. Conclusively, the ability to find what a customer wants in the product or service by the provider will lead towards the position of market leadership.

Relational capital is a perception of the possible capabilities of the company based on immateriality. These immaterials include the knowledge of customer, vendor and the influencing authorities. This can be estimated on the evaluation of relational capital as its importance arises within the company. In simple terms, market representation can also be linked with the customer influence on the relational capital.

There is no generalised definition of market representation, but following are the definitions that are frequently used by previous authors. The first is defined by Kohli and Kawarski (1990) that market intelligence is the market active response of the present and the future demands. Same definition was described by Deng and Dart (1994). Another definition is presented by Narver and Slater (1990) and they define market representation as the element that is extracted from three behavioural responses and two bases for decision-making. These include customer based, the market rivalry based and the interrelation based behaviours where the rule of thumb for making a decision was goal oriented and profit generating. Hulland (1995) predicted that there are two methods of learning, company based learning and the market learning system that can be treated in relation with the human capital. Kogut and Zander (1992) are of the view that the companies can do better than other markets if they introduce the culture of sharing and transforming knowledge among other companies. They, in addition to this, have suggested that the inductive capacities of the company are hidden in the regulation of the company. On the basis of these rules and regulations, individuals from

inside and outside the company interact with each other in an organised way (Kogut and Zander, 1992: 384).

Teece (1998) critically analysed the importance of two types of organisational relationships, one is inter-organisational relationship and the other is the intra-organisational relationship with reference to the progression and interest of modern technologies. He elaborated that the companies have now shifted from a sequential value chain process, towards two directional processes which include a number of activities at the same time, like demand for cooperation and rise in combined competencies. Pennings and Harianto (1992) proposed a theory of induction, assuming that the modern technologies would be produced from the inductive abilities of the company. According to Teece (1998), the relational capital is based on the intra-organisational structure which, in turn is based on technical expertise (Pennings and Harianto, 1992).

Hidden expertise in the advertising mediums and customer relations that a company produces by executing the business activity is the basic purpose of customer oriented capital (Bontis, 1999).

According to Stewart (1997), Bontis (2002) and Kong (2008), IC embodies employees, company's daily work, and the relational networks that are the part of collective knowledge. On the other hand, other studies explain that IC is the construct of three major portions: human capital, structural capital and relational capital (Bontis, 1998; Dzinkowski, 2000; Stewart, 1997). Relational capital is basically the demonstration of the company including customers, vendors of the company or the partners of research and development. This includes a proportion of human and structural capital with the company relations and all the beneficiaries like investor, creditor, customer, and suppliers are adding to this the conception of the company in them (Belkaoui, 2003).

Sveiby (1997) presented a model of VAICTM which is frequently used by a number of researchers in their experimental research (Brennan, 2001; Petty and Guthrie, 2000; Wong and Gardner, 2005; Goh and Lim, 2004). He deemed that IC consists of three parts: internal structure, external structure, and the employee's potential (Bontis, 1998; Sveiby, 1997). Internal capital includes all those immaterial assets like databases, processes, values, culture, etc. (Guthrie et al., 1999; Sveiby, 1997; Wong and Gardner, 2005). These are the sources of the company which cannot be eliminated even if the employee kept changing the company. These are the assets which are employed and owned by the company (Roos et al., 1997; Guthrie et al., 1999; Wong and Gardner, 2005). External capital includes the company external relations like relation with customer, the distribution network, company image, human capital, their education, their willingness, their loyalty, their training and developments within the company (Tan et al., 2008). These are not considered as the assets of the company because these asset move as the employee moves from the company.

The latest researches have shown that service oriented circle is focusing on the cause and effect relations between the employee satisfaction and loyalty of customer and monetary progression (Kaplan and Norton, 1996). It has also been generalised that companies do not spend enough time in aligning the goals and objectives of its employees with the goals and objectives of the company which result in inefficient employee maintenance (Senge, 1990). More studies have suggested that the loyalty of the customer can be estimated by estimating the loyalty of the employee (Horibe, 1999). Hence, it is evident that customer capital is an important component of IC.

Relational capital can also be stated as the expertise of those related parties that can influence the company's progression. The previous studies in this field have justified that relationship with the linked bodies is essential for creating, balancing, and reproducing the sources. Few of the researchers (Prahalad and Ramaswamy, 2000) have recommended that an important

competent source of a company is its customers because the customer is basically a dominant source which uplifts the company (Gibbert et al., 2001).

Hakansson and Snehota (1995) stated that the marketing relational capital is the source of competitive advantage for the company. Whereas, Bontis (2002) suggested that the relational capital can be estimated on the basis of its lasting functionality..

The managerial rules are developed by the higher bodies of the companies; whereas, it is human capital that executes those rules within the organisation. This collective expertise cannot easily be distributed as it is based on the company specific regulations (Zander and Kogut, 1995; Barney, 1992). Companies require intellectual collective competencies to progress technologically from both inside and outside the company (Hamel, 1991; Kodama, 1992). It is tough to execute, but it is very significant to build a productive interaction among the partners for technological joining (Dodgson, 1992). On the other hand, at times, the network is built and it supports as a vital resource of information related to the interlinked company (Bontis, 2001).

Relational capital is an intangible asset that helps in building, cherishing, and maintaining healthy relationship with individual, organisation or group of people that influence the enterprises (Welbourne, 2008).

2.4. Measuring intellectual capital

IC is an emerging term which refers to the intangible assets that are prevailing in the financial system including the financial evaluations and calculation. Its measurement in financial terms is very difficult. Many researchers have devised a number of methodologies to measure non-tangible assets of the company. The intangible assets of the company have been defined by a number of researchers as there is no generalised definition and this term is improving with the passage of time. According to the latest definition, IC includes all non-physical assets that

a company acquired for value addition. The traditional financial system only measures the financial assets of the company, and ignores such value addition.

In the emerging era, IC has become the most important asset of an organisation. So, there should be some tools to measure this value addition within the organisation. In consideration to this, the first measurement model, Tobin's Q model, was presented by a Nobel Prize winner Tobin's Q. This model was based on the market to book ratios ($Q = \text{market value}/\text{asset value}$). Tobin's Q model does not actually measure the exact IC; whereas, cited by Stewart (1997) this model measures only the contribution of technology and human effort in the overall market value of the organisation. The model presented by Tobin is just like the market to book value, but market to book value ratio was replaced by the market to asset value because the updated model has resolved the problem of the calculation of replacement cost of an asset (Luthy, 1998). In addition to this, Luthy (1998) argued that this model has included the contribution of IC which was totally ignored by the traditional system of accounting.

Later on, the scholars criticised that Tobin's Q model measures IC on the basis of value addition made through technology and human capital for the analysis of an organisation over a period of time (Stewart, 1997). The other problem with Tobin's q model was that this model calculates the values of asset replacement which includes depreciation and other costs that may vary company to company, country to country, and even time to time (Rooset al., 1998; Stewart, 1997). Therefore, this model is not an accurate measure of IC.

In 1991, Stewart introduced a new measure for IC measurement with the name of EVA model. This model was presented on the basis of the traditional system of accounting that was calculated through the difference between the net value of operating income after tax of the company and the capital cost of both types of capital such as equity and debt, etc (Chen and Dodd, 2001). Stewart (1991) elaborated his model through EVA equation, ($EVA = \text{Residual}$

Income (RI) + Accounting Adjustments (Acct Adj.). This equation includes the accounting adjustments. According to traditional accounting system, a number of critical adjustments are required to calculate the value. The equation aims to achieve the cash earnings and their comparison with the cash based capital. This model measures the value of stocks after minimum time period of year without the treatment of fluctuation of rate during that time period. The model presented a picture of the company on the basis of historical data of the company. At this stage, the measurement of IC was still under question mark.

Market Value Added (MVA) was proposed as a new model which is the extension of previous Economic Value Added (EVA) model. MVA is calculated by calculating the difference between market value and book value of the company on the basis of equity and debt of the company. If MVA results are positive it means that the capital is utilised well or vice versa (Performance Rankings, 1999).

This model had also some drawbacks. For example, this model only measures the value on the basis of history which is not significant as compared to current situation results. It only measures the value after the time period of one year. There was not adjustment for the rate fluctuated during the time period. On such basis, the model was not generalised as measure of IC.

Another model was developed by a Swedish financial services company, Skandia, headed by Leif Edvinsson. That model was known as the Skandia's Navigator. That model was based on the presupposition that IC can be represented by the difference of the market value and the book value of the company (Edvinsson and Malone, 1997; Luu et al., 2001). Analysing the business point of view, Skandia, Edvinsson and Malone (1997) had taken five perspectives (financial, renewal and development, customer, procedures and human) into account.

This model was appreciated by researcher, and was a considerable contribution to the measurement of IC (Petty and Guthrie, 2000). Edvinsson and Malone (1997) stated that the

market value of the company is the total of the financial assets and IC of the company. Furthermore, the components of IC include the human and structural capital. The structural capital comprises of two components that are customer capital and organisational capital. Organisational capital is a construct of innovation capital and process capital (Edvinsson and Malone, 1997).

It has been discussed in the previous studies that IC can be measured by the overall measurement of efficiency coefficient. The efficiency coefficient is the arithmetic mean of the 'intellectual capital coefficient of efficiency indices'; this whole process is a tough and lengthy process (Edvinsson and Malone, 1997). It also clarifies that in order to understand the employee's development process of the company, it is necessary to measure IC of the company (Shand, 1999).

The Skandia's Navigator model was significant in the measurement of IC models as it has elaborated various components of IC, but it is also not an accurate measure because this model includes some financial drawbacks. It measures intellectual but at the same time it has neglected numerous financial indicators which also need to be investigated.

The two managers, Roberts Norton and David Kaplan, were to manage and design a strategy for their organisation. They had to set up frame work for measuring the performance of the employees. In this consideration, they developed a model that was aimed to measure the performance of the employees in accordance with the achievement of the financial organisational objectives. This model was named as the balance scorecard (BSC) (Kaplan and Norton, 1996). The BSC was based on the measurement of external factors; (shareholders and customers) whereas; internal factors are based on the learning and progression of employees (Kaplan and Norton, 1996). The BSC described the term as IC on the basis of four dimensions and the proposed tool was measuring IC on the basis of four dimensions that were financial, customer, business procedures and, learning (Kaplan and

Norton, 1992, 1996). The model was also supported by other researchers (Petty and Guthrie, 2000). Brooking (1996) also supported the model with the argument that the model includes market assets, human assets, intellectual assets and structural assets.

Additionally, Roos et al. (1997) suggested a model including four construct of IC which included human capital, business procedures, business developmental and renewals, and customer relationship models.

The result of the BSC describes both measures i.e. internal and external over a time span. It can only be used for designing a strategy of strategic management for the efficient achievement of organisational goals, but actually it does not measure IC which was our major goal. The good will of the company, patents, copyrights, trademarks, and other non-tangible market valued assets were not included in the asset in the balance sheet of the company. The model has one contradiction that this does not show adjustments for the fluctuation of the market value (Garcia-Ayuso, 2003; Mouritsen, 2003; Petty and Guthrie, 2000).

The detailed description of the models discussed above failed to develop a refined measure through which IC can be measured properly. It is still a point of contradiction to clearly define IC and its contribution to the company. As a solution to this confusion and to sort out this conflict, Sveiby (1997) developed a model called as Intellectual Asset Monitor. The model consisted of internal capital, external capital and the employee's potential as the constructs of IC. Afterwards, Sveiby designed an intangible asset model for the measurement of non-financial, most valued, and knowledge based assets. According to Sveiby (1997), the market value of the company comprises sub-categorisations which are the financial assets (internal assets) and the other two are the external sources which include structure or knowledge based assets. It practically resulted in measuring the potential growth of the company (Sveiby, 1997). This model is not in accordance with the progressive monetary progression. Nazari and Herremans (2007) stated that the worth of IC can be estimated by

decreasing the book value of the company from the market value of the company. The important research methodology for the measurement of IC is the annual report content analysis. Petty and Guthrie (2000) are the pioneers of such type of research. Guthrie et al. (1999) model is based on the Intangible Asset Monitor model made by Sveiby to observe the characteristics of IC in 1998. The same model was used in numerous researches. Petty and Guthrie (2000) used the content analysis of the annual reports and came up with their findings that there is no constant model of IC being used for the measurement of IC of a company.

Furthermore, Parker (2007) pointed out that the measurement of IC is still a gap to be filled up. Later on, Pulic (1998, 2000) proposed a model that was used by a number of researchers (e.g. Shareef and Davey, 2006; Schneider and Samkin, 2008). As an inference, IC includes immaterial assets, but not all of the immaterial assets come under the head of IC (Petty and Guthrie, 2000).

With the passage of time and the changing practices in the field of measuring IC, the tools were improving and according to the latest definition, the components of IC are human capital, internal or structural capital, and relational capital (Ordonez de Pablos, 2002; Bozzolan, Favotto and Recceri, 2003; Brennan, 2001; Guthrie and Petty, 2000; Guthrie, Petty, Yongvanich and Ricceri, 2004). Another model was proposed by Pulic (2000) which estimated the value adding contributions by the commercial IC which was later termed as VAICTM. The main continuants of VAICTM on the basis of a knowledge based company are the physical, human and structural capitals. The implications of VAICTM have been increasing in the economic (Nova Kreditna banka Mariba, 2000; Pulic, 1998; Pulic, 2000) as well as educational activities (Firer and Williams, 2003; Williams, 2001). This model has been used to measure the progression of the companies in different countries (Mavridis, 2004; Goh, 2005; Kamath, 2007). Firer and Williams (2003) also used the same VAICTM

model to measure IC and came up with the findings of association between the value addition in the form of progression in returns and efficacy with the market worth of the company. The results of Mavridis (2005) proposed that human capital and capital employed are the constructs of IC of a company. These elements are summed up in the following definition: 'IC is the possession of knowledge and experience; professional knowledge and skills, good relationships, and technological capacities, which when applied will give organisations competitive advantage' (CIMA, 2001).

The firms which are currently practising IC can better sustain the position in the market, and can improve profits as compared to those organisations which do not invest on value creation and knowledge expansion (Edvinsson and Sullivan, 1996). IC is basically the major source of value creation within the organisation for the conversion of human and relational capital of the company into structural capital (Lynn, 1988). Corporate processes are very beneficial to (e.g., recruitment, training and compensation) bolster creativity and innovation.

A number of researchers and economists with numerous particular capabilities were putting their efforts to measure the concept of IC and its implementation. Stewart (2002) measured IC as the total of human capital, structural capital and customer capital. The one world view favours that human capital and structural capital can collectively be described as IC. While the previous researches did not accept the above-mentioned definition of IC, all the scholars still admitted that IC consists of three components that are HCE, SCE and CEE (Edvinsson and Sullivan, 1996; Roos et al., 1997; Lynn, 1998; Bontis, 1998; Stewart, 1991, 1997; Edvinsson and Malone, 1997). Human capital captures the knowledge, professional skills and experience, and creativity of employees. Structural capital consists of innovation capital (intellectual assets such as patents) and process capital (organisational procedures and processes). Relational capital captures the knowledge of market channels, customer and supplier relationships, and governmental or industry networks.

IC for the first time was explained by Sveiby (2004). He divided it into three determinants: human, structural, and customer capital. After a few years, this was altered and the customer capital was replaced with relational capital. The value was measured by taking the difference between market worth and book worth that was associated with IC. Holmen (2005) stated that estimating the value of IC is a tough job but not unachievable. IC has benefited the investor, as it helps to identify the doubtful threats and support in much better way. Above all this, it is still very difficult to value this valued asset in financial terms.

Firer and Williams (2003) discussed several benefits of VAICTM. The first and foremost benefit of this model is that it is a well-defined measurement of IC (Pulic and Borneman, 1999) and it helps to estimate the comparison among a number of companies from different sectors. The other models that can be used to estimate IC is consisting on the estimation method on the basis of the data of selected specific companies accumulate a number of financial and non-financial indicators that are previously as a part of individual detailed measures, specifically designed for the measurement of selected companies (Roos et al., 1997; Sullivan, 2000). As a result of the discussion, the implication of those models has been eliminated and another reason behind this is the data collected for this purpose is secondary so it is easy to remain objective oriented and all the results can be further validated (Pulic, 1998; Pulic, 2000). There are also other models for the estimation of VAICTM which have been presented but because of some issues they are not practically implemented (Williams, 2001). In addition to this, some of the problems have also raised the complications in validation of the data that has been used for measuring the other constructs of IC.

Simplified estimation is the major characteristics on the basis of which this model has been generalised and practised for the measurement of company's progression like ROA to book value. The other proposed measures can only be applied by the inner related parties and based on other critical methods.

VAICTM model evaluates majorly the three types of capital in a business that includes physical capital, human capital and infrastructural capital. As a substitute to estimating IC of the company, VAICTM model observes three major investments invested in the company: material and financial investment, infrastructural investment, and human capital investment. The combination of all three above-mentioned investments is known as CEE, HCE and SCE. The enhancement of all these three measures altogether is overall termed as VAICTM. The further subdivision of the conceptualisation is ICE of VAICTM. The term VAICTM is the measurement of the total progression of the company; whereas, ICE is the only measurement of IC out of the total. As the company properly utilises its resources, the worth of the company increases accordingly. The methodology adopted by Pulic (2000) comprises of two major things that are the employed capital and IC. These studies have uncovered the concept of IC and for this sake, cross sectional data were collected, where the data were distinctive on the basis of country. Some studies based on the analysis of longitudinal data were also conducted. The major studies for the understanding of IC were conducted in Australia, the UK, Ireland, Sweden, Canada, Malaysia, Sri Lanka, New Zealand, Bangladesh and India. Mostly, the content was analysed in the studies while some of the studies also used survey as the methodology (Beattie and Thomson, 2007).

ICE of the firm can be measured through VAICTM method. Basically, VAICTM approach measures the firm's resources efficiency through value creation process and ICE is major element of value creation that is employed by the company. Consequently, a firm can possess better value creation process if it utilises its resources efficiently and effectively (Pulic, 2000). There are two major resources which play a significant role in value creation process of the company i.e. capital employed and IC, and both resources are considered as a major investment made by the firm. Where capital employed is based on firm equity, profit

adjusting entries, and liabilities including interest expenses and IC (human and structural capital) that are almost similar to VAICTM.

2.5. Intellectual capital and financial performance

In this competitive business milieu, firms are getting more interested to find such ways of creating competitive advantage that cannot be easily emulated by its counterparts. One of the key components that help the firms in creating this competitive edge in terms of wealth creation is the intellectual capital (IC) of the organisation (Karp, 2003). Lonqvist and Markova (2006) discuss that IC is the key component of enhancing the firm performance that is based on different intangible sources of value creation. Pulic (2000) is also of the view that IC plays a key role in advancing the firm success. The relationship between IC and firm performance is widely discussed in the literature from a multiple perspectives (Ji-jian et al., 2006; Iswati and Anshori, 2007; Yalama and Coskun, 2007; Kamath, 2007; Makki and Lodhi, 2008; Muhammad, 2009; Murale et al., 2010; Zeghal and Maaloul, 2010).

A study was conducted to measure the effect of IC on the performance of US multinationals firms, and it is explored that IC has positive significant effect on the performance of the multinational organisations (Riahi-Belkhoui, 2003; sharabati, Jawad and Bontis, 2010). Similarly, sharabati, Jawad and Bontis, (2010) found a positive significant relationship between IC and firm performance in the pharmaceutical sector of Jordan. In the study of Bontis et al. (2000) it is concluded that the components of IC such as human capital, structural capital, and relational capital have also significantly affected the firm performance of service and non-service sector.

There are different models which are often used to measure IC effect on firm financial performance, and one of the widely focused model is the VAICTM (value added intellectual coefficient). A number of studies have extended the scope of their research by using VAICTM approach for examining the empirical relationship between IC components and firm

performance, using traditional proxy measures such as profitability, productivity and market evaluation (Shiu, 2006b; Firer and William, 2003; Chan, 2009; Chen et al., 2005). A Meta-analysis study has been conducted by using VAIC™ model in predicting the relationship between IC components (HCE, SCE, CEE) and the performance of 17 commercial banks in Bangladesh. It has been found in this study that HCE is the most important factor in enhancing banks performance as compared to SCE and CEE (Mohiuddin, Najibullah and Shahid, 2006). Tan et al. (2007) studied the financial performance of 150 stock exchange listed companies of Singapore and found a significant positive association of IC and its components (HCE, CEE, SCE) on firm current and future performance.

Joshi, Cahill and Sidhu (2010) discussed the role of IC in enhancing the firm's performance using VAIC™ model. They argued that HCE is the key component that shows positive significant effect on the performance of Australian owned banks. However, SCE and CEE did not show any significant effect on stated hypothesis. They have concluded that banks efficiency can be ameliorated through investing on human capital.

According to Chen et al. (2005), organisations with better VAIC™ have more profitability and good revenue growth. In addition, Firer and William (2003) examine the empirical relationship between the three components of VAIC™ and firm market value, and they found a significant relationship between these variables.

Most of the studies have found a positive relationship between firm's intellectual resources and its performance (Carmeli and Tishler, 2004; Riahi-belkaoui, 2003). However, it is suggested that the orientation of relationship between intangible assets and firm performance might be industry or country specific, and still there are chances that some industries or countries with tangible assets rather than intangible resources are performing better in enhancing firm competitiveness (Firer and Williams, 2003). Hence, more empirical research

can be conducted to analyse the relationship between intangible assets and firm performance in different disciplines.

2.6. Intellectual capital in the Textile Sector of Pakistan

Lundy (2005) stated that textile and clothing industry has been considered as the most influential industry for any country. This industry is basically a major hub for employment opportunities due to its labour intensive nature. The textile and clothing industry of Pakistan has earned a significant value in the last four decades, and have the potential to become the key driver of Pakistan's economy in the near future (Lundy, 2005). Textile and clothing industry cannot be substituted with any other industry as this sector has the potential to drive the economy of the country by providing employment opportunities and increasing foreign income.

The significance of textile industry is not just due to its dominance to other sub industrial sectors, but also because of its strong association with agriculture sector as well (Malik and Saqib, 1989). The Textile Sector of Pakistan is providing 39% of the total employment opportunities and 53.8 % of the total exports and 46 % of manufacturing directly or indirectly and ultimately, this sector is contributing 8.5% to the GDP of Pakistan (Economic Survey of Pakistan, 2008).

The trading of textile and clothing was \$ 212 billion in 1990 and \$ 612 billion in 2008 which showed significant increase in these 18 years. As per the report of Economic Survey of Pakistan (2008), textile and cotton industry of Pakistan is 4th in production and the 3rd largest consumer in the world. In 2008, the share of trading textile and clothing was \$ 7.19 and \$ 3.9 respectively (Economic Survey of Pakistan, 2008).

The Textile Industry of Pakistan is sub categorised in sub sectors according to the Economic Survey of Pakistan (2008). The categorisation of the textile industry includes the cotton

ginning, spinning, weaving sectors, filament manufacturing and cotton cloth. The cotton cloth further includes the textile down-streaming, hosiery, towel, canvas and fiber manufacturing (Economic Survey of Pakistan, 2008).

Textile Sector of Pakistan is very important for the economic development of the country. The financial recession all over the world has affected the developing countries like Pakistan. This shows a huge decrease in exports due to less value addition, low quality brands, less production and delayed shipments (Economic Survey of Pakistan, 2008). All these problems seem to be financial problems, but financial support is not enough for the development of textile sector.

Numerous studies have been conducted in order to measure the value addition of IC. VAICTM model has been used to measure the relationship of IC and financial performance. VAICTM model includes HCE, SCE and CEE. A number of researchers have applied the VAICTM model to find the relationship of IC in the banking sectors (Joshi et al., 2010; Goh, 2005; Mohiuddin et al., 2006; Muhammad, 2009; Ting and Lean, 2009). Few researches have analysed the stock market as well (Zeghal and Maaloul, 2010; Appuhami, 2007; Tan et al., 2007; Ghosh and Wu 2007; Chen et al., 2005). The contribution of IC in the information technology industry has also been analysed by some researchers (Wang and Chang, 2005; Kamath, 2008; Ghosh and Mondal, 2009). Lundy (2005) and Malik and Saqib (1989) described the importance of textile industry in terms of employment opportunities and contribution to GDP and this would also be one of the reasons for the selection of textile industry in order to examine the impact of IC on the financial performance of the firm. As we discussed earlier, the textile industry is the labour intensive industry and the emphasis of one of the component of VAICTM model is HCE which plays a vital role in managing employees of the company and also adding value in the form of fixed asset in the balance sheet of the company.

2.7. Chapter Summary

This chapter has provided the review of available literature on IC and its influence on the firm's financial performance. The components of intellectual capital such as human capital, structural capital and relational capital have been discussed for getting the in-depth understanding of IC and also determining that how these components are linked with firm's financial performance. The measurement of IC is always considered as one of the important debate in the contemporary literature. Different models have been presented to measure the firms IC. However, most of the existing literature is of the same view that VAIC model is the most appropriate method in measuring firm's IC. Based on the critical review of the literature the current study developed a proposed theoretical framework based on VAIC proposed by Pulic in 1998. Model 1 is developed to examine the effect of IC on the financial performance of the firm and Model 2 uses the three components of IC i.e. human capital, structural capital and relational capital as independent variables and firm's financial performance as dependent variable.

On the basis of proposed conceptual framework developed in this study, preceding chapter presents the discussion on methodology employed to achieve my study objectives.

CHAPTER THREE: METHODOLOGY

The purpose of this chapter is to provide a comprehensive overview of research design, data collection methods, and econometric estimation model for analysing the research topic i.e. impact of IC on firms financial performance. Crotty (1998) and Cresswell (2003) provide comprehensive framework for the possible considerations that should be kept in mind while designing a particular research.

Research can be defined as a systematic process of clearly explaining the set of organised knowledge. A researcher makes efforts to unleash the truth by implementing the research process. In order to extract true conclusions from a research, it is important to employ a proper and scientific approach to get the maximum effective results. The selection of research methodology is thus entirely based on the objectives of the research study. Therefore, research methodology can only be decided when the purpose and domain of research are well-recognised and clearly elaborated. Adams and Schvaneveldt (1985) defined research design as a complete process of planning, guiding, collecting data and interpretation of the stated problem. In this chapter, research methodology will be explained in detail.

3.1. Research approaches

Yin (1994) explains two research approaches for empirical research that are used on frequent basis: quantitative and qualitative approach. Quantitative research approach deals with such study which is based on clearly stated research problem and hypothesis. Moreover, this type of research discusses the cause and effect relationship of the research problem with the broader perspective. However, the purpose of qualitative research is to conduct in-depth analysis with the selected observations and explore the certain phenomenon that is prevailing inside. This type of research is used to develop a deeper understanding of some complex

research problems, but generalisation is far more difficult. An effective research is based on the selection of right approach for the analysis of data as Creswell (2003) also explains that an effective research is based on the selection of right approach for the analysis of data. Similarly, Yin (1994) describes that best approach can be selected on the basis of purpose and related research questions. On the contrary, if the aim is to explore certain phenomenon or a concept due to limited availability of previously conducted studies then it is better to adopt a qualitative approach. Table 1 shows the features of qualitative and quantitative research.

Table 1: Qualitative and Quantitative Research

Qualitative Research	Quantitative Research
The main objective of a qualitative study is to provide ample description of data.	The main objective is to explain the cause and effect relationship between variables by applying statistical techniques.
The entire process of this research approach is based on exploration of certain phenomenon.	This approach deals with the verification of certain theory in particular sector.
This research is based on unstructured or semi-structured approach in which researcher hardly knows about what he/she is looking for.	The researcher is familiar with all the procedures that he/she is going to apply in his/her research process.
Interview mode and subjective approach are used for data gathering.	Questionnaire and objective approach are used for data gathering.

Source: (Miles and Huberman, 1994)

The main purpose of my study is to examine the impact of IC on financial performance and testing of VAICTM model for verifying this relationship in the Textile Industry of Pakistan; therefore, quantitative approach is used in order to confirm this relationship between variables.

3.2. Research design

Yin (1994) explains research design as a method to identify the methods and techniques, measurement and modes of data collection.

3.2.1. Population

Bryman and Bell (2003) describe population as a collection of units from which sample of study is to be selected. Population of this study includes all textile companies listed at Lahore Stock Exchange (LSE).

3.2.2. Sampling

Sampling is basically a procedure of selecting a sample from population which has been opted for research study. There are basically two methods for the selection of sample that are named as Probability Sampling and Non-probability Sampling (Saunders, Lewis and Thornhill, 2000; Bryman and Bell, 2003).

Probability Sampling is a technique in which chances of selection of each respondent from the population are known and it is the most appropriate technique for survey based research. Contrarily, Non-probability Sampling is a technique in which chances of selection of each case are not known and it is the most suitable technique when you need to select cases which would best respond to your research question and meet the researcher's objective.

Non-probability technique is used for the selection of sample in order to meet the requirements of the research study and to get maximum expected benefits out of it. This study used Convenience Sampling Technique (technique used in Non-probability Sampling) for the collection of data from 30 textiles companies of Lahore Stock Exchange (LSE).

3.2.3. Data collection

For this study secondary data was collected from the financial statements of the textile companies. Textile sector is considered as the most influential sector of the economy because of its innovation in fabric products and services and it is also considered as a driving force for the competition among companies mainly accounted for IC. The data on textile sector is collected from the Lahore Stock Exchange, company websites, and other data bases available on the internet. The data of 10 years of each company have been used for the analysis. The description of each company data is attached in Appendix A. The reason for using 30 companies as a sample for this study is the unavailability of the complete data (1 to 10 years) on other textile companies. Furthermore, different scholars used sample almost of 18 companies (Muhammad, 2009), 21 companies (Najibullah, 2005) or maximum of 25 companies (Makki and Lodhi, 2008) approximately.

3.3 Measurement of variables

3.3.1. Measure of value added intellectual capital efficiency (Independent Variable)

According to Makki and Lodhi (2008), two schools of thought have presented views on the measurement of IC. One school is cost-oriented and it calculates IC by taking differences of market and book value of firm's assets. While the second school of thought focuses on profits and value, and uses the value addition of components of IC (HC and SC) to measure efficiency of IC.

According to Stewart, IC can be measured by adopting any of the three methods, discussed below (cited by Luthy, 1998; Iswati and Anshori, 2007).

3.3.1.1. Market to book value method (MBV)

This method assumes that a company's total worth including physical and intangible assets is represented by its market value. This method has many limitations like market value/stock

price of company's shares which are influenced by many external factors not particularly relevant to company's physical or intangible assets. Moreover, book value of firms given on balance sheet shows historical less depreciation, thus it does not truly represent value generating potential of physical assets (Luthy, 1998; Iswati and Anshori, 2007).

3.3.1.2. Tobin's q method

This method was introduced by James Tobin, a Nobel Prize winner economist. He compares market value of assets with replacement cost. He assumes if value of 'q' is greater than 1 and also above those of competitors, firm has better ability to generate higher profit returns than competitors in similar industry (Luthy, 1998; Iswati and Anshori, 2007).

3.3.1.3. Calculated intangible value

Iswati and Anshori (2007) mentioned following methods for measuring IC:

1. The invisible Balance Sheet Method: This invisible balance sheet (BS) segregates IC in individual capital and structural capital. Individual capital consists of professional experience and competition, corporate strategy, workers' size and education, and these are related to customer and concerned with projects.
2. The Balanced Scorecard method measures the degree of implementation of company's strategy in four areas including customer, finance, internal business and innovation, and growth.
3. Economic Value Added method is a comprehensive model to measure IC, and this approach uses variables of capital budgeting and other variables like performance measurement, goal setting, etc which either improve or reduce corporate value.
4. Technology Broker approach assumes that company market value is based on two main components i.e. tangible and intangible assets of the firm. This method performs split in IC in order to calculate the dollar value of IC.

5. ROA is the method in which firm's average income is divided by firm's tangible assets for the average time period of five years. The result employed from ROA is compared with the industry average for assessing the prevailing differences. If results are zero or negative, it shows company has no excess of IC, but if results are positive (difference is positive), company assumes that it has excess of IC from the industry.
6. Direct Intellectual Capital Method calculates the value of IC by performing some further calculations to identify the values of its components which in return are summed up to find final value of IC. Major components include loyalty of customers, intellectual property, technological capital, human capital, and structural capital etc.

Further, Iswati and Anshori (2007) also shed light on other methods of measuring IC such as: market capitalisation method, the direct intellectual capital method, Skandiya AFS business navigator, and financial method of intangible assets measuring. Another method that has been used by many researchers for configuring the impact of IC efficiency on company performance is VAICTM as suggested by Pulic in 1998. Similar methodology is used in this empirical research. Its detail is as follow:

3.3.1.4. Current methodology- VAICTM Method

In this study, VAICTM model developed by Ante Pulic in 1998 has been used to determine independent variables. As mentioned above, many other methods have long been used by researchers to compute IC of a business, but according to expert's opinion, other existing measures do not provide sufficient results for IC performance (Pulic, 2000). Drucker (1999) stated that in 20th century, the most significant contribution was 50 fold increases in productivity of manual production of workers, while 21st century has emerged with the concept of knowledge based economy (Pulic, 2000). He also mentioned that VAICTM was introduced to contend all aforementioned issues (Pulic, 2000). VAICTM approach provides

newer way of computing value creation efficiency in a company (Pulic, 2000). Pulic (2000) described that it uses data from financial statements of companies and calculates value addition efficiency of tangible and intangible assets of those companies. It assumes that a company is subject to continuous change, and its workers are key factor for success (Pulic, 2000).

According to Pulic (2000), VAICTM is an analytical tool which enables all stakeholders especially management and shareholders to keep an eye on VA efficiency of a firm's resources in total and in each of its components. The VAICTM approach has been used by many researchers in different countries (Chen et al., 2005; Najibullah, 2005; Makki and Lodhi, 2008; Muhammad, 2009; Ahangar, 2011; Murale et al., 2010; Bharathi, 2010). Its basic features i.e. simple calculation, easy availability of audited data, and easy comparisons at company and industry level, has increased its popularity among many researchers (Makki and Lodhi, 2008).

The VAICTM method measures VA efficiency mainly from two types of resources including IC (indicated by ICE) and physical or financial capital (indicated by CEE) (Pulic, 2000). ICE is further subdivided into Human Capital (indicated by HCE) and Structural Capital (indicated by SCE) (Pulic, 2000).

Here, value of VAICTM is equal to sum of the values of these three measures (VAICTM = HCE+SCE+CEE) or (CEE+ICE), and decision rule is; higher the value of VAICTM, higher will be the value creation of potential business. (Pulic, 2000).

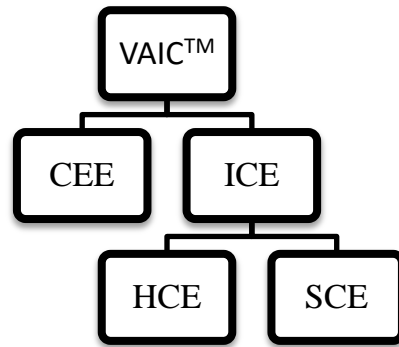


Figure 3¹: Graphical representation of VAIC™

According to Makki and Lodhi (2008), VAIC™ does not calculate money value of IC rather it adds three efficiency factors of IC which in return indicates VA to a firm from all its resources. So, to calculate IC efficiency, a subordinate concept of VAIC™ is used that is ICE = HCE + SCE. But in this research, main model of VAIC™ provided by Pulic is used for analysis.

The value of VAIC™ can be calculated by following the five steps, discussed as under:

1) VA (Value Added)

It is the value added in current year and can be calculated from following methods:

$$\mathbf{VA = Out - In}$$

Where stands for total sales and cost of material, and IN OUT represents, components and services.

Alternatively, it can be calculated from the following equation:

$$\mathbf{VA = OP \text{ (Operating Profit)} + EC \text{ (Employee Cost)} + D \text{ (Depreciation)} + A \text{ (Amortisation)}}$$

2) Human Capital Efficiency (HCE)

¹ **Source:** This model is constructed by researcher on the basis of information of VAIC™ provided by Pulic (2000)

It measures the efficiency generated from human capital of a company and is calculated as follows:

$$\mathbf{HCE = VA / HC}$$

Where HC = total salaries and wages (direct labour + indirect labour + administration, marketing and selling salaries)

3) Structural Capital Efficiency (SCE)

It measures the efficiency generated from structural capital of company, and is calculated as follows:

$$\mathbf{SCE = SC / VA}$$

Where SC = VA - HC

4) Capital Employed Efficiency (CEE)

It measures the efficiency generated from total capital employed in a company and can be calculated by using equation, stated below:

$$\mathbf{CEE = VA / CE}$$

Where CE = book value of the net assets of a company

5) Value added intellectual capital (VAICTM)

It measures total efficiency generated from all three types of resources of company (HC, SC and CE) and is calculated as follows:

$$\mathbf{VAIC^{TM} = CEE + ICE \quad OR \quad VAIC^{TM} = CEE + HCE + SCE}$$

3.3.2. Measure of financial performance (Dependent Variable)

The dependent variable of the study is financial performance of the company. In order to measure the financial performance of the companies, two proxy variables have been used in this study: ROA and ROCA. Previous studies e.g. Ahanger (2011) and Najibullah (2005) have used ROA as the measure of financial performance. Formulas for ROA and ROCE are as follows:

$$\text{ROA} = \left[\frac{\text{Profit before taxation}}{\text{Total assets}} \right] \times 100$$

$$\text{ROCE} = \left[\frac{\text{Profit before taxation}}{\text{Capital employed}^2} \right] \times 100$$

3.4. Econometric estimation model

All the measured variables used in this study including IC, HCE, SCE, CEE, and financial performance have been discussed above in detail. It is expected in this study that all the variables are integrated at level form that is I (0). A time series data is considered to be stationary if zero order of integration exists in the data which means that the time series is free from unit root. To confirm this expectation, we employed different panel unit root tests including Levin, Lin and Chu (2002), Breitung (2002), Im, Pesaran and Shin (2003), and Fishertype tests using ADF and PP tests (Maddala and Wu, 1999; Choi, 2001) in our study.

According to literature, there are numerous unit root test available for confirming the stationary of data. These tests were based on univariate and covariate tests. Univariate test time series data did not include relevant information that was covered in other time series. On the other side, covariate test is used with considerable improvement in order to exploit time series information easily which was originated by Hansen (1995). This covariate model was

² Where capital employed = Net total assets = Total assets – Current liabilities

also used by Elliott and Jansson in 2003. This covariate test has minor errors as compared to error variance of univariate regression. Both types of test resulted in lesser confidence intervals and more influential tests statistics as compared to traditional unit root tests. However, sometimes, there are chances to have potential correlation among variables that may cause to decrease the power of univariate unit root test. Hence, in this situation, panel unit root test (covariate) is the appropriate method which includes other time series information from a panel in order to increase the power of panel unit root test. Therefore, the study uses panel unit root tests which include Levin, Lin and Chu (2002), Breitung (2002), Im, Pesaran and Shin (2003), and Fishertype tests employing ADF and PP tests (Maddala and Wu, 1999; Choi, 2001). These panel unit root tests are also termed as multiple-series unit roots which are applied on panel data. These tests are used to develop multiple series from a single series of cross sectional data. The aforementioned panel unit root tests are different with respect to their assumption which the study is going to address below in detail:

Levin and Lin developed a panel unit root test that was initially discussed in their working paper of 1992 and 1993. However, their work was actually published in 2002 in which Chu was a co-author of this paper. They developed following equation for the analysis of their study:

$$\Delta Y_{i,t} = \alpha_i + \delta_i t + \theta_t + P_i Y_{i,t-1} + \varphi_{i,t}$$

$$i = 1, 2, \dots, N, \quad t = 1, 2, \dots, T.$$

The above mentioned equation shows two way fixed effects (α and θ) and unit-specific time trends. All the units of the panel are considered to be heterogeneous because of the specific fixed effects of those units, and resultantly the coefficients of lagged dependent variables are restricted to become homogeneous. The test involves null and alternative hypothesis where null hypothesis can be written as that there is a unit root in the data ($H_0: P_i = 0$). While alternative hypothesis can be developed as that there is no unit root in the data ($H_A: P_i = P$

<0). Levin, Lin and Chu assume that the individual procedures are cross-sectional independent. They considered that null hypothesis of pooled OLS estimation had a standard normal distribution.

In 1997, Im, Pesaran and Shin presented their test which is basically the extension of the framework of Levin, Lin and Chu. They also worked on the heterogeneity of P_i value in alternative hypothesis. They stated the following estimation equation:

$$\Delta Y_{i,t} = \alpha_i + \delta_i t + \theta_t + P_i Y_{i,t-1} + \varphi_{i,t}$$

$$i = 1, 2, \dots, N, t = 1, 2, \dots, T.$$

They listed null hypothesis in the following way $H_0: P_i = 0$ and for alternative hypothesis they used $H_A: P_i < 0, i = 1, 2, \dots, NI; p_i = 0, i = NI + 1, NI + 2, \dots, N$. Therefore, they assumed that all series are non-stationary in null hypothesis and the fraction of all series is supposed to be stationary in alternative hypothesis. The alternative hypothesis assumed by Im, Pesaran and Shin have a point of contradiction from Levin, Lin, Chu test where they supposed that all the series are stationary in alternative hypothesis. Their null hypothesis was based on group mean Lagrange multiplier statistics. However, they assumed that they have better fixed sample performance as compared to Levin, Lin and Chu test.

Breitung (2000) provides another method of measuring panel unit root through t-ratio statistics. The first step of his test is same as LLC test, but he did not include the deterministic terms in the data. He claimed that his test has more powerful properties within a local range unity.

Fisher augmented Dickey Fuller and Phillips Perron tests presented the similar framework for unit root statistics. ADF assumes null hypothesis that data needs to be differenced to make it stationary and for alternative, he inscribed that data did not have unit root and do not need to be differenced. This test is also used in unit root test in univariate time series data set.

However, this test did not have significant power to reject null of non-stationary data series and it also restricts the distribution which is not explained properly. Phillips-Perron has supposed same null and alternative hypothesis, but they have slight difference on the treatment of serial correlation in regression test. PP test is used for non-parametric corrections based on estimates of the long run variance of Δy_t .

The study proposes that the null hypothesis assumes unit root and for the confirmation of this hypothesis, above discussed panel unit root tests have been applied for the confirmation of the data stationarity. This shows that the data will be stationary if null hypothesis is rejected. The purpose of the study is to examine the effect of IC on financial performance of the company. We take two proxy variables i.e. ROA and ROCE in order to measure the financial performance of the company. Our study addresses two types of models: one is based on simple estimation model which examines the effect of VAICTM on ROA and ROCE, and second deals with multiple estimation models which determine the combine effect of HCE, SCE and CEE on ROA and ROCE respectively.

In order to accomplish the aforementioned purpose, two analysis models are employed: a pooled cross-section time series model and a fixed effect panel data model. Pooled cross-section model neglects the time dimension and space effects. The pooled cross-section equation is presented in the following way:

$$ROA_{it} = \beta_0 + \beta_1 (VAIC_{it}) + U_{it} \quad 4.1$$

Where: $i = 1 \dots N$ and $t = 1 \dots T$

Equation 4.1 shows the pooled regression model where ROA_{it} the dependent variable and $VAIC_{it}$ is the independent variable and U_{it} is the error term. β_0 represents the constant and β_1 is the slope coefficient of VAIC.

In order to test the effect of VAICTM on ROCE, another proxy of financial performance takes the following form:

$$ROCE_{it} = \beta_0 + \beta_1 (VAIC_{it}) + U_{it} \quad 4.2$$

Where: $i = 1 \dots N$ and $t = 1 \dots T$

Where ROCE is basically ROCE for the company i in time period t , and it represents the dependent variable in 4.2. To examine the effect of each component of VAICTM, above given model has been employed with slight modifications.

$$ROA_{it} = \beta_0 + \beta_1 (HCE_{it}) + \beta_2 (SCE_{it}) + \beta_3 (CEE_{it}) + U_{it} \quad 4.3$$

Where: $i = 1 \dots N$ and $t = 1 \dots T$

$$ROCE_{it} = \beta_0 + \beta_1 (HCE_{it}) + \beta_2 (SCE_{it}) + \beta_3 (CEE_{it}) + U_{it} \quad 4.4$$

Where: $i = 1 \dots N$ and $t = 1 \dots T$

Both Models (4.3 and 4.4) represent the pooled regression models where there are three independent variables: HCE, SCE and CEE respectively.

Along with pooled time series regression model, panel model is studied with fixed effect. As it is discussed earlier that pooled data ignored the space and time dimensions, fixed effect panel model has been used to estimate the variability of constant across individuals. The panel data has numerous advantages over traditional time series data sets (Hsiao, 1986). Panel data allows the researcher to deal with large number of data sets through which the issue of co-linearity among explanatory variables can be controlled and degree of freedom can be enhanced. Hence, this leads towards the improved efficiency of econometric estimations. Furthermore, this is easy to answer long standing questions through panel data which is not possible in cross-sectional or time series data sets because this reduces the

problem of co-linearity by utilising inter-individual differences in x values. Our fixed effect panel data models are given below:

$$ROA_{it} = \beta_{0i} + \beta_1 (VAIC_{it}) + U_{it} \quad 4.5$$

$$ROCE_{it} = \beta_{0i} + \beta_1 (VAIC_{it}) + U_{it} \quad 4.6$$

$$ROA_{it} = \beta_{0i} + \beta_1 (HCE_{it}) + \beta_2 (SCE_{it}) + \beta_3 (CEE_{it}) + U_{it} \quad 4.7$$

$$ROCE_{it} = \beta_{0i} + \beta_1 (HCE_{it}) + \beta_2 (SCE_{it}) + \beta_3 (CEE_{it}) + U_{it} \quad 4.8$$

Where: $i = 1 \dots N$ and $t = 1 \dots T$

In the above mentioned models, β_{0i} is the constant term which shows the fixed effects for the company i.

CHAPTER FOUR: ANALYSIS AND RESULTS

The purpose of this chapter is to analyse the data with the help of some econometric techniques. The results of the study are divided into three sections: the first section is about the discussion on the companies profile and unit root tests in order to confirm whether the data used in this study is stationary. Secondly, panel time series and pooled time series data analysis have been conducted on full sample of 30 companies. Thirdly, 30 companies were divided into two sub-samples on the basis of the variation in fixed effects (positive and negative) in order to understand the completeness of relationship among variables.

4.1. Section 1

4.1.1. Company's information

The data was collected from the content analysis (annual reports) of 30 textiles companies in Pakistan. The annual reports were available at the Lahore Stock Exchange (LSE) of Pakistan. All the companies were emphasising the capital employed as they kept increasing their total assets on the basis of increasing their fixed assets every year. The financial details of selected textile companies are given in Appendix A.

4.1.2. Panel unit root test

Table 2 shows the results of panel unit root tests for all the variables. Panel unit root tests were applied in order to examine the integration properties of the variables HCE, SCE, CEE, ROA, ROCE and VAICTM. Different panel unit root tests were applied for the purpose of the confirmation of the data stationary. Levin, Lin and Chu (2002), Breitung (2000), Im, Pesaran and Shin (2003), and fisher type ADF, PP tests assume null hypothesis; the panel contains the unit root. It is generally stated that if there is no unit root in the data then the data is stationary and if the unit root exists in the data it shows that the data is non-stationary. It can be observed from the table that all tests show the rejection of null hypothesis for each of the four

variables: HCE, SCE, ROA and ROCE. However, Levin, Lin and Chu, Breitung, and fisher type ADF, PP test exhibited the rejection of H_0 for CEE but test of Im, Pesaran and Shin shows the acceptance of unit root in the data. Similarly, all tests except Breitung show existence of stationary in the data for VAICTM. Hence, this can be concluded from the table that all the variables are stationary because most of the panel unit root tests confirm the rejection of null hypothesis (there is a unit root in the data). Hence, this study considered that all the variables are stationary at level form i.e I (0). So, regression test can be applied directly on the stated variable.

Table 2: Unit root tests for full sample

Variables	Test Type	Statistics	Cross Section	Observation
HCE	Levin, Lin & Chu t*	-20.3896***	30	265
	Breitung t-stat	-1.41995*	30	235
	Im, Pesaran and Shin W-stat	-4.42386***	30	265
	ADF - Fisher Chi-square	96.8902**	30	265
	PP - Fisher Chi-square	97.2651**	30	270
SCE	Levin, Lin & Chu t*	-50.1544***	30	261
	Breitung t-stat	-3.06521**	30	231
	Im, Pesaran and Shin W-stat	-13.0566***	30	261
	ADF - Fisher Chi-square	170.383***	30	261
	PP - Fisher Chi-square	137.380***	30	270
CCE	Levin, Lin & Chu t*	-2.8121**	30	262
	Breitung t-stat	-1.36481*	30	232
	Im, Pesaran and Shin W-stat	-0.14931	30	262
	ADF - Fisher Chi-square	90.3577**	30	262
	PP - Fisher Chi-square	84.7246**	30	270
ROA	Levin, Lin & Chu t*	-5.06564***	30	262
	Breitung t-stat	-1.36557*	30	232
	Im, Pesaran and Shin W-stat	-2.85224**	30	262
	ADF - Fisher Chi-square	111.629**	30	262
	PP - Fisher Chi-square	136.586***	30	270
	Hadri Z-stat	5.23538***	30	300
ROCE	Levin, Lin & Chu t*	-4.47314***	30	262
	Breitung t-stat	-1.55217*	30	232
	Im, Pesaran and Shin W-stat	-2.13346**	30	262
	ADF - Fisher Chi-square	112.168**	30	262
	PP - Fisher Chi-square	120.091***	30	270
VAIC TM	Levin, Lin & Chu t*	-19.3628***	30	266

Breitung t-stat	-1.19625	30	236
Im, Pesaran and Shin W-stat	-4.92848***	30	266
ADF - Fisher Chi-square	104.487**	30	266
PP - Fisher Chi-square	106.745**	30	270

***, **, and * shows the rejection on null hypothesis of non-stationarity at 1%, 5%, and 10% respectively. However, only in Hadri test ***, **, and * shows the rejection of stationarity at 1%, 5%, and 10%

4.2. Section 2 (full-sample)

The primary purpose of the study is to examine the effect of IC on financial performance of the company. The study is based on two models: the first model has taken VAIC^{TM3} as independent variable and ROA and ROCE taken as dependent variables⁴. In the second model, HCE, SCE and CEE were treated as independent variables which are basically the components of VAICTM and ROA and ROCE were taken as dependent variables. Moreover, the study conducted regression analysis first with pooled data time series (without fixed effects) and second with panel data time series (with fixed effects) respectively.

4.2.1. Pooled Regression Model (without fixed effects)

Tables 3 and 4 represent the results of simple and multiple regressions of pooled data time series for Model 1 and 2 respectively. Model 1 reported the simple regression analysis results of VAICTM on ROA and ROCE correspondingly (see Table 3). Results show that VAICTM has significant positive effect on ROA ($\beta = 0.01$, $P < 0.001$) but exhibits insignificant effect on ROCE ($\beta = 0.005$, $P > 0.10$). This means that VAICTM affects the financial performance of the company in terms of ROA but at the same time, it does not show any significant effect on financial performance in terms of ROCE. In first pooled regression model where ROA has been taken as dependent variable the value of Adj. R² is 0.24 which illustrates that 24 percent variations of ROA are explained by VAICTM. The F-Statistics value (95.93) is significant at less than 1% which exhibits that the model is good fit. As discussed earlier in this dissertation that most of the previous studies took ROA as measure of financial performance (FP) of the

³ This VAIC model was presented by Pulic in 1998 and it is used as a measure for IC.

⁴ Both ROA and ROCE were taken as proxy variables for financial performance.

company and found significant effect of VAICTM on financial performance in terms of ROA (Shiu, 2006a,b; Chen, Cheng and Hwang, 2005; Vali, 2007; Clarke, Seng and Whiting, 2010). We could not find any study that would have examined VAICTM and FP relationship by using ROCE as proxy measure. Balabanis et al. (1998) discussed ROCE as an efficient ratio for assets utilisation. He further claims that ROCE ratio is free from biasness that may be obtained from difference in capital structure of the companies. Similarly, Enyi (2005) reports ROCE as a confusing term for measuring firm performance. One of the possible reasons of insignificant effect of VAICTM on ROCE may be due to its different nature of operations in the company because function of ROCE is more inclined towards resource allocation rather than focusing on intangible assets of the company. The study found that VAICTM did not show any significant association with ROCE. Hence, the results confirm our stated hypothesis of Model 1, H₁ (There is a positive direct effect of VA efficiency of IC (VAICTM) on ROA but this study could not support the other hypotheses, H₂ (There is a positive direct effect of VAICTM on ROCE).

Table 3: Model 1: Pooled regression for full sample

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	-0.12	-2.66*	0.037	1.62
VAICTM	0.01	9.79***	0.0005	0.99
Adjusted R Square	0.24		-0.00008	
F – Value	95.94***		0.98	
Durbin-Watson stat	1.47		1.31	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

The Second Model in Table 4 represents the results of multiple regressions where the effects of HCE, SCE and CEE on ROA and ROCE have been determined respectively. The first

linear multiple regression exhibits that only coefficient of HCE is positive significant effect on ROA ($\beta = 0.01$, $P < 0.001$). In case of this model, the value of adjusted R^2 (0.24) shows that 24% of the variations of ROA are explained by the independent variables. The reported value of F-statistics (32.63) is significant at less than 1%, which exhibits that the model is good fit. These results are consistent with the previous study of Ahangar (2011) in which he also found that HCE showed significant positive effect on firm's performance with respect to ROA and other components of VAICTM including SCE as CEE did not show any significant effect on ROA. Similarly, Clarke, Seng and Whiting (2010) found significant effect of HCE on ROA. However, in their study, SCE and CEE did not show significant effect on ROA. In the second linear multiple regression, it has been found that none of the coefficients representing independent variables (HCE, SCE and CEE) has significant effect on dependent variable (ROCE).

Table 4: Model 2: Pooled regression for full sample

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficient	t-Ratio	Coefficient	t-Ratio
Constant	-0.06	-0.90	0.06	2.26**
HCE	0.01	9.88***	0.0003	0.71
SCE	-0.06	-0.81	-0.02	-0.74
CEE	-0.005	-0.36	0.09	17.43
Adjusted R Square	0.24		0.50	
F – Value	32.63***		101.53***	
Durbin-Watson stat	1.47		1.52	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

4.2.2. Panel data model (with fixed effects)

The results of fixed effects panel data regression models have been reported in Tables 5 and 6. Table 5 shows the result of fixed effects panel data regression models where VAICTM shows positive significant effect on ROA ($\beta = 0.01$, $P < 0.001$) whereas it exhibits

insignificant effect on ROCE. These results are consistent with previous results of pooled regression analysis given in Table 2. It has been found that empirically there is no difference in the results of panel and pool data regression analyses in this case. The fixed effects have also been reported below Table 5 where almost 14 companies out of 30 have negative fixed effects in case of first model where ROA has been used as dependent variable whereas, 18 companies out of 30 have negative fixed effects in case of second model where ROCE has been used as dependent variable. The value of adjusted R² (0.24) shows that 24% variation in ROA is explained by VAICTM. Similarly, the value of F-Statistics (4.11) is significant at less than 1 percent.

Table 5: Model 3: Panel regression for full sample

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	-0.14	-3.01***	0.04	1.78*
VAIC TM	0.01	9.22***	0.0003	0.58
Adjusted R Square	0.24		0.08	
F – Value	4.13***		1.85**	
Durbin-Watson stat	1.66		1.57	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

Fixed Effects: VAICTM on ROA

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
-0.08	-0.11	-0.04	-0.22	-0.43	-0.04	0.08	-0.32	-0.06	-0.03	0.02	-0.44	0.03	0.02	0.02
C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30
-0.04	0.03	0.03	0.26	0.59	0.04	-0.04	0.05	0.27	0.02	-0.11	-0.16	0.54	0.07	0.06

Fixed Effects: VAICTM on ROCE

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
0.05	0.01	-0.01	-0.05	0.08	0.50	0.06	0.06	-0.10	-0.07	0.28	-0.01	-0.11	-0.40	-0.10
C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30
0.03	0.01	-0.08	0.06	-0.06	-0.08	-0.02	-0.06	-0.07	-0.05	0.10	-0.06	0.22	-0.07	-0.06

In Table 6, Model 4 of multiple regression reported that the effect of HCE on ROA ($\beta = 0.01$, $P < 0.001$) is positive and significant. The value of coefficient shows that a unit increase in HCE will raise ROA by 0.01 units. However, other variables included in this model don't show any significant effect on ROA. These results are also similar to the results reported in

Model 2 of Table 4 which contains results of pool regression model. The value of adj. R^2 (0.24) in this case is exactly same as it was in pooled regression model. This value exhibits that 24% variations of dependent variable (ROA) are explained by independent variables. The F-statistics value (3.92) is significant at less than 1 percent. In case of second panel data regression model of Table 6, ROCE has been used as dependent variable and the three components of VAICTM have been used as independent variables. In this situation, the effect of CEE on ROCE has been found to be positive and significant, whereas the effects of other two components of VAICTM on ROCE are not significant. It is interesting to discuss that pooled regression model did not produce significant effect of any of the three components of VAICTM. The value of Adjusted R^2 is 0.56 that shows 56% of the variance of ROCE is explained by independent variables. The value of F-Statistic (13.225) in the case of this model is significant at less than 1 percent. The fixed effects of Model 4 have been given below Table 6. These fixed effects show that 15 companies out of 30 have negative constant value in first model where ROA has been entered into model as dependent variable and 17 companies out of 30 have negative value in case of second model where ROCE has been used as dependent variable.

Table 6: Model 4: Panel regression for full sample

Independent Variables	Dependent Variable		Independent Variable	
	ROA		ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	-0.09	-1.19	0.07	2.88**
HCE	0.01	9.28***	0.0001	0.36
SCE	-0.04	-0.67	-0.03	-1.34
CEE	-0.006	-0.40	0.09	17.42***
Adjusted R Square	0.24		0.57	
F – Value	3.93***		13.23***	
Durbin-Watson stat	1.654097		1.923666	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

Fixed Effects: HCE, SCE and CEE on ROA														
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
-0.07	-0.10	-0.04	-0.22	-0.42	-0.03	0.09	-0.31	-0.05	-0.04	0.03	-0.43	0.02	-0.07	0.03
C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30
-0.04	0.04	0.01	0.26	0.60	0.05	-0.04	0.06	0.27	0.02	-0.10	-0.15	0.55	0.04	0.07
Fixed Effects: HCE, SCE and CEE on ROCE														
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
0.03	0.01	-0.02	-0.05	0.08	0.43	0.03	0.03	-0.10	-0.10	0.23	-0.03	-0.13	0.12	-0.11
C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30
0.01	0.00	-0.11	0.06	-0.06	-0.11	-0.04	-0.07	-0.06	-0.06	0.09	-0.06	0.16	-0.10	-0.07

4.3. Section 3 (Sub-sample)

Previous section of this chapter determined the effects of VAICTM and its three components: HCE, SCE and CEE, separately on ROA and ROCE using the data of all the thirty firms. In this section, the full sample containing the data on thirty companies has been divided into two sub-samples. This division is based on the direction of fixed effects of the model where HCE, SCE and CCE have been used as independent variables and ROCE as dependent variable. The first sub-sample includes 17 companies which have negative fixed effects, whereas the other sub-sample contains the data of 13 companies which have positive fixed effects in the case of said model. Therefore, in order to have a deep understanding of this relationship it seems appropriate to determine the effect of VAICTM and each component of VAICTM (HCE, SCE and CEE) on ROA and ROCE. Panel and pool data time series analysis has been conducted in order to examine the relationship of variables. The purpose is to examine whether there exists any change in the results in case of any sub-sample or the results remain robust to these changes.

4.3.1. Pooled data time series model (Without fixed effects)

The pooled regression analysis results for Models 5 and 6 are presented in Tables 7 (sub-sample-A) and 8 (sub-sample-B) respectively. The results exhibit that VAICTM has significant positive effect on ROA for Model 5, whereas it shows insignificant effect on

ROCE. It is discussed above that Sample-A is basically representing 17 companies which have negative value of fixed effect. VAICTM explains the variations of ROA by 39 percent as exhibited by the value of Adj. R². The F-statistics value (107.28) is significant at less than 1 percent.

Table 7: Model 5: Pooled regression for sub-sample (A)

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	-0.21	-2.98**	-0.02	-2.05**
VAIC TM	0.02	10.36***	0.00007	0.35
Adjusted R Square	0.39		-0.005	
F – Value	107.28***		0.12	
Durbin-Watson stat	1.61		1.19	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

Table 8 contains the results of pooled regression analysis where the effect of VAICTM on ROA and ROCE has been determined in case of second sub-sample which consists of 13 companies. The results of Model 5 were consistent with the analysis of Model 1 for full sample of 30 companies with respect to significant effect of VAICTM on ROA. However, one variation that can be observed from the results is that the value of adj. R² for Model 5 (sub-sample A) and Model 1 (full sample) remained 0.39 and 0.24 respectively in case of ROA used as dependent variable. In case of second sub-sample, VAICTM does not significantly affect any of the two dependent variables i.e. ROA and ROCE. This situation gives the important message that VAICTM is not a significant predictor of financial performance of every kind of companies.

Table 8: Model 6: Pooled regression for sub-sample (B)

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	0.07	3.52**	0.11	2.02**
VAIC TM	-0.0002	-0.36	0.001	0.92
Adjusted R Square	-0.007		-0.001	
F – Value	0.13		0.84	
Durbin-Watson stat	2.33		1.37	
*** shows significant level at 1% ** shows significant level at 5% * shows significant level at 10%				

The results for multiple regression analysis of Models 7 and 8 are reported in Tables 9 and 10 for sub-sample A and sub-sample B respectively. Results given in Table 9 in case of sub-sample A represent that two components of VAICTM; HCE and CEE have significant effect on ROA. However, HCE shows positive effect and CEE shows negative effect on the performance of firm with respect to ROA. However, the effect of SCE on ROA has not been found to be significant.

Table 9: Model 7: Pooled regression for sub-sample (A)

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	-0.02	-0.27	-0.02	-1.85*
HCE	0.02	14.73***	-0.0002	-1.17
SCE	-0.05	-0.64	-0.008	-0.72
CEE	-1.83	-8.76***	0.15	4.85***
Adjusted R Square	0.58		0.11	
F – Value	78.42***		8.06**	
Durbin-Watson stat	1.81		1.34	
*** shows significant level at 1% ** shows significant level at 5% * shows significant level at 10%				

These results are consistent with the study of Clarke, Seng and Whiting (2010) with respect to significance level of HCE and CEE but there is a little contradiction with their study as they found positive effect of CEE and this study finds negative effect of CEE on ROA. This

variation may be due to the economic differences of Australia and Pakistan. Here in textile sector, the reason of negative effect of CEE on ROA may be the inappropriate use of resources because companies are trying to invest their capital in banks for getting good rate of return on it as compared to wasting their money in purchasing machines. The major reason of not investing in purchasing machinery may be the energy crisis that is a major problem for companies operating in Pakistan.

Second model of Table 9 represents that the effect of CEE on ROCE is positive and significant but HCE and SCE don't affect ROCE significantly. The one possible reason for this may be stakeholders' interests who invest in the companies. The stakeholders only invest their money in an organisation when there exists capital efficiency within that organisation. The value of adj. R^2 is 0.57 and 0.11 for ROA and ROCE respectively. The value of F-statistics for ROA (78.41) and ROCE (8.05) is significant at less than 1 percent and 5 percent respectively.

Table 10 represents the results of pooled regression analysis in case of sub-sample (B). The results exhibit that SCE has significant negative effect on ROA and others components of VAICTM don't show any effect on it. However, in case of second model of Table 10 only CEE exhibited positive significant effect on ROCE but others components of VAICTM did not show significant effect on it. These results are very different from those that had been found in full sample analysis. The value of adj. R^2 is 0.03 and 0.57 for ROA and ROCE respectively. The value of F-statistics for ROA (2.17) and ROCE (57.52) is significant at less than 10 percent and 1 percent respectively.

Table 10: Model 8: Pooled regression for sub-sample (B)

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	0.17	3.57**	0.25	3.14**
HCE	-0.00006	-0.13	0.0008	0.94
SCE	-0.11	-2.28**	-0.13	-1.64
CEE	-0.005	-1.19	0.09	12.99***
Adjusted R Square	0.03		0.57	
F – Value	2.18*		57.53***	
Durbin-Watson stat	2.40		1.78	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

4.3.2. Panel data model (with fixed effects)

In order to examine whether there is any effect of VAICTM or components of VAICTM on ROCE and ROA, panel data model with fixed effects is applied on the data in case of two sub-samples. Tables 11 and 12 report the results of fixed effects panel regression models for sub-sample of A and B respectively. These results show that the effect of VAICTM on ROA is positive and significant at less than 1 percent, whereas, VAICTM does not affect ROCE significantly. Similarly, results given in Table 12 reveal that the effect of VAICTM on ROA and ROCE is not significant in case of second sub-sample. These results resemble to those found in pooled regression model. VAICTM shows significant effect on firm's ROA and it does not affect the return on capital employed of the firm. This means that the higher the level of IC is, the higher the value of financial performance of the company in terms of ROA is. The value of adj R² shows that 37% variation in ROA is due to changes in VAICTM. The value of F-statistics (6.86) is significant at less than 1 percent. Fixed effects are also presented along with Tables 11 and 12.

Table 11: Model 9: Panel regression for sub-sample (A)

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	-0.22	-3.15**	-0.01	-1.49
VAIC TM	0.02	9.47***	-0.0002	-0.89
Adjusted R Square	0.37		-0.005	
F – Value	6.86***		0.95	
Durbin-Watson stat	1.76		1.33	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

Fixed Effects: VAIC TM on ROA																
C3	C4	C9	C10	C12	C13	C15	C18	C20	C21	C22	C23	C24	C25	C27	C29	C30
-0.06	-0.32	-0.05	-0.02	-0.63	0.08	0.06	0.06	0.23	0.09	-0.05	0.09	0.43	0.06	-0.22	0.13	0.12
Fixed Effects: VAIC TM on ROCE																
C3	C4	C9	C10	C12	C13	C15	C18	C20	C21	C22	C23	C24	C25	C27	C29	C30
0.06	0.02	-0.04	-0.01	0.07	-0.05	-0.04	-0.02	0.04	-0.03	0.04	0.00	-0.03	0.01	0.01	-0.02	-0.01

Table 12: Model 10: Panel regression for sub-sample (B)

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	0.07	3.21**	0.10	1.86*
VAIC TM	-0.0001	-0.24	0.001	0.95
Adjusted R Square	-0.06		0.05	
F – Value	0.40		1.49	
	1.76		2.44	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

Fixed Effects: VAIC TM on ROA												
C1	C2	C5	C6	C7	C8	C11	C14	C16	C17	C19	C26	C28
-0.06	-0.07	0.04	0.05	-0.01	-0.02	0.06	-0.06	-0.03	0.02	0.02	0.01	0.04
Fixed Effects: VAIC TM on ROCE												
C1	C2	C5	C6	C7	C8	C11	C14	C16	C17	C19	C26	C28
-0.04	-0.08	-0.04	0.41	-0.01	-0.05	0.19	-0.47	-0.05	-0.07	0.01	0.01	0.19

Tables 13 and 14 represent the results of fixed effects panel regression models where three components of VAICTM have been used as independent variables in case of sub-sample A and sub-sample B respectively. Table 13 shows that the effects of HCE and CEE on ROA are significant at less than 1 percent. However, the effect of HCE on ROA is positive and the effect of CEE on ROA is negative in case of sub-sample A. These findings are similar to previous results of Model 7 in Table 9 where HCE reflected positive and CEE negative effect on ROA. Some surprising results have been found in case of model 2 of Table 13 where ROCE has been used as a dependent variable. In this case, HCE and CEE reported significant effects on ROCE but HCE showed negative effect on ROCE and CEE positive effect on it. The reason for negative effect of HCE on ROCE may be due to the functions associated with ROCE. As the main function of ROCE is to deal only with the investor not with the employees directly that's why HCE shows negative association with ROCE. The study is also consistent with the previous studies conducted in South Africa (Firer and Williams, 2003) and Taiwan (Shiu, 2006b) which found negative significant effect of HCE on firm's performance. The value of adj. R² is 0.58 and 0.12 for ROA and ROCE respectively. The value of F-statistics for ROA (13.43) and ROCE (2.28) is significant at less than 1 percent and 5 percent correspondingly.

Table 13: Model 11: Panel regression for sub-sample (A)

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	-0.04	-0.48	-0.02	-1.28
HCE	0.02	13.77***	-0.0005	-2.31**
SCE	-0.03	-0.40	-0.01	-1.04
CEE	-1.97	-8.79***	0.16	4.90***
Adjusted R Square	0.58		0.13	
F – Value	13.43***		2.28**	
Durbin-Watson stat	2.04		1.53	
*** shows significant level at 1%				
** shows significant level at 5%				
* shows significant level at 10%				

Fixed Effects: HCE, SCE and CEE on ROA																
C3	C4	C9	C10	C12	C13	C15	C18	C20	C21	C22	C23	C24	C25	C27	C29	C30
0.15	-0.49	-0.20	0.19	-0.48	0.02	0.21	0.18	0.05	0.31	0.11	0.07	-0.08	-0.01	-0.22	0.09	0.09
Fixed Effects: HCE, SCE and CEE on ROCE																
C3	C4	C9	C10	C12	C13	C15	C18	C20	C21	C22	C23	C24	C25	C27	C29	C30
0.04	0.04	-0.03	-0.03	0.06	-0.05	-0.05	-0.03	0.05	-0.04	0.03	0.00	0.01	0.02	0.01	-0.02	0.00

Table 14 reported the results of fixed effects panel regression analysis in case of sub-sample B. The results given in the said table reveal that the effects of SCE and CEE on ROA are significant yet negative. Further, HCE does not have any significant effect on ROA. In the second fixed effects panel regression model of Table 14, ROCE has been used as dependent variable. The results show that CEE has positive significant effect on ROCE. In this case, other components don't affect ROCE significantly. These findings are not different than those which were found while using pooled regression analysis. The value of adj. R² (0.57) represents that 57 percent variation of ROCE are explained by the three components of VAICTM. The value of F-statistic (12.80) is significant at less than 1 percent. However, the value of F-statistic in case of first model of Table 14 where ROA is dependent variable and is not significant. The fixed effects have also been reported below Tables 13 and 14 respectively.

Table 14: Model 12: Panel regression for sub-sample (B)

Independent Variables	Dependent Variable ROA		Dependent Variable ROCE	
	Coefficients	t-statistic	Coefficients	t-statistic
Constant	0.17	3.40**	0.23	2.89**
HCE	-0.00009	-0.15	0.001	1.13
SCE	-0.11	-2.21**	-0.12	-1.51
CEE	-0.008	-1.70*	0.09	12.10***
Adjusted R Square	-0.01		0.58	
F – Value	0.86		12.80***	
Durbin-Watson stat	2.52		2.05	
*** shows significant level at 1% ** shows significant level at 5% * shows significant level at 10%				

Fixed Effects: HCE, SCE and CEE on ROA												
C1	C2	C5	C6	C7	C8	C11	C14	C16	C17	C19	C26	C28
-0.05	-0.06	0.05	0.06	-0.01	-0.01	0.06	-0.10	-0.03	0.02	0.02	0.02	0.04
Fixed Effects: HCE, SCE and CEE on ROCE												
C1	C2	C5	C6	C7	C8	C11	C14	C16	C17	C19	C26	C28
-0.06	-0.09	-0.05	0.32	-0.06	-0.09	0.13	0.02	-0.09	-0.09	-0.02	-0.02	0.09

4.4. Chapter Summary

The chapter focused on presenting the results of the current study. The analysis started with the descriptive statistics that was used to give the description of the data included the central tendency and data dispersion. Further, econometric technique of unit root test has been applied for confirming the stationarity of data. Along with unit root test, panel time series and pooled time series regression analysis have been used.

Based on the results, it is concluded that VAIC has positive significant effect on ROA in both types of analyses (pool as well as panel time series analysis). However, the results did not show any significant effect of VAIC on ROCE in both cases (pool as well as panel time series analysis). The results also revealed that HCE has positive significant effect on ROA and CEE showed positive significant relationship with ROCE. But SCE did not present any significant effect on ROA and ROCE.

In order to understand the completeness of relationship, sensitivity analysis has also been conducted in which 30 companies have been divided into two groups on the basis of their combine fixed effects. The results did not exhibit any significant changes as compare to previous analysis of 30 companies. The VAIC remained significant with ROA in case of the companies having negative fixed effects but it did not show any significant effect on ROA and ROCE in case of the companies having positive fixed effects. HCE shows significant positive effect on ROA and negative effect on ROCE in case of sub-sample (a) and it did not remain significant in case of sub-sample (b). CEE has negative significant effect on ROA and

positive significant effect on ROCE in both sub-samples. Yet SCE still remained insignificant with ROA and ROCE in case of sensitivity analysis.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

This chapter summarises the findings and provides an overview of the complete research study in an organised way. This chapter provides the conclusion of the study and addresses the possible implications for practitioners and academicians. Moreover, the future research direction has also been discussed at the end of this chapter.

5.1. Summary of the study

In this business milieu, companies all around the globe are trying hard to achieve such competitive advantage through which they can utilise their resources efficiently and effectively (Luthy, 1998). However, initially, the main focus of the companies is to improve their tangible resources for enhancing their performance but the current progression in the field of science, technology and most importantly knowledge based economy is increasing the importance of intangible resources (i.e. knowledge, skills, expertise, practices and relationship with stakeholders).

These intangible resources are collectively described as IC for the organisation (Canibano et al., 2000; Ahangar, 2011; Stewart, 1997). This term was first time used by John Kenneth Galbraith in 1969. Numerous studies have been conducted on IC in order to understand this terminology and also to find out its effects on business performance (Drucker, 1993; Brooking, 1996; Edvinsson and Malone, 1997; Sveiby, 1997, 1998; Bontis, 2000; Meritum, 2002; Makki and Lodhi, 2008; Chen, 2008; Kong, 2008; Schiuma and Lerro, 2008; Ricceri, 2008; Vargas-Hernandez, 2010; Ahangar, 2011).

According to Makki and Lodhi (2008), a number of studies have examined the relationship of IC with process value addition for businesses in the context of developed countries but only few studies have discussed the role of IC in developing countries perspective. Therefore, the

purpose of current study is to examine the impact of IC on firm's financial performance in the Textile Sector of Pakistan. Furthermore, the study also examines the impact of IC components (HCE, SCE and CEE) on financial performance of the firm.

Most of the previous researches investigating the impact of IC on firm's financial performance have used net profits, ROA, employee's productivity, growth in sales, return on equity, etc., as proxy measures of financial performance. None of them used ROCE (a stakeholder view from perspective of management, current and prospective shareholders, current and prospective lenders) as dependent variable; ROCE is a comprehensive measure of effectiveness of management in generating profits with its total equity and borrowed investment. Hence, this study worked with two financial proxy measures i.e. ROA and ROCE.

Similarly, various methods and models were developed using different types of data to measure IC. The most practiced model is VAICTM which is developed by Pulic in 1998 and that is further modified by him in 2000. According to this model, IC was a construct of three components: human capital, structural capital and capital employed. This model was also used by Sveiby (1997) for measuring the contribution of VAICTM (human capital, structural capital and capital employed) in the financial performance of the company. The components of VAICTM model are measured by calculating their efficiency level (HCE, SCE and CEE).

The study aims at using quantitative research approach in order to confirm the relationship among stated variables. This study is based on secondary data which was obtained from financial statements of textile companies. The source of data is Lahore Stock Exchange company websites and other databases available on the internet. The data of 10 years of each company was used for analysis. Our study addresses two types of models: one is based on simple estimation model which examines the effect of VAICTM on ROA and ROCE and

second is based on multiple estimation models which determine the combine effect of HCE, SCE and CEE on ROA and ROCE respectively.

As this study focuses on secondary data, so, in order to check whether the data is stationary or not panel unit root test is used. This test has been applied with the purpose of examining the integration properties of the variables (HCE, SCE, CEE, ROA, ROCE and VAICTM). These variables are included in the table. Different panel unit root tests have been given in the table for the purpose of the confirmation of the data stationary. Levin, Lin and Chu (2002), Im, Pesaran and Shin (2003), and Fisher type ADF, PP tests assume null hypothesis that all the panels contain the unit root. While test of Hadri (2000) assumes null hypothesis i.e. all the panels have no unit root. It is concluded from the different test results that all the variables are stationary on I (0) zero order of integration because most of the panel unit root test confirms the rejection of null hypothesis (there is a unit root in the data).

The findings revealed that VAIC has positive significant effect on ROA (pooled as well as panel time series analysis) but it did not show any significant effect on ROCE (pooled as well as panel time series analysis). Further, the study also examined the effect of intellectual capital components; HCE, SCE, CEE on ROA and ROCE respectively. It has been found that only HCE showed positive significant effect on ROA and CEE showed positive significant effect on ROCE. However, SCE did not show any significant effect on ROA and ROCE. Moreover, in order to further understand the completeness of relationship sensitivity analysis was also conducted by dividing the thirty companies in to two groups on the basis of combined fixed effect (negative and positive) of HCE, SCE, and CEE on ROA and ROCE correspondingly. The results of the analysis did not exhibit any significant changes as compared to previous results of 30 companies. However, VAIC shows significant effect on ROA in case of the companies that are having negative fixed effect and its effect remains insignificant on ROA and ROCE in case of the companies having positive fixed effect. When

the individual effect of HCE, SCE, and CEE was investigated then it was found that HCE shows significant positive effect on ROA and significant negative effect on ROCE in case of sub-sample (a) and it remains insignificant in case of sub-sample (b). SCE showed negative significant effect on ROA in case of sub-sample (b), Wherever CEE exhibited negative significant effect on ROA and positive significant effect of ROCE in both sub-samples.

5.2. Discussion on findings

The results of the research study has been comprehensively analysed on the basis of pooled cross-section time series analysis and fixed effect panel data time series analysis. A number of hypotheses were developed in order to investigate the relationship between IC and components of IC with financial performance. The hypotheses are discussed below in detail.

The first hypothesis investigates the relationship between VA efficiency of IC-VAICTM and ROA. Both pooled data analysis and fixed effect panel data analysis were applied in order to examine VAICTM-ROA relationship. Results revealed that VAICTM has positive significant effect on ROA in both types of analyses (pool as well as panel time series analysis). As discussed earlier in this dissertation that most of the studies use ROA as measure of FP of the company and those studies found significant effect of VAICTM on financial performance in terms of ROA (Shiu, 2006a,b; Chen, Cheng and Hwang, 2005; Vali, 2007; Clarke, Seng and Whiting, 2010; Najibullah, 2005). Hence, our results are also consistent with previous studies. This means that if a firm uses its IC efficiently, this will lead to increase the financial performance of the firm.

The second hypothesis examines the relationship between VA efficiency of IC-VAICTM and ROCE. The results show that VAICTM did not have significant effect on ROCE in both cases (panel and pooled data analysis). It has already been discussed in the literature that none of the study has found VAICTM and FP relationship by using ROCE as proxy measure. One of

the possible reasons for the insignificant effect of VAICTM with ROCE may be due to its different nature of operations in the company because function of ROCE is more of resource allocation rather than to focus on intangible assets of the company.

It can be further explained with the studies of Balabanis et al. (1998) and Enyi (2005) that ROCE is an efficient ratio for assets utilisation rather than the availability of assets. However, the study has rejected the hypothesis of VAICTM-ROCE relationship and Enyi (2005) also confirmed the findings that IC was not related with ROCE.

The hypotheses from three to eight describe the relationship of HCE, SCE and CEE on ROA and ROCE respectively. Results revealed that only HCE showed positive significant effect on ROA and CEE showed positive significant relationship with ROCE. However, SCE did not show any significant association with ROA and ROCE. The results are consistent with the previous study of Ahangar (2011) in which he also found that HCE showed significant positive effect on firm's performance with respect to ROA and other components of VAICTM including SCE where CEE did not show significant association with ROA. Similarly, Clarke, Seng and Whiting (2010) found significant effect of HCE on ROA. However, SCE and CEE did not show significant effect on ROA. The reason for positive relationship of CEE with ROCE may be investment of stakeholders because it is the stakeholders who only invest their money in organisation when the capital efficiency exists within that organisation.

Sensitivity analysis was also conducted on the stated variables in order to understand the completeness of relationship and to know whether the results of sensitivity analysis show any variation with previous results or it remains same across different sub samples. For this purpose, thirty companies have been divided in two groups. This division is based on the combined fixed effect of HCE, SCE and CCE on ROCE. The first group includes 17 companies out of 30 which have negative combined fixed effects of HCE, SCE and CCE on

ROCE. The second group includes remaining 13 companies which have positive combined fixed effect of HCE, SCE and CCE on ROCE. The results of the analysis did not exhibit any significant changes as compared to previous results of 30 companies in full sample analysis. Some variations that have been observed are discussed below:

The value of VAICTM remains significant with ROA in case of sub-sample which is based on the companies having negative fixed effect but VAICTM did not show any significant effect on ROA and ROCE in the sub-sample which consists of the companies having positive fixed effect. However, the study found interesting results when individual effect of HCE, SCE and CEE was investigated on ROA and ROCE. HCE shows significant positive effect on ROA and negative effect on ROCE in sub-sample (a) but this component did not report any significant effect in case of sub-sample (b). The possible reason for the negative effect of HCE is because of the relationship of ROCE with the investors rather than the workers who are serving in the company. SCE is such component which did not exhibit any significant effect in previous analysis of 30 companies but one interesting finding highlighted that SCE showed negative effect on ROA in sub-sample (b). Whereas, the third component CEE has negative significant effect on ROA and positive significant effect on ROCE in sub-sample (a) and sub-sample (b).

5.3. Implications

The finding of the existing study is a potential contribution in understanding the effect of IC and its components on the financial performance of the textile industries of Pakistan. The study broadens the horizon for academicians and practitioners in a number of ways:

- a) IC is important for business world since IC and its components have significant effect on business performance (Makki et al., 2009). Instead of focusing on the financial results, the firms should concentrate on studying the hidden factors deeply which

effect, financial results. These factors are the intangible resources of the firm. It is discussed in the literature that all the components of IC (HCE, SCE, and CEE) have positive significant influence on tangible performance of the firm (Vergauwen, Roberts and Vandemaele, 2009). The practitioner associated with textile sector could use the findings of this study to measure and evaluate value based performance of the firm and it will further help them to strengthen their understanding of the importance and benefits of IC.

- b)** Companies in the Textile Sector of Pakistan should focus on managing their IC with the intention to increase their efficiency in achieving higher financial performance. Efficient use of intangible assets will help the firms to achieve competitive advantage over their counterparts.
- c)** Textile sector is a major contributor to exports of Pakistan resulting in higher amount of foreign exchange for the country. However, the findings revealed that human capital is an important component of IC and firms should focus on managing its human resources for long term survival in the market.
- d)** Companies with lower value of VAICTM should focus on improving their overall efficiency either by reducing their costs or by increasing VA. They can perform efficiency analysis of efficient counterparts to scrutinise and learn from them how they ensure their efficiency facing similar environment.
- e)** This study shows strong influence of IC in order to maximise capital gain on shares average and also a source of attracting investors in the market. Hence, companies operating in textile sector can formulate their corporate strategies for the proliferation in the efficiency of its resources and attain competitive advantage over its rivals. Correspondingly, investors also analyse firms IC along with other set parameters in order to gain substantial returns on their investments.

5.4. Limitations

There is no doubt that the current study is an indispensable contribution to the literature of management and finance. But apart from its contribution, the study has some limitations as well which are discussed below in detail:

- a) The existing study is a new endeavour that adds value in exploring the concept of IC in developing countries like Pakistan and is also limited by its methodology. In addition, the results of the study are specifically applicable in textile sector of Pakistan which will limit its generalisability among other sectors.
- b) The current study uses VAICTM efficiency model for measuring IC and its components (HCE, SCE, and CEE). One of the IC components, Structural Capital (SC) is measured through Structural Capital Efficiency (SCE) that ignores the firm's investments in research and development (R & D) and promotional campaigns (i.e. advertising). It is also evident from the literature that companies investment on the R & D and advertising campaigns positively influence the firm's overall corporate market value (Najibullah, 2005). The reason behind this conception is the investors' concerns of getting higher rate of return through having larger investments in the field of R & D.
- c) There are number of methods to measure the financial performance of the firm such as profit before taxation, return on equity, growth in sales and employee productivity but the study includes only two measures of financial performance (ROA and ROCE) as proxy variables. Furthermore, present study has not addressed non-financial performance of the firm.

5.5. Future research

Given the limited research that has concentrated on examining the relationship between IC and firm financial performance, further research can be conducted to explore this relationship in detail. Further research can be conducted on IC and firm performance in the following way:

First, the study is based on two proxy measures for financial performance (i.e. ROA and ROCE); however, other key proxy variables such as Return on Investment (ROI) and Return on Equity (ROE) can be further considered for better understanding the orientation of relationship between IC and firm financial performance.

Second, there are some other approaches that can be used for measuring IC instead of VAICTM model. So, a comparative study can also be conducted by accommodating different measuring approaches of IC (i.e. market to book value, Tobin's Q method, calculated intangible value etc.) to further validate the results.

Third, a comparative study can also be conducted in terms of examining IC relationship with the firm's financial and non-financial performance separately.

Fourth, the scope of the current study is limited to only textile industry of Pakistan but researchers can explore this relationship in other sectors as well (i.e. pharmaceuticals, telecommunication, chemicals, etc.).

Finally, research should better be carried out to understand the relationship between IC and financial performance by considering the data from 100 index companies listed of Karachi Stock Exchange.

5.6. Conclusion

The study aims at analysing the relationship between efficiency of value added components (HC, SC, CE) and two proxy measures of firm's financial performance-ROA and ROCE. Value added efficiency of textile sector is determined using VAICTM approach. Based on the findings of this empirical research, it can be concluded that companies in the Textile Sector of Pakistan are well influenced by the efficiency with which they manage their physical and intangible capitals (HCE, SCE and CEE) especially the role of HCE is well enriched. Similarly, VAICTM which is formed by combining efficiencies from all three components of IC has also a significant positive impact on financial performance in term of ROA of the Textile Sector of Pakistan. VAICTM showed better results as compared to its components which identify that the Textile Sector of Pakistan can improve its financial performance by focusing on the VAICTM model rather than looking into each component separately.

As HCE component of IC is positively related to financial performance, it results in higher ROA. Therefore, such measures should be exercised through which the participation of employees can be increased in value addition process.

The movement of the world towards globalisation has increased the degree of competition and unexploited opportunities for current businesses. In this global village, everyone wants to have more benefit and gain strategic advantages. Today, as a result, international investors need more non-financial information than the routine financial disclosures in order to supplement their investment decisions. Like some companies are fulfilling social responsibility towards society, community and other stakeholders or otherwise these companies have invested in IC, it will benefit only if such information is properly disclosed in financial statements according to standards. But as Stewart (1999) said current accounting procedures do not really reflect companies' investment in intangibles or perhaps value

creation efficiency of company in a meaningful way. Thus, a key role is required to be played by financial authorities for ensuring suitable management and disclosures of knowledge assets and sources of companies' value creation

References

- Adams, G., & Schvaneveldt, J. D. (1985).** *Understanding research methods (1st Ed.)*. New York, USA: Longman Inc.
- Ahangar, R. (2011).** The relationship between intellectual capital and financial performance: An empirical investigation in an Iranian company. *African Journal of Business Management*, 5(1), 88-95. Accepted September 3, 2010, published January 4, 2011 Available at <http://www.academicjournals.org/AJBM>
- Amir, E., & Lev, B. (1996).** fValue-relevance of nonfinancial information: The wireless communications industry's. *Journal of Accounting and Economics*, 22, 3-30.
- Appuhami, B. R. (2007).** The Impact of Intellectual Capital on Investors' Capital Gain on Shares: An Empirical Investigation in Thai Banking, Finance & Insurance Sector. *Journal of Internet Banking and Commerce*, 12(1), 1-14.
- Armstrong, A., & Foley, P. (2003).** Foundations for a learning organization: organization learning mechanisms: The Learning Organization. *An International Journal*, 10(2), 74-82.
- Balabanis, G., Philips, H. C., & Lyall, J. (1998).** Corporate Social Responsibility and Economic Performance in the Top British Companies: Are They Linked?. *European Business Review*, 98(1), 25-42.
- Barney, J. B. (1992).** Integrating organizational behavior and strategy formulation research: A resource based analysis. In P. Shrivastava, A. Huff and J. Dutton (eds.), *Advances in Strategic Management*, 8, 39-62. Greenwich, CT: JAI Press.
- Beattie, V., & Thomson, S. J. (2007).** Lifting the lid on the use of content analysis to investigate intellectual capital disclosures. *Accounting Forum*, 31(2), 129-163.
- Becker, G. (1964).** *Human Capital*. Columbia University Press: New York, NY.
- Becker, G. S. (1960).** *An Economic Analysis of Fertility In Demographic And Economic Change In Developed Countries*. Princeton: Princeton University Press for National Bureau of Economic Research.

Bektas, E., & Kaymak, T. (2009). Governance mechanisms and ownership in an emerging market: The case of Turkish banks. *Emerging Markets Finance & Trade*, 45(6), 20-32.

Belkaoui, A. (2003). Intellectual Capital and Firm Performance of U.S. Multinational Firms. *Journal of Intellectual Capital*, 4(2), 215-226.

Bharathi, K. G. (2007). The Intellectual Capital Performance of the Indian Banking Sector. *Journal of Intellectual Capital*, 8(1).

Bharathi, K. G. (2010). The Intellectual Capital Performance of Banking Sector in Pakistan. *Journal of Commerce and Social Sciences*, 4(1), 84-99.

Blackburn, V. L., Doran, M., & Shrader, C. B. (1994). Investigating the dimensions of social responsibility and the consequences for corporate financial performance. *Journal of Managerial Issues*, 6, 195–212.

Boisot, M. (2002). *The creation and sharing of knowledge in Choo, C.W. and Bontis, N. (Eds), The Strategic Management of Intellectual Capital and Organizational Learning*, Oxford University Press: oxford

Bontis, (2002). Intellectual capital ROI: a causal map of human capital antecedents and consequents. *Journal of Intellectual Capital*, 3(3), 223-247.

Bontis, N. (1996a). There's a Price on your Head: Managing Intellectual Capital Strategically. *Business Quarterly*, 40-47.

Bontis, N. (1996b). *Economic Value Added*. In R. Michalski and M. Sealey (Eds.). Society of Management Accountants of Canada Professional Program, Toronto: Society of CMAs, Module 5, Part 4.3.

Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management Decision*, 36(2), 63-76.

Bontis, N. (1999). Managing Organizational Knowledge by Diagnosing Intellectual Capital: Framing and advancing the state of the field. *International Journal of Technology Management*, 18, 433- 462.

Bontis, N. (2000). CKO Wanted – Evangelical Skills Necessary: A review of the Chief Knowledge Officer position. *Knowledge and Process Management*, 7(4).

Bontis, N. (2001). Assessing Knowledge Assets: A Review of the Models Used to Measure Intellectual Capital. *International Journal of Management Reviews*, 3(1), 41-60.

Bontis, N. (2004). National intellectual capital index: a United Nations initiative for the Arab region. *Journal of Intellectual Capital*, 5 (1), 13-39.

Bontis, N., & Fitzenz, J. (2002). Intellectual capital ROI: a causal map of human capital antecedents & consequents. *Journal of Intellectual Capital*, 3(3), 223-47.

Bontis, N., Chua, W., & Richardson, S. (2000). Intellectual Capital and the Nature of Business in Malaysia. *Journal of Intellectual Capital*, 1(1), 85-100.

Bontis, N., Crossan, M., & Hulland, J. (2001). Managing an Organizational Learning System by Aligning Stocks and Flows. *Journal of Management Studies*, forthcoming.

Bontis, N., Crossan, M. M., & Hulland, J. (2002). Managing an organizational learning system by aligning stocks and flows. *Journal of Management Studies*, 39(4), 437-69.

Bontis, N., Dragonetti, N., Jacobsen, K., & Roos, G. (1999). The knowledge toolbox: A review of the tools available to measure and manage intangible resources. *European Management Journal*, 17(4), 391-402.

Bozzolan, S., Favotto, F., & Ricceri, F. (2003). Italian annual intellectual capital disclosure: an empirical analysis. *Journal of Intellectual Capital*, 4(4), 543-58.

Bragdon, J. H., & Marlin, J. A. T. (1972). Is Pollution Profitable? *Risk Management*, 19 (4), 9-18.

Breitung, J. (2000). The Local Power of Some Unit Root Tests for Panel Data. *Nonstationary Panels, Panel Cointegration, and Dynamic Panels, Advances in Econometrics*, 15, 161-178.

Breitung, J. (2002). Nonparametric Tests for Unit Roots and Cointegration. *Journal of Econometrics*, 108, 343-363.

- Brennan, N. (2001).** Reporting Intellectual Capital in Annual Reports: Evidence from Ireland. *Accounting, Auditing & Accountability Journal*, 14(4), 423.
- Brooking, A. (1996).** *Intellectual capital: Core asset for the third millennium enterprise*, International Thomson Business Press, London.
- Bryman, A., & Bell, E. (2003).** *Business Research methods*, Oxford: Oxford University Press Business Reports 31, University of Tampere.
- Cabrita, M. R., & Vaz, J. L. (2005).** Intellectual Capital and Value Creation: Evidence from the Portuguese Banking Industry. Research paper: Technical University, Institute of Economics and Business Administration, Portugal.
- Calisir, F., Gumussoy, A. C., Bayraktaroglu, E. A., & Deniz, E. (2010).** Intellectual capital in the quoted Turkish ITC sector. *Journal of Intellectual Capital*, 11(4), 537-553.
- Cameron, C., & Trivedi, P. (1990).** Regression Based Tests for Overdispersion in the Poisson Model. *Journal of Econometrics*, 46, 347-364.
- Canibano, L., Garcia-Ayuso, M., & Sanchez, M.P. (2000).** Accounting for intangibles, a literature review. *Journal of Accounting Literature*. 19, 102-130.
- Carmeli, A., & Tishler, A. (2004).** The Relationships between Intangible Organizational Elements and Organizational Performance. *Strategic Management Journal*, 25, 1257- 1278.
- Chan, H. K. (2009).** Impact of intellectual capital on organisational performance: An empirical study of companies in the Hang Seng Index (Part 2). *Learning Organization*, 16(1), 22 – 39.
- Chen, Cheng and Hwang. (2005).** An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance, *Journal of Intellectual Capital*, 6(2), 159-176
- Chen, j., Zhu, Z., & Xie, H.Y. (2004).** Measuring intellectual capital: a new model and empirical study. *Journal of Intellectual Capital*, 5(1): 195-212.
- Chen, S., & Dodd, J. L. (2001).** Operating income, residual income and EVAe: which metric is more value relevant. *Journal of Managerial Issues* , 13(1), 65-86.

Chen, Y. S. (2008).The positive effect of green intellectual capital on competitive advantages of firms. *Journal of business ethics*, 77(3), 271-286

Cheng, C. P., & Xie, K. F. (2001). The relationship between enterpriser' human capital and corporate performance. *Nankai Manage*, 5, 30-34.

Choi, I. (2001).Unit Root Tests for Panel Data.*J ournal of international money and fianance*, 20, 249-272

Choo, C.W., & Bontis, N. (2002). *The Strategic management of intellectual capital and organizational knowledge*. Oxford University Press:New York.

CIMA (2001). *Understanding corporate value: managing and reporting intellectual capital*. Cranfield University: Chartered Institute of Management Accountants. 1-28.

Clarke M., Seng D., & Whiting H. (2010). Intellectual capital and firm performance in Australia. Working Paper series no. 12, University of Otago: New Zealand

Creswell, J. W. (2003). *Research design: Quantitative, qualitative, and mixed methods approaches (2nd ed.)*. Thousand Oaks, CA: Sage.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. London: Sage.

Davis, M. (2009). The value of knowledge management. Available online: http://www.knowledgepoint.com.au/intellectual_capital/Articles/IC_MD001c.html Demset

Deng, S., & Dart, J. (1994).Measuring market orientation: a multi-factor, multi-item approach. *Journal of Marketing Management*, 10, 725-42.

Dewhurst, F.W., & Navarro, J.G.C. (2004). External communities of practice and relational capital: The Learning Organization. *An International Journal*, 11, 31-322.

Dodgson, M. (1992). The strategic management of R & D collaboration. *Journal of Technology analysis and Strategic management*, 4 (3), 227-244

Doraid, M. (2000). *Human Development and Poverty in the Arab States, United Nations Development Program Research Paper*, United Nations Development Program, New York, NY.

Drucker, P. (1999). Knowledge-worker productivity: The biggest challenge. *California Management Review*, 41, 79-94.

Drucker, P.F. (1993). *Post-Capitalist Society*. HarperCollins: New York, NY.

Dzinkowski, R. (2000). The measurement and management of intellectual capital: an introduction. *Management Accounting*, 78(2), 32-6.

Economic Survey of Pakistan (2008). Economic survey of Pakistan. Finance Division: Islamabad.

Edvinsson, L. & Malone, M., (1997). *Intellectual Capital*. Harper Business: New York.

Edvinsson, L., & Sullivan, P. (1996). Developing a model for management intellectual capital. *European Management Journal*, 14 (4), 187-99.

Elliott, G., & Jansson, M. (2003). Testing for Unit Roots with Stationary Covariates. *Journal of Econometrics*, 115, 75-89.

Enyi, E. P. (2005). How Useful is the Return on Capital Employed (ROCE) as a Performance Indicator?. *AJMS*, 1(4).

Firer, S., & Williams, M. S. (2003). Intellectual capital and traditional measures of corporate performance. *Journal of Intellectual Capital*, 4(3), 348 – 360.

Firer, S., & Williams, S.M. (2003). Intellectual capital and traditional measures of corporate performance. *Journal of Intellectual Capital*, 4(3), 348-60.

Fu, W. N. (2003). Enterpriser's human capital and performance: a theoretical model. *J. Capital Univ. Econ. Bus.*, 5, 54-59.

Galbraith, J. K. (1969). The Consequences of Technology. *Journal of Accountancy*, 127, 44–56.

García-Ayuso, M. (2003). Factors explaining the inefficient valuation of intangibles. *Accounting, Auditing & Accountability Journal*, 16(1), 57-69.

Gereffi, G. (1999). International trade and industrial upgrading in the apparel commodity chain. *Journal of International Economics*, 48, 37-70

Ghosh, D., & Wu, A. (2007). Intellectual capital and capital market: additional evidence. *Journal of Intellectual Capital*, 8(2), 216-238.

Ghosh, S., & Mondal, A. (2009). Indian software and pharmaceutical sector IC and financial performance. *Journal of intellectual capital*, 10(3), 369-388.

Gibbert, M., Leibold, M., & Voelpel, S. (2001). Rejuvenating corporate intellectual capital by co-opting customer competence. *Journal on Intellectual Capital*, 2(2), 109-126.

Goh, C. P. (2005). Intellectual capital performance of commercial banks in Malaysia. *Journal of international Capital*, 6(3), 385-396.

Goh, P. C., & Lim, K. P. (2004). Disclosing intellectual capital in company annual reports: Evidence from Malaysia. *Journal of Intellectual Capital*, 5 (3), 500-510

Government of Pakistan, (2008). Economic Survey of Pakistan, Ministry of Finance, Islamabad.

Government of Pakistan, (various years). Economic Survey of Pakistan, Ministry of Finance, Islamabad.

Griffin, J. J., & Mahon, F. J. (1997). Corporate social performance and corporate financial performance debate. *Business and society*, 36(1), 5-31.

Guthrie, J., Petty, R., Ferrier, F., & Wells, R. (1999). There is no accounting for intellectual capital in Australia: a review of annual reporting practices and the internal measurement of Intangibles. *OECD*, 9-11.

Guthrie, J., Petty, R., Yongvanich, K., & Ricceri, F. (2004). Using content analysis as a research method to inquire into intellectual capital reporting. *Journal of Intellectual Capital*, 5(2), 282 -293.

Hadri, K. (2000). Testing for stationarity in heterogeneous panel data. *Econometrics Journal*, 3, 148-161.

Hakansson, H., & Snehota, I. (1995). *Developing relationships in business networks*. London: Routledge.

- Halim, S. (2010).** Statistical analysis on the intellectual capital statement. *Journal of intellectual capital*, 11(1), 61-73
- Halim.H.A.,& Baxter. T. (2010).**Voluntary Disclosure of intangibles among Australian Publicly Listed Companies.*Global review of Accounting and Finance*, 1 (1), 60 – 79.
- Hamel, G. (1991).**Competition for competence and inter-partner learning within international strategic alliances.*Strategic Management Journal*, 12, 83-103.
- Hansen, B. E. (1995).**Rethinking the Univariate approach to unit root testing.*Econometric Theory*, 11, 1148-1171
- Haynes, M., Thompson, S., & Wright, M. (2000).** The Determinants of Corporate Divestment in the UK. *International Journal of Industrial Organisation*, 18, 1201–22.
- Henderson, R., & Cockburn, I. (1994).** Measuring competence? Exploring firm effects in pharmaceutical research.*Strategic Management Journal*, 15, 63-84.
- Ho, H. (2003).** Dividend Policies in Australia and Japan. *International Advances in Economic Research*, 9(2), 91-100.
- Ho, M. H. (2008).**How to deal with questions on assessing the performance of a company.retrieved on Sept 11, 2011. Retrieved from: www.hkiaat.org/images/uploads/articles/How.pdf
- Holmen, J. (2005).**Intellectual capital reporting. *Management Accounting*, 6(4), 1-9.
- Horibe, F. (1999).** *Managing knowledge workers - new skills and attitudes to unlock the intellectual capital in your organization*. Toronto: John Wiley & Sons.
- Hsiao, C. (1986).***Analysis of Panel Data*. Cambridge University Press: Cambridge.
- Huang, C. C., Luther, R., & Tayles, M. (2007).** An evidence-based taxonomy of intellectual capital. *Journal of Intellectual Capital*, 8(3), 86 – 408
- Hudson, W. (1993).***Intellectual Capital: How to Build it, Enhance it, Use it*. John Wiley & Sons: New York, NY.

Hulland, J. (1995). Market Orientation and Market Learning Systems: An Environment - Strategy - Performance Perspective. Working Paper: University of Western Ontario.

Human Development Network (1999). *Education in the Middle East and North Africa: A Strategy Towards Learning for Development, United Nations Development Programme Research Paper*, United Nations Development Programme, New York, NY.

Hunton, E. J., Lippincott, B., & Reck, L. J. (2003). Enterprise resource planning systems: comparing firm performance of adopters and nonadopters. *International Journal of Accounting Information Systems*, 4, 165-184.

Im, K. S., and Pesaran, M. H. (2003). On the Panel Unit Root Tests Using Nonlinear Instrumental Variables. Cambridge Working Papers in Economics, number 0347, University of Cambridge.

Im, K. S., Pesaran, M. H., & Shin, Y. (1997). *Testing for Unit Roots in Heterogeneous Panels*. Manuscript, Department of Applied Economics, United Kingdom: University of Cambridge.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics*. 115 (revised version of 1997's work), 53-74.

Iqbal, S. M., Shaikh, M. F., Mahmood, B., & Shafiq, K. (2010). Development of Textile Industrial Clusters in Pakistan. *Asian Social Sciences*, 6(11), 123-140.

Iswati, S., & Anshori, M. (2007). The Influence of Intellectual Capital on Financial Performance at Insurance at Jakarta Stock Exchange. The Proceedings of the 13 Asia Pacific Management Conference, Melbourne, Australia, 1393-1399.

Itami, Hiroyuki (1987). *Mobilizing Invisible Assets*. Harvard Business Press

Ji-jian, Z., Nai-ping, Z., & Yu-sheng, K. (2006). Study on Intellectual Capital and Enterprise's Performance: An Empirical Evidence from Chinese Securities Market. *Journal of Modern Accounting and Auditing*, 2(10), 35-39.

Joshi, G. (2002). *Garment Industry in South Asia Rags or Riches? Competitiveness, Productivity and Job Quality in the Post-MFA Environment*. New Delhi: International Labor Organization, South Asia Multidisciplinary Advisory Team.

Joshi, M., Cahill, D., & Sidhu, J. (2010). Intellectual Capital Performance in the Banking Sector. An assessment of Australian Owned Banks. *Cost. Account*, 14(2): 151-170.

Kamath, B. (2008). Intellectual capital reporting in India: content analysis of teck firms. *Journal of Human Resource Costing and Accounting*, 12(3), 213-224.

Kamath, G.B. (2007). Intellectual capital performance of Indian banking sector. *J. Intel. Capital*. 8(1), 96-123.

Kamath, G.B. (2008). Intellectual capital and corporate performance in Indian pharmaceutical industrial. *Journal of Intellectual Capital*, 9(4), 684-704.

Kaplan, R.S., and Norton, D.P. (1996). *Translating strategy into action - the balanced scorecard*. Boston, MA: Harvard Business School Press.

Kaplan, R.S., & Norton, D.P. (1992). The Balanced Scorecard Measures that Drive Performance. *Harvard Business Review*, 71-79.

Karp, T. (2003). Is Intellectual Capitalism the Future Wealth of Organizations. *Foresight*, 5 (4), 20-27.

Kodama, F. (1992). Technology fusion and the new R&D. *Harvard Business Review*, 70(4).

Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capacities and the replication of technology. *Organization Science*, 3, 383-397.

Kogut, Bruce and Udo Z. (1992). Knowledge of the Firm, Combinative capabilities, and the Replication of Technology. *Organization Science*, 3, 383-397.

Kohli, A.K., and Jaworski, B.J. (1990). Market orientation: the construct, research propositions, and managerial implications. *Journal of Marketing*, 54, 1-18.

Kong, E., (2008). the development of strategic management in the non – profit context: intellectual capital in nonprofit social service organizations. *International journal of management reviews*.

Lev, B. (2001). *Intangibles – management, measuring and reporting*. New York: Brookings Institution Press

Levin, A., Lin, C., and Chu, C. J. (2002). Unit Root Tests in Panel Data: Asymptotic and Finite-sample Properties. *Journal of Econometrics*, 108, 1-24.

Lonnqvist, A., & Markova, M. (2006). Emergent Themes in Intellectual Capital Research. Tampere: e-Business Research Center.

Lundy, G. (2005). Changes in the world trade rule and their impact on future of clothing and textile sector in western cape. PhD thesis. Graduate School of Business of the University of Stellenbosch.

Luthy, D. H. (1998). Intellectual Capital and its Measurement. research paper college of Business, Utah State University, Logan, Utah USA.

Luu, N., Wykes, J., Williams, P., & Weir, T. (2001). Invisible value: the case for measuring and reporting intellectual capital. Canberra: Department of Industry, Science and Resources, Commonwealth of Australia.

Lynn, B. (1998). Intellectual capital: Key to value-added success in the next millennium, CMA Magazine, *Society of Management Accountants, Hamilton*, 10-15 February

Lynn, B. (1998). Intellectual Capital. *CMA Magazine (February)*: 10-15.

Lynn, L. K., & Dallimore, P. (2002). To the public-listed companies, from the investment community. *Journal of Intellectual Capital*, 3, 262–276.

Maddala, G. S., and Wu, S. (1999). A Comparative Study of Unit Root Tests with Panel Data and A New Simple Test. *Oxford Bulletin of Economics and Statistics*, 61, 631–52.

Makki, M. A. M., & Lodhi, S.A. (2008). Impact of Intellectual Capital efficiency on profitability. *The Lahore Journal of Economics*, 3(2), 81-91.

Makki, M. A., Suleiman, A., Lodhi C. R., & Rohra, C. L. (2009). Impact of Intellectual Capital on Return on Investment in Pakistani Corporate Sector. *Australian Journal of Basic Applied Sciences*, 3(3), 2995-3007.

Makni, R., Francoeur, C., & Bellavance, F. (2009). Causality between corporate social performance and financial performance: Evidence from Canadian firms. *Journal of Business Ethics*, 89(3), 409-422.

Malik, M. H., and Saqib, N. (1989). Tax incidence by income classes in Pakistan. *The Pakistan Development Review*, 28(1), 13-26.

Marr, B., Gray, D., & Neely, A. (2003). Why do firms measure their intellectual capital? *Journal of Intellectual Capital*, 4(4), 441-464.

Marti, J.M.V. (2001). ICBS – intellectual capital benchmarking system. *Journal of Intellectual Capital*, 2 (2), 148-65.

Mavridis, D. & Kyrmizoglou G.P. (2005). Intellectual capital performance drivers in the Greek banking sector. *Manage. Res. News*, 28(5): 43- 62.

Mavridis, D. (2005). Intellectual capital performance drivers in the Greek banking sector. *Management Research News*, 28(5), 43-62.

Mavridis, D.G. (2004). The intellectual capital performance of Japanese banking sector. *Journal of Intellectual Capital*, 5(1), 92-115.

McGregor, J., Tweed, D., & Pech, R. (2004). Human capital in the new economy: Devil's bargain. *Journal of Intellectual Capital*, 5 (1), 153-64.

Meritum, (2002). Guidelines for Managing and Reporting on Intangibles, ed. L Cañibano, P. Sanchez, M. Garcia-Ayuso, and C. Chaminade. Fundación Airtel Móvil. (www.eu-know.net), Madrid.

Miles, M. B., and Huberman, A. M. (1994). *Qualitative data analysis: an expanded sourcebook (2nd Ed.)*. Thousand Oaks, CA: Sage

Mohiuddin, M., Najibullah, S., & Shahid, A.I. (2006). An Exploratory Study on Intellectual Capital Performance of the Commercial Banks in Bangladesh. *Cost Management*, 34(6): 40-54.

Moore, N.G. (1996). Measuring Corporate IQ. Chief Executive, November Issue.

Moore, N.G. (1996). Measuring Corporate IQ. Chief Executive, November Issue.

Mouritsen, J. (2003). Intellectual capital and the capital market: the circulability of intellectual capital. *Accounting, Auditing & Accountability Journal*, 16(1), 18-30

Mouritsen, J. (2003). Intellectual capital and the capital market: the circulability of intellectual capital. *Accounting, Auditing & Accountability Journal*, 16(1), 18 – 30.

Muhammad, N. M. N. (2009). Intellectual Capital Efficiency and Firm's Performance: Study on Malaysian Financial Sectors. *International Journal or Economics and Finance*: 1(2) August 2009. Retrieved from www.ccsenet.org/journal.html

Muhammad, N. M. N., & Ismail, A. K. M. (2009). Intellectual Capital Efficiency and Firm's Performance: Study on Malaysian Financial Sectors. *International journal of economics and finance*, 1(2), 206-212.

Murale, V., Jayaraj, R., & Ashrafali, (2010). Impact of Intellectual Capital on Firm Performance: A Resource Based View Using VAICTM Approach. *International journal of Business management and information technology*, 2(2), 283-293.

Najibulllah, S. (2005).An Empirical Investigation of the Relationship between Intellectual Capital and Firms' Market Value and Financial Performance in Context of Commercial Banks of Bangladesh. Research Paper: Independent University, Bangladesh.

Nam, V. H., Sonobe, T., & Otsuka, K. (2010). An Inquiry into the Development Process of Village Industries: The Case of a Knitwear Cluster in Northern Vietnam. *Journal of Development Studies*, 46(2), 312-30.

Narver, J.C.,& Slater, S.F. (1990).The effect of a market orientation on business profitability.*Journal of Marketing*, 20-35.

Nazari, J.A.,&Herremans I.M.(2007).Extended VAIC model: Measuring intellectual capital components. *Journal of Intellectual Capital*, 8(4), 595-609.

Nelson, R.R., &Winter, S.G. (1982).*An evolutionary theory of economic change*. Harvard University Press: Cambridge, MA.

Neumann, G.,& Tomé, E. (2005).Knowledge Management and Logistics.An Empirical Evaluation. Proc. I-KNOW '05 – 5th International Conference on Knowledge Management, Graz, 96-103.

Nicolini, D. (1993). Apprendimento Organizzativo e Pubblica Amministrazione Locale. *AutonomieLocali e ServiziSociali*, 16(2).

Nirmal, P. N., Sundaresan, S., Ray, J., Bhargava, H., Glantz, E., and McHugh M.W., (2004). Knowledge Quotient™ (KQ): A Way to Measure the Knowledge Intensity of Your Team, The Penn State eBusiness Research Center.

Nova Kreditna banka Mariba (2000).Annual report, Nova KreditnabankaMariba, Maribor

O'Donnell, D., O'Regan, P., Coates, B., Kennedy, T., Keary, B., & Berkery, G. (2003). Human interaction: The critical source of intangible value. *Journal of Intellectual Capital*, 4(1), 82-99.

OECD, (1996). The Knowledge-based Economy. Organization for Economic Co-operation and Development: Paris.

OECD, (1999). Measuring and reporting intellectual capital. OECD Research Papers: Amsterdam.

OECD, (2001). *The Wellbeing of Nations: The Role of Human and Social Capital*, Centre for Educational Research and Innovation Research Paper, OECD: Paris.

Ordóñez de Pablos, P. (2002). Evidence of Intellectual Capital Measurement from Asia, Europe and the Middle East. *Journal of Intellectual Capital*, 3(3), 287-302.

Ordóñez de Pablos, P., (2004). Measuring and reporting structural capital: lessons from European learning firms. *Journal of Intellectual Capital*, 5(4), 629-47.

Owen, G. (2001). Globalisation in textiles: corporate strategy and competitive advantage. *The third annual Pasold lecture delivered at the London School of Economics*. Retrieved April, 2007, from <http://www.lse.ac.uk/collections/MES/pdf/pasold.pdf>

Owen, N. (2003). *A comparative study of British and Italian textile and clothing industry*. UK: Crown

Parker, L. D. (2007). Financial and external reporting research: the broadening corporate governance challenge. *Accounting and Business Research*, 37(1), 39-54.

Pennings, J. M., & Harianto, F. (1992). Technological networking and innovation implementation. *Organization Science*, 3(3), 356-383.

Performance Rankings (1999).[Web site]. Stern Stewart & Co. Retrieved, 2002, from the World Wide Web: <http://www.eva.com/performance/overview.shtml>

Petty, R., & Guthrie, J. (2000). Intellectual capital literature review: measuring, reporting and management. *Journal of Intellectual Capital*. 1(2), 155-176.

Pike, S., Fernström, L. and Roos, G. (2006). Intellectual capital: origin and evolution. *International Journal of Learning and Intellectual Capital*, 3(3), 233-248.

Prahalad, C.K., & Ramaswamy, V. (2000). Co-opting customer competence. *Harvard Business Review*, 79-87.

Pulic, A. (1998). Measuring the performance of intellectual potential in knowledge economy. available at: www.measuring-ip.at/Opapers/Pulic?Vaictxt.htm

Pulic, A. (2000). VAIC™ – an accounting tool for IC management. *International Journal of Technology Management*, 20 (5-8), 702-714.

Pulic, A. (2004). Intellectual capital – does it create or destroy value? *Measuring Business Excellence*, 8, 62-68.

Pulic, A., & Bornemann, M. (1999). The physical and intellectual capital of Austrian banks. Available at: www.measuring-ip.at/papers/pubic/Bank/en-bank.html (accessed 11 March, 2009)

Riahi-Belkaoui, A. (2003). Intellectual capital and firm performance of US multinational firms: A study of the resource-based and stakeholder views. *Journal of Intellectual Capital*, 4(2), 215 – 226.

Ricceri, F. (2008). *Intellectual Capital and Knowledge Management: Strategic Management of Knowledge Resources*. New York: Taylor & Francis Group.

Roos, G., & Roos, J. (1997). Measuring Your Company's Intellectual Performance. *Journal of Long Range Planning*, 30(3).

Roos, J., Roos, G., Dragonetti, N.C., & Edvinsson, L. (1997). *Intellectual Capital Navigating the New Business Landscape*. London: Macmillan Press Ltd.

Roos, J., Roos, G., Dragonetti, N.C., & Edvinsson, L. (1998). *Intellectual Capital: Navigating in the New Business Landscape*. New York University Press: New York, NY.

Roos, J., Roos, G., Dragonetti, N. C., & Edvinsson, L. (1997). *Intellectual Capital: Navigating the New Business Landscape*. London: Macmillan Press Ltd.

Russo, M. V., & Fouts, A. P. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal*, 40, 534–559.

Saint-Onge, H. (1996). Tacit knowledge: the key to the strategic alignment of intellectual capital. *Strategic Leadership*, 24(2): 10-14.

Sarumpaet, S. (2005). The relationship between environmental performance and financial performance of Indonesian companies. *Jurnal Akuntansi dan Keuangan*, 7(2), 89-96.

Saunders, M., Lewis, P. and Thornhill, A. (2000). *Research Methods for business students*, Harlow: Pearson Education Limited

Schiuma, G., & Lerro, A. (2008). Intellectual Capital and Company's Performance Improvement. *Measuring Business Excellence*, 12(2), 3-9.

Schneider, A., & Samkin, G. (2008). Intellectual capital reporting by New Zealand local government sector. *Journal of Intellectual Capital*, 9(3), 456-486.

Senge, P., (1990). *The Fifth Discipline*. Massachusetts Institute of Technology: New York, Doubleday.

Senge, P.M. (1992). *The Fifth Discipline: The Art and Practice of the Learning Organization*. Century Business: London.

Shand, D. (1999). Return on knowledge: Proving financial payoffs from knowledge management investments plagues experienced and novice practitioners. *Knowledge Management*, April, 1-9. Retrieved September 22, 2001, from http://www.destinationcrm.com/km/dcrm_km_article.asp?id=601

Sharabati, A., Jawad, S., & Bontis, N. (2010). Intellectual Capital and Business Performance in the Pharmaceutical Sector of Jordan. *Management Decision*, 48(1), 105-131.

Shareef, F., & Davey, H. (2006). Accounting for intellectual capital: evidence from listed English football clubs. *Journal of Applied Accounting Research*, 7(3), 78-116.

Shiu, H. (2006a). The application of the value added intellectual coefficient to measure corporate performance: evidence from technological firms. *International Journal of Management*, 23(2), 356-64.

Shiu, H. (2006b). Application of the VAIC method to measures of corporate performance: a quantile regression approach. *Journal of American Academy of Business*, 8(2), 156-60.

Skandia (1998). Human Capital in Transformation, IC Prototype Report — a Supplement to Annual Report, pp. 1-25.

Sofian, S., Tayles, M., & Pike, R., (2005). The implications of intellectual capital on performance measurement and corporate performance. *Journal Kemanusiaan*, 8, pp. 13-24.

Stewart, F. (2002). Horizontal Inequality: a Neglected Dimension of Development. Helsinki, WIDER Annual Development Lecture.

Stewart, T. A. (1991). Brainpower: how intellectual capital is becoming America's most valuable asset. *Fortune*, 3 June: 44-60.

Stewart, T. A. (1997). *Intellectual Capital. The New Wealth of Organizations*: Doubleday, New York.

Sullivan, P.H. (2000). A brief history of IC movement: Value-driven Intellectual Capital: how to convert intangible corporate assets into market value. John-Wiley & Sons, Inc :New York, NY

Sveiby K.E. (1997). *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets*. San Fransisco: Berrett-Koehler.

Sveiby, K. (1998). Intellectual capital: thinking ahead. *Australian Accountant*, 68(5), pp. 18-22.

Sveiby, K.E. (2004). Methods for measuring intangibles. Available at www.sveiby.com

Tan, H. P., Plowman, D. & Hancock, P. (2007). Intellectual capital and financial returns of companies. *Journal of Intellectual Capital*, 8(1), 76-95.

Tan, H. P., Plowman, D. & Hancock, P. (2008). The evolving research on intellectual capital. *Journal of intellectual capital*, 9(4), 585-608.

Tan, H.P., Plowman, D., & Hancock, P., (2007). Intellectual Capital and Financial Returns of Companies. *Journal of Intellectual Capital*, 8(1), 76-94.

Tayles, M., Pike, R. H., & Sofian, S. (2007). Intellectual capital, management accounting practices and corporate performance: Perceptions of managers. *Accounting, Auditing, and Accountability journal*, 20 (4), 522-548

Teece, D. J. (1998). Capturing value from knowledge assets: the new economy, markets for know-how, and intangible assets. *California Management Review*, 40, 55-79.

Teece, D. J. (1986). Firm boundaries, technological innovation and strategic management. *In The Economics of Strategic Planning*. Ed. L. G. Thomas. Lexington, MA: Lexington Books, 187-199.

Teece, D. J. (2002). *Managing Intellectual Capital, Organizational Strategic and policy Dimensions*, Oxford University Press.

Teece, J. D. (1986). Profiting from Technological Innovation: Implication for integration, collaboration, licensing, and public policy. *A journal of policy research management and planning*, 15(6), 285-305

Ting, I. W. K. & Lean, H. H. (2009). Intellectual capital performance of financial institutions in Malaysia. *Journal of intellectual capital*, 10 (4), 588-599

Ting, W. I., and Lean, H. H. (2009). Intellectual capital performance of financial institutions in Malaysia. *Journal of intellectual capital*, 10(4), 588-599.

Unesco (1991). Education for All: Purpose and Context, United National Development Programme Research Paper, Educational, Scientific and Cultural Organization Bureau, Paris.

Vali, E. (2007). Determining causal relationship between IC drivers & performance- a structural equation modeling approach, proceedings of the 2nd EAISM workshop on intangibles.

Van Buren, M. E. (1999). A yardstick for knowledge management. *Training & Development*, 53(5), 71 – 78.

Vargas-Hernandez, J. G. (2010). Intellectual Capital Notion and Knowledge Diffusion Drivers in Knowledge Based-Organizations. *Pakistan Journal of Business & Management*, 1(1).

Vergauwen, P., Roberts, H., & Vandemaele, S. (2009). Business alliance & partnership performance and its value drivers: An intellectual capital approach. *The Business Review, Cambridge*, 12(2), 239-252.

Walsh, J. P., & Ungson, G.R. (1991). Organizational memory. *The Academy of Management Review*, 16(1), 57-91.

Wang, W. Y., & Chang, C. (2005). Intellectual capital and performance in causal models: Evidence from the information technology industry in Taiwan. *Journal of Intellectual Capital*, 6(2), 222-236.

Welbourne T.M. (2008). Relational capital: strategic advantage for small and medium-size enterprises (SMEs) through negotiation and collaboration. *J. Bus. Econ*, 18(5), 438-492.

Wiig, K. M. (1997). Integrating Intellectual capital and Knowledge Management. *Long Range Planning*, 30(3), 399-405.

Williams, M. (2001). Is intellectual capital performance and disclosure practices related. *Journal of Intellectual Capital*, 2(3), 192-203.

Williamson, O. E. (1985). *Economic Institutions of Capitalism*. New York: Free Press.

Winter, S.G. (1987). *Knowledge and competence as strategic assets*, in Teece, D.J. (Ed.), *The Competitive Challenge: Strategies of Industrial Innovation and Renewal*. Ballinger: Cambridge, MA, pp. 159-84

Wong, M., & Gardner, C. (2005). Intellectual capital disclosure: New Zealand evidence. Conference paper presented at the AFFANZ 2005 conference: Melbourne, Australia.

Wright, P.M., McMahan, G.C., & McWilliams, A. (1994). Human Resources and sustained competitive advantage: a resource-based perspective. *International Journal of Human Resource Management*, 5(2), 301-326.

Yalama, A., & Coskun, M. (2007). Intellectual capital performance of quoted banks on the Istanbul stock exchange market. *Journal of Intellectual Capital*, 8(2), 256-271.

Yin, R. (1994). *Case study research: Design and methods (2nd Ed.)*. Thousand Oaks, CA: Sage Publishing.

Zander, U., & Kogut, B. (1995). Knowledge and the speed of the transfer and imitation of organizational capabilities: An empirical test. *Organization Science*, 6(1), 76-92.

Zeghal, D. & Maaloul, A. (2010). Analyzing value added as an indicator of intellectual capital and its consequences on company performance. *Journal of Intellectual Capital*, 11(1), 39-60.

Bibliography

Abass, F., Hayat, M., Shahzad, A., & Riaz, A. (2010). Analysis of Knowledge Management in the Public Sector of Pakistan. *European Journal of Social Sciences*, 19(4)

Al-Haq (2009). Operation Cast Lead: A Statistical Analysis. <http://www.alhaq.org/pdfs/gaza-operation-cast-Lead-statistical-analysis%20.pdf>

Augier, M., & Teece, D. (2006). Understanding complex organization: the role of know-how, internal structure, and human behavior in the evolution of capabilities. *Journal of Industrial and Corporate Change*. 15: 395 – 416.

Bano, S., Rehman, K., & Khan, M. A. (2010). Study of Factors That Impact Knowledge Management Fit in Corporate Sector of Pakistan. *Far East Journal of Psychology and Business*, 1(1).

Bontis, N. (1996). There's a price on your head: managing intellectual capital strategically. *Business Quarterly*, 40 – 47

Bontis, N., Chua, W., & Richardson, S. (2000). Intellectual capital and the nature of business in Malaysia. *Journal of Intellectual Capital*, 1(1): 85-100.

Bozzolan, S., O'Regan, P., & Ricceri, F. (2006). Intellectual capital disclose: A comparison of Italy and the UK. *Journal of Human Resources Costing and Accounting*, 10(2), 92-113.

Cabrita, M.R. (2005). Using partial least squares (PLS) to study interrelationships and interactions among intellectual capital components: an approach to evaluate market orientation, antecedents in T. Aluja, J. Casanovas, V.E. Vinzi, A. Morineau and M. Tenenhaus (Eds). *PLS and Related Methods Proceedings of the PLS'05 International Symposium*, Barcelona, 307–314.

Chen, M., Cheng, S., & Hwang, Y. (2005). An Empirical Investigation of the Relationship between Intellectual Capital & Firm's Market Value and Financial Performance. *Journal of Intellectual Capital*, 6(2), 159-176.

Davis, M. (2009). The value of knowledge management, available online at: http://www.knowledgepoint.com.au/intellectual_capital/Articles/IC_MD001c.html

- Din Textile (2010).** Overview of textile sector of Pakistan. Annual Report 2010.
- Doraid, M. (2000).** Human Development and Poverty in the Arab States, United Nations Development Program Research Paper, New York, NY.
- Drew, S., (1999).** Building knowledge management into strategy: Making sense of a new perspective. *Long Range Planning*, 32(1), 130-136.
- Drucker, P.F. (1995).** The information executives truly need. *Harvard business review*. 73: 54 – 62.
- Enyi, P, (2005).** How Useful is the Return on Capital Employed (ROCE) as a Performance Indicator?. *AJMS*, 1(4). Available at SSRN: <http://ssrn.com/abstract=753124>
- Gan, K., & Saleh, Z. (2008).** Intellectual Capital and Corporate Performance of technology – Intensive Companies: Malaysia Evidence. *Asian Journal of Business and Accounting*, 1 (1), 113 – 130
- Gul Ahmad (2010).** Information about financial performance. Annual Report 2010.
- Håkansson, H. and Snehota, I. (1995).** *Developing relationships in business networks*. Routledge: London.
- Haq, R. (2009).** Developing Pakistan intellectual capital. Retrieved from: <http://www.pakalumni.com/profiles/blogs/1119293:BlogPost:64100>
- Ho, S.M., & Wu. B. (2008).** Evaluating intellectual capital with integrated fuzzy statistical analysis: a case study on the CD POB. *Information and management sciences*, 19 (2), 285 – 300
- ICM, (2009).** Intellectual Capital Management, Comprehensive Intellectual Capital Management, visited: July 2009, available at: <http://www.wdc-econdev.com/>
- Juma& Norma, A. (2006).** The Relationship between Intellectual Capital and New Venture Performance: An empirical investigation of the moderating role of the environment. Retrieved from <http://gradworks.umi.com/31/92/3192266.html>

Klein, J. C., & Prusak, L. (1994).characterizing intellectual capital: mastering the information environment program. Working Paper March. Center for information technology, Ernst and Young, Boston, March

Nonaka, I., & Takeuchi, (1995).*The knowledge – creating company*. New York: Oxford University Press

Olve, N.G., Roy, J., & Wetter, M. (1999).*A practical guide to using the balanced scorecard – performance drivers*.Chichester: John Wiley & Son.

Pakistan Economic Survey (2010).Economic survey of Pakistan. Finance Division: Islamabad.

PewTan, H., Plowman, D., & Hancock, P. (2007).Intellectual capital and financial returns of companies.*J. Intel. Capital*, 8(1), 76-95.

PTJ (2010).Textile sector posts record profits despite high cotton costs,Cited from: <http://www.ptj.com.pk/Web-2011/03-2011/Editorial.htm>

Pulic, A. (2004).Intellectual capital – does it create or destroy value?”, *Measuring Business Excellence*, 8(1): 62-68.

Reeds, K. (2000).The dynamics of intellectual capital.Ph.D.Dissertation.The University of Connecticut.

Richieri, F. L. (2007).Intellectual Capital and the Creation of Values in the Brazilian Companies. ESPM- Mackenzie University. Abstract retrieved from: papers.ssrn.com/sol3/Delivery.cfm?abstractid=1081849

Stewart, T., (2001).*The Wealth of Knowledge*. Currency Doubleday: New York

Stewart, T.A. (1994). Your company’s most valuable asset: *intellectual capital*. *Fortune*, 3 October: 68-74.

Tavakkoli, M., Jamali, A., & Ebrahimi, A. (2010). New Method to Evaluate Financial Performance of Companies by Fuzzy Logic: Case Study, Drug Industry of Iran Asia Pacific.*Journal of Finance and BankingResearch*, 4(4).

Tayles, M., Pike, R. & Sofian, S. (2007).Intellectual capital, management accounting practices and corporate performance.*Accounting, Auditing & Accountability Journal*, 20(4), 522-48.

Tayles, M., Pike, R., & Sofian, S. (2007).Intellectual capital, management accounting practices and corporate performance.*Accounting, Auditing & Accountability Journal*, 20(4), 522-48.

Teese, D. (2000). *Managing intellectual capital*. London: Oxford University Press.

Ulrich, D. (1998).*Delivering Results: A New Mandate for Human Resource Professional*. Boston: Harvard Business School Press

Vision (2030) a government Project for Pakistan's future economic development. Cited on 15 July 2011; cited from <http://www.pc.gov.pk/chapterwise.html>

Wong, K.Y. (2005). Critical success factors for implementing knowledge management in small and medium enterprises.*Industrial Management & Data Systems*, 105(3), 261-79.

Appendix A

Textile Sector of Pakistan (listed companies) 2001						
(In Pak Rupees)						
Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	1,032,592,363	417,000,485	27,271,339	124,793,598	6,530,293
2	ZAHID	396,459,171	333,443,735	19,567,101	44,398,396	1,215,513
3	kohinoor weaving	2,295,334,390	1,094,053,357	358,500,692	582,565,888	14,188,595
4	REDCO	853,232,944	684,929,174	48,572,691	34,728,135	3,890,748
5	Ibrahim fibers	9,119,861,046	6,029,280,568	878,141,823	1,272,422,086	8,381,146
6	sana industries	184,462,378	167,845,708	45,089,011	53,857,549	815,225
7	nagia cotton	933,103,724	576,375,528	103,443,679	201,672,596	28,027,504
8	masood	1,601,510	861,525	113,243	392,463	24,440
9	KOHINOOR INDUSTRIES	4,317,261	3,442,760	(77,576)	304,195	24,127
10	SAMIN	808,927,431	252,898,095	(13,344,881)	98,063,975	4,589,618
11	N.P SPINNING	591,957,491	251,734,784	94,883,270	164,211,164	3,529,983
12	KOHINOOR TEXTILES	2,721,958	1,390,933	29,009	30,786	22,851

13	MIAN TEXTILE	845,267	518,771	1,876	67,943	5,203
14	SHAZAD	849,579,233	204,843,790	37,326,714	101,154,840	6,391,750
15	M.FARROQ	1,090,784,000	549,535,000	40,960,000	200,819,000	18,541,000
16	ARUJ	66,025,428	51,230,185	5,433,116	12,034,923	559,353
17	SHAHTAJ	395,329,761	265,939,520	40,595,172	80,075,652	911,433
18	YOUSAF WEAVING	925,628,589	569,343,459	(28,185,867)	93,372,251	10,901,388
19	SALEEM DENIM	127,660,506	115,848,107	(2,096,378)	(5,111,587)	1,041,311
20	TATA TEXTILE	664,533,827	337,582,072	61,346,234	175,074,510	5,927,821
21	ICC TEXTILE	496,229,974	210,345,050	10,938,459	105,447,537	11,599,751
22	SALLY TEXTILES	274,115,684	201,165,465	(1,681,864)	77,385,188	7,917,486
23	SAIF TEXTILE	819,247,000	525,716,000	28,059,000	80,074,000	17,756,000
24	RAVI TEXTILE	216,835,965	170,826,636	4,898,786	30,647,985	5,927,599
25	RUBY TEXTILE	332,164,088	245,963,006	8,013,369	49,247,685	3,319,213
26	RELIANCE	610,064,477	296,325,918	114,660,725	120,096,734	2,504,543
27	RESHAM	739,975,922	306,490,480	11,172,494	69,712,121	2,145,981
28	PUNJAB COTTON MILLS	1,503,319	565,391	547,997	937,982	742,011
29	GHAZI FABRIC	1,497,484,000	1,241,635,000	(114,371)	19,023,000	13,948,000

30	SAJJAD TEXTILE	461,495,537	377,002,675	916,607	40,719,279	4,585,397
Textile Sector of Pakistan (LSE listed companies) 2002						
In Pak Rupee						
Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	980,176,775	456,737,039	67,902,198	177,448,399	9,519,679
2	ZAHID	444,312,374	318,829,953	23,852,627	42,662,588	1,797,424
3	kohinoor weaving	3,254,506,190	1,842,789,953	329,298,170	566,684,455	17,847,525
4	REDCO	836,536,765	668,358,931	21,864,831	8,136,668	3,679,111
5	Ibrahim fibers	8,521,895,324	5,858,024,880	388,691,829	936,875,120	14,183,859
6	sana industries	182,773,410	16,293,584	39,027,300	49,587,441	894,152
7	nagia cotton	1,409,474,462	725,608,647	10,038,227	219,160,043	37,589,670
8	masood	1,833,191	896,482	106,512	405,011	24,569
9	KOHINOOR INDUSTRIES	4,157,362	3,365,481	(129,669)	133,514	26,712
10	SAMIN	781,005,016	267,353,361	2,845,000	101,191,774	5,357,550
11	N.P SPINNING	769,200,930	257,859,778	45,669,130	99,758,862	5,134,049
12	KOHINOOR TEXTILES	4,714,744	2,592,897	55,416	498,281	38,947
13	MIAN TEXTILE	781,720	471,220	(166)	71,777	5,884
14	SHAZAD	877,086,552	268,177,577	26,434,041	96,422,247	6,604,957
15	M.FARROQ	1,171,008,000	556,153,000	12,972,000	177,762,000	18,998,000

16	ARUJ	73,729,104	64,887,006	2,254,868	8,894,230	569,567
17	SHAHTAJ	420,968,212	279,279,270	52,711,579	94,280,785	9,721,321
18	YOUSAF WEAVING	8,622,357,410	8,271,436,799	(66,846,947)	72,401,066	12,105,980
19	SALEEM DENIM	120,784,626	109,810,519	(19,140,609)	(3,867,743)	552,922
20	TATA TEXTILE	719,330,016	330,450,198	10,447,203	15,139,865	7,722,868
21	ICC TEXTILE	436,072,252	193,935,240	9,951,377	81,863,449	11,073,503
22	SALLY TEXTILES	261,120,801	185,695,340	(21,990,586)	25,673,582	8,187,629
23	SAIF TEXTILE	1,241,653,000	832,963,000	48,619,000	112,703,000	20,191,000
24	RAVI TEXTILE	213,865,327	157,509,028	3,766,860	28,015,890	6,662,808
25	RUBY TEXTILE	297,254,920	245,188,112	(12,967,675)	17,800,777	3,777,440
26	RELIANCE	599,468,945	322,577,520	97,122,810	104,191,204	3,446,157
27	RESHAM	433,270,672	292,612,195	26,007,745	91,476,952	2,444,740
28	PUNJAB COTTON MILLS	1,354,755	514,839	601,948	839,916	742,001
29	GHAZI FABRIC	1,368,219,000	1,211,784,000	(46,570,000)	30,527,000	14,918,000
30	SAJJAD TEXTILE	448,697,882	365,226,622	13,225,348	48,314,540	3,653,397

Textile Sector of Pakistan (LSE listed companies) 2003

(In Pak Rupee)

Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	1,166,537,158	607,063,112	73,437,040	143,140,229	8,576,624
2	ZAHID	398,775,264	318,628,386	(5,491,735)	12,636,607	2,576,394
3	kohinoor weaving	4,001,180,284	2,231,413,251	203,171,076	446,846,466	21,778,662
4	REDCO	921,730,134	659,100,016	(34,392,862)	21,368,485	2,044,706
5	Ibrahim fibers	7,750,226,542	4,684,651,102	627,621,408	1,189,937,663	20,265,917
6	sana industries	184,787,861	22,535,259	39,027,300	53,474,257	915,882
7	nagia cotton	1,129,500,887	606,927,201	79,228,212	157,787,491	16,623,361
8	masood	3,587,810	1,381,341	116,644	592,392	34,600
9	KOHINOOR INDUSTRIES	3,875,157	3,295,145	116,510	86,500	35,336
10	SAMIN	1,213,890,173	613,430,556	16,554,857	127,988,355	7,304,118
11	N.P SPINNING	969,403,046	254,207,747	36,825,187	95,343,407	6,382,969
12	KOHINOOR TEXTILES	5,596,299	3,024,770	167,017	682,104	16,806
13	MIAN TEXTILE	718,198	433,435	18,763	77,304	5,015
14	SHAZAD	900,825,679	754,552,779	(13,696,018)	48,224,204	10,161,212
15	M.FARROQ	1,188,213,000	527,464,000	24,741,000	183,477,000	22,631,000
16	ARUJ	84,163,629	67,478,805	(3,482,173)	2,410,737	837,764
17	SHAHTAJ	813,240,129	584,481,157	35,358,031	71,067,320	10,441,904

18	YOUSAF WEAVING	931,030,665	546,542,888	(42,460,952)	61,612,022	13,570,766
19	SALEEM DENIM	112,995,619	104,266,254	(19,721,593)	(4,806,631)	485,301
20	TATA TEXTILE	826,930,841	536,979,564	50,748,347	139,365,431	1,722,124
21	ICC TEXTILE	490,745,799	187,179,248	6,919,334	67,424,947	12,171,589
22	SALLY TEXTILES	363,304,020	265,001,483	(1,595,832)	41,034,879	1,720,607
23	SAIF TEXTILE	1,710,215,000	884,238,000	60,122,000	141,243,000	24,124,000
24	RAVI TEXTILE	223,630,979	130,751,206	23,476,438	3,591,635	6,863,665
25	RUBY TEXTILE	391,187,805	295,894,592	1,137,565	21,875,414	4,300,999
26	RELIANCE	715,169,404	344,757,460	55,532,475	85,710,224	2,610,752
27	RESHAM	359,101,938	269,160,469	(2,945,116)	17,309,609	2,260,383
28	PUNJAB COTTON MILLS	843,710	478,347	(69,312)	938,928	92,900
29	GHAZI FABRIC	1,625,498,000	1,396,245,000	(43,685,000)	13,831,000	16,146,000
30	SAJJAD TEXTILE	453,438,512	348,166,139	(15,200,991)	16,190,820	5,222,982

**Textile Sector of Pakistan (LSE listed companies) 2004
(In Pak Rupee)**

Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	1,439,941,530	100,619,028	47,271,376	108,704,181	8,085,153
2	ZAHID	193,637,612	12,299,488	(3,578,739)	14,583,408	2,283,920
3	kohinoor weaving	6,010,456,548	462,680,391	154,708,533	503,846,781	41,166,390

4	REDCO	1,284,582,825	84,639,126	(15,211,599)	87,661,196	3,022,070
5	Ibrahim fibers	14,083,353,621	1,780,173,894	1,250,212,120	1,803,215,517	23,041,623
6	sana industries	192,353,246	43,375,575	27,688,692	44,361,247	985,672
7	nagia cotton	1,066,619,640	99,580,500	49,257,362	115,109,771	15,529,271
8	masood	4,370,972	586,810	111,487	626,322	39,512
9	KOHINOOR INDUSTRIES	4,003,780	148,238	(77,197)	182,213	33,975
10	SAMIN	1,311,067,284	111,655,494	(39,048,807)	118,310,461	6,654,967
11	N.P SPINNING	823,255,497	185,553,269	101,514,881	191,378,956	5,825,687
12	KOHINOOR TEXTILES	5,972,572	698,716	444,793	715,573	16,857
13	MIAN TEXTILE	1,112,424	51,774	11,707	57,701	5,927
14	SHAZAD	865,082,289	58,629,454	21,656,398	69,358,672	10,729,218
15	M.FARROQ	1,696,846,000	145,410,000	15,933,000	171,584,000	26,174,000
16	ARUJ	91,131,410	7,679,124	1,873,197	8,640,430	961,306
17	SHAHTAJ	1,162,115,253	50,310,649	27,627,547	61,775,420	11,464,771
18	YOUSAF WEAVING	989,019,950	67,980,386	(70,514,076)	82,078,560	14,098,174
19	SALEEM DENIM	107,762,016	(134,239)	(19,098,453)	-	134,239
20	TATA TEXTILE	1,350,412,918	150,761,956	55,060,417	152,165,292	1,403,336
21	ICC TEXTILE	570,018,676	43,704,458	6,804,088	56,829,931	13,125,473

22	SALLY TEXTILES	509,438,125	50,784,080	18,168,053	52,357,980	1,573,900
23	SAIF TEXTILE	2,744,825,000	141,637,000	56,713,000	162,145,000	20,508,000
24	RAVI TEXTILE	216,035,645	12,707,572	(2,397,574)	19,626,462	6,918,890
25	RUBY TEXTILE	773,066,018	34,514,598	15,145,951	39,119,790	4,605,192
26	RELIANCE	787,528,245	69,403,164	44,285,450	72,782,606	3,379,442
27	RESHAM	569,770,123	39,288,826	(182,546,232)	41,696,790	2,407,964
28	PUNJAB COTTON MILLS	779,783	285,336	53,644	377,736	92,400
29	GHAZI FABRIC	2,062,794,000	(125,212,000)	(84,544,000)	56,604,000	181,816,000
30	SAJJAD TEXTILE	462,611,910	9,122,306	(19,593,254)	14,912,866	5,790,560

Textile Sector of Pakistan (LSE listed companies) 2005

(In Pak Rupee)

Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	1,492,365,567	995,284,179	22,016,439	117,013,892	6,968,406
2	ZAHID	219,485,407	76,217,288	11,388,882	25,147,777	1,592,491
3	kohinoor weaving	6,929,834,789	3,856,489,726	(182,123,618)	204,073,766	44,226,842
4	REDCO	1,244,364,355	927,789,626	47,995,136	50,480,203	215,908
5	Ibrahim fibers	13,953,528,573	9,516,262,487	591,331,253	938,857,705	17,536,640
6	sana industries	291,003,318	107,096,867	13,219,630	19,972,680	5,921,533
7	nagia cotton	1,181,270,356	633,033,756	104,228,640	166,272,020	12,528,577

8	masood	5,859,090	1,923,241	130,160	572,058	9,114
9	KOHINOOR INDUSTRIES	4,278,085,675	3,482,829,513	(33,865,875)	36,845,791	1,963,147
10	SAMIN	1,457,285,108	695,386,544	(6,113,221)	134,147,550	5,896,852
11	N.P SPINNING	643,977,151	274,312,831	144,118,893	183,789,691	5,272,860
12	KOHINOOR TEXTILES	8,815,656	5,645,551	147,598	669,449	21,253
13	MIAN TEXTILE	1,115,050,948	715,298,196	(30,398,283)	45,700,724	4,428,524
14	SHAZAD	940,390,441	705,851,927	6,852,633	63,799,516	8,495,811
15	M.FARROQ	2,167,982,000	1,426,046,000	440,000	144,683,000	21,064,000
16	ARUJ	132,800,160	82,256,634	2,971,140	9,101,879	102,189
17	SHAHTAJ	1,112,282,935	712,554,784	3,565,045	69,383,381	9,817,277
18	YOUSAF WEAVING	721,315,977	431,475,453	(92,396,643)	2,256,382	9,265,885
19	SALEEM DENIM	104,004,525	95,356,488	(13,439,557)	-	101,700
20	TATA TEXTILE	2,412,605,168	1,447,806,621	80,740,078	217,642,211	10,427,177
21	ICC TEXTILE	994,856,403	560,089,206	11,353,124	58,685,202	8,171,259
22	SALLY TEXTILES	680,246,114	430,024,312	18,408,346	46,632,292	4,685,025
23	SAIF TEXTILE	6,058,720,000	4,805,746,000	37,397,000	189,854,000	19,165,000
24	RAVI TEXTILE	385,431,513	275,248,097	(17,395,102)	3,547,163	5,226,761
25	RUBY TEXTILE	741,051,428	574,742,680	6,245,603	29,831,192	3,563,259

26	RELIANCE	1,078,145,225	464,983,937	59,452,878	100,046,856	4,344,397
27	RESHAM	992,434,439	755,910,980	21,444,939	59,778,230	2,250,943
28	PUNJAB COTTON MILLS	37,391,132	(70,218,484)	4,287,210	9,416,454	650,000
29	GHAZI FABRIC	2,066,849,000	1,671,646,000	(44,286,000)	53,602,000	16,593,000
30	SAJJAD TEXTILE	508,238,519	364,740,829	18,285,699	49,827,825	5,167,387

**Textile Sector of Pakistan (LSE listed companies) 2006
(In Pak Rupee)**

Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	1,422,906,085	192,193,966	49,318,611	201,803,584	9,609,618
2	ZAHID	285,097,922	35,426,492	4,293,989	37,886,674	2,460,182
3	kohinoor weaving	7,823,519,011	735,153,684	6,049,436	795,069,322	59,915,638
4	REDCO	1,325,829,313	6,389,569	(33,774,210)	7,302,293	912,724
5	Ibrahim fibers	14,486,052,079	1,917,779,214	1,848,453,176	1,946,010,572	28,231,358
6	sana industries	336,836,577	46,067,546	32,126,880	53,760,424	7,692,878
7	nagia cotton	1,377,577,736	131,737,623	34,714,840	150,265,581	18,527,958
8	masood	6,519,292	878,957	173,998	889,986	11,029
9	KOHINOOR INDUSTRIES	1,981,567,625	108,958,282	89,044,614	110,892,601	1,934,319
10	SAMIN	1,440,264,424	180,753,054	(42,178,152)	190,816,767	10,063,713

11	N.P SPINNING	644,668,819	129,649,692	81,447,076	136,631,293	6,981,601
12	KOHINOOR TEXTILES	11,339,989	993,256	354,984	1,021,807	28,551
13	MIAN TEXTILE	1,112,802,473	20,445,515	(87,460,877)	26,155,083	5,709,568
14	SHAZAD	1,052,511,963	93,278,440	29,178,354	105,309,578	12,031,138
15	M.FARROQ	2,367,035,000	152,452,000	(34,201,000)	180,389,000	27,937,000
16	ARUJ	159,864,498	24,936,300	17,336,046	26,792,918	1,856,618
17	SHAHTAJ	1,221,942,323	150,443,062	57,380,828	166,370,797	15,927,735
18	YOUSAF WEAVING	956,728,493	113,583,339	39,505,557	124,804,022	11,220,683
19	SALEEM DENIM	98,512,803	(123,950)	187,607,687	-	123,950
20	TATA TEXTILE	2,555,775,348	353,491,983	67,333,729	370,020,943	16,528,960
21	ICC TEXTILE	1,179,166,421	86,448,143	(25,909,300)	103,814,817	17,366,674
22	SALLY TEXTILES	727,746,940	67,200,932	13,301,192	76,256,702	9,055,770
23	SAIF TEXTILE	3,587,890,000	312,202,000	52,373,000	346,118,000	33,916,000
24	RAVI TEXTILE	389,389,971	(2,925,558)	(29,843,698)	4,840,138	7,765,696
25	RUBY TEXTILE	88,247,333	24,244,006	(16,158,159)	30,030,132	5,786,126
26	RELIANCE	1,056,313,136	104,637,321	36,181,813	111,604,065	6,966,744
27	RESHAM	104,881,005	48,963,387	(6,332,490)	52,270,358	3,306,971

28	PUNJAB COTTON MILLS	499,701,617	8,766,454	53,462,483	9,416,454	650,000
29	GHAZI FABRIC	2,340,357,000	160,025,000	29,614,000	186,522,000	26,497,000
30	SAJJAD TEXTILE	570,021,566	31,917,096	(13,355,032)	36,620,496	4,703,400
Textile Sector of Pakistan (LSE listed companies) 2007 (In Pak Rupee)						
Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	1,572,816,863	1,054,159,627	14,854,146	159,845,076	9,740,710
2	ZAHID	961,220,449	584,235,225	148,905,127	229,418,740	8,086,944
3	kohinoor weaving	8,540,250,466	4,092,609,834	173,053,933	1,124,499,879	76,768,753
4	REDCO	1,390,436,775	977,878,046	470,915	67,229,437	4,299,705
5	Ibrahim fibers	15,299,866,986	10,683,235,389	1,786,635,814	1,630,511,474	34,504,352
6	sana industries	355,322,665	176,204,190	(5,133,627)	21,433,053	6,351,938
7	nagia cotton	1,210,565,923	755,906,864	54,882,225	163,445,138	18,891,435
8	masood	7,326,132	2,838,912	167,870	1,054,545	10,995
9	KOHINOOR INDUSTRIES	2,031,733,377	1,646,371,480	(106,219,863)	62,754,605	2,202,246
10	SAMIN	1,530,185,439	877,700,781	31,500,488	151,431,545	14,288,869
11	N.P SPINNING	523,609,985	242,203,783	115,455,403	121,065,306	6,593,211
12	KOHINOOR TEXTILES	14,484,053	9,936,988	(28,293)	1,045,526	36,603

13	MIAN TEXTILE	989,254,486	643,365,033	(145,658,602)	1,691,517	5,215,974
14	SHAZAD	977,927,145	822,503,458	(27,953,971)	62,473,849	14,641,075
15	M.FARROQ	2,335,229,000	1,411,919,000	(89,762,000)	167,627,000	33,813,000
16	ARUJ	189,821,533	89,621,222	16,388,953	28,939,430	2,189,002
17	SHAHTAJ	128,688,187	(436,927,590)	38,487,089	160,150,420	18,761,508
18	YOUSAF WEAVING	1,181,066,114	760,672,148	26,038,738	131,348,666	13,409,748
19	SALEEM DENIM	35,167,211	34,019,065	(6,888,500)	(2,036,761)	144,000
20	TATA TEXTILE	2,608,548,496	1,405,993,793	81,560,019	432,691,298	20,662,394
21	ICC TEXTILE	1,197,547,529	716,451,375	(72,166,429)	71,919,272	19,913,184
22	SALLY TEXTILES	727,794,869	510,924,014	(8,070,415)	56,864,358	4,845,048
23	SAIF TEXTILE	4,163,221,000	2,353,121,000	(21,762,000)	389,441,000	31,878,000
24	RAVI TEXTILE	201,226,737	200,384,533	(63,843,683)	(1,862,482)	8,053,826
25	RUBY TEXTILE	1,269,706,818	988,822,186	(56,493,662)	26,685,452	6,163,738
26	RELIANCE	1,054,140,967	496,661,111	75,209,626	211,500,532	7,459,412
27	RESHAM	1,036,201,736	773,588,641	(31,190,835)	46,872,778	4,282,223
28	PUNJAB COTTON MILLS	464,477,241	295,718,987	59,923,579	5,218,689	764,889
29	GHAZI FABRIC	2,302,980,414,000	1,721,448,691,000	(178,344,012,000)	48,981,553,000	28,190,934,000

30	SAJJAD TEXTILE	589,358,496	425,361,568	(13,361,310)	56,441,631	7,101,701
Textile Sector of Pakistan (LSE listed companies) 2008 (In Pak Rupee)						
Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	157,279,092	1,037,388,790	(54,021,234)	155,642,542	9,770,180
2	ZAHID	5,036,330,260	3,444,199,426	(40,989,852)	166,420,712	8,560,802
3	kohinoor weaving	9,082,467,061	4,311,432,117	(267,105,104)	793,520,519	36,385,108
4	REDCO	1,432,764,837	902,444,271	(43,627,346)	6,788,006	3,856,061
5	Ibrahim fibers	16,285,099,975	9,273,674,547	2,109,504,572	2,187,707,754	460,457,786
6	sana industries	359,629,095	172,829,941	7,236,216	37,645,972	6,160,131
7	nagia cotton	1,188,108,664	708,392,406	12,609,152	141,366,612	20,311,139
8	Masood	8,234,421	3,047,941	408,010	1,455,987	15,115
9	KOHINOOR INDUSTRIES	1,391,949,467	1,311,318,787	(151,579,212)	6,547,244	2,028,186
10	SAMIN	2,604,725,957	684,880,723	(11,780,491)	4,794,319	15,078,281
11	N.P SPINNING	646,584,605	236,252,641	69,488,919	17,702,572	7,386,863
12	KOHINOOR TEXTILES	3,515,322	2,241,899	130,805	1,162,700	44,187
13	MIAN TEXTILE	969,329,038	778,739,819	(149,916,522)	(70,195,598)	5,069,082
14	SHAZAD	1,146,849,562	879,708,634	4,177,770	52,107,401	14,193,336

15	M.FARROQ	2,333,271,000	1,308,185,000	(56,378,000)	159,696,000	35,387,000
16	ARUJ	213,070,461	120,818,317	12,189,117	27,484,241	2,100,724
17	SHAHTAJ	1,505,202,990	593,577,669	15,593,086	129,135,297	19,054,962
18	YOUSAF WEAVING	1,308,722,827	854,473,831	705,939	175,629,676	16,643,569
19	SALEEM DENIM	33,313,640	32,895,762	(678,660)	(44,350)	144,000
20	TATA TEXTILE	4,142,217,941	2,318,945,150	27,677,420	424,826,674	26,673,353
21	ICC TEXTILE	1,065,102,631	640,440,666	(155,760,256)	(19,541,105)	9,575,360
22	SALLY TEXTILES	1,032,055,209	556,467,034	22,959,669	111,523,975	5,494,762
23	SAIF TEXTILE	4,293,409,000	2,305,033,000	(79,409,000)	440,437,000	35,315,000
24	RAVI TEXTILE	382,878,717	337,123,707	4,560,786	(14,573,460)	3,359,166
25	RUBY TEXTILE	1,508,717,111	1,149,247,611	(52,655,291)	51,958,375	8,330,365
26	RELIANCE	1,202,107,399	494,696,624	85,093,941	215,947,210	11,390,301
27	RESHAM	1,169,153,894	886,522,880	(54,186,643)	36,321,943	3,817,860
28	PUNJAB COTTON MILLS	392,610,721	280,280,033	121,714,393	(54,186,758)	198,000
29	GHAZI FABRIC	2,443,769,722,000	1,650,925,312,000	(161,723,218,000)	65,761,500,000	27,323,360,000
30	SAJJAD TEXTILE	589,358,496	394,847,555	(60,849,515)	10,759,069	7,563,367
Textile Sector of Pakistan (LSE listed companies) 2009 (In Pak Rupee)						

Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	1,547,801,631	925,767,126	108,119,717	368,861,432	10,690,930
2	ZAHID	379,845,436	2,371,782,372	(116,195,730)	263,515,960	9,926,204
3	kohinoor weaving	9,051,232,152	5,672,331,210	(661,761,010)	659,137,986	47,525,888
4	REDCO	1,437,836,005	900,558,677	(1,953,514)	41,527,879	5,114,501
5	Ibrahim fibers	20,086,072,521	15,015,043,324	1,926,152,220	2,311,056,000	54,100,928
6	sana industries	376,227,705	172,188,768	36,102,133	68,973,148	6,354,076
7	nagia cotton	1,290,139,388	681,104,344	14,650,351	216,855,599	21,046,269
8	Masood	9,621,739	3,166,615	550,111	2,094,764	67,992
9	KOHINOOR INDUSTRIES	932,212,764	928,079,105	(301,194,019)	(81,048,590)	43,755,588
10	SAMIN	2,319,286,979	638,615,362	(69,235,579)	111,660,202	17,111,205
11	N.P SPINNING	625,627,407	229,535,945	10,124,236	67,845,862	8,597,672
12	KOHINOOR TEXTILES	13,275,539	(37,856,345)	(5,361,676)	1,259,906	62,565
13	MIAN TEXTILE	893,878,982	734,520,886	(76,126,969)	(24,714,514)	4,817,760
14	SHAZAD	125,216,385	(140,980,882)	(55,491,232)	1,675,246,116	31,823,952
15	M.FARROQ	1,978,985,000	1,268,908,000	(408,869,000)	(19,278,000)	43,430,000
16	ARUJ	232,670,363	114,559,198	8,591,912	3,095,368	2,266,329

17	SHAHTAJ	1,447,291,401	(6,031,769,390)	50,432,172	270,479,224	19,985,578
18	YOUSAF WEAVING	1,267,530,795	807,152,957	14,898,035	214,421,423	16,168,430
19	SALEEM DENIM	27,764,360	27,349,744	(1,383,188)	-	144,000
20	TATA TEXTILE	3,183,111,262	1,730,992,877	(217,728,867)	437,575,970	2,410,056
21	ICC TEXTILE	1,457,778,194	1,045,603,961	(69,800,974)	88,953,580	10,605,016
22	SALLY TEXTILES	917,416,545	549,958,387	4,248,067	71,018,258	6,667,768
23	SAIF TEXTILE	4,000,300,000	2,428,946,000	(691,529,000)	111,282,000	43,164,000
24	RAVI TEXTILE	437,022,970	301,994,493	242,654	(347,095,373)	4,543,903
25	RUBY TEXTILE	1,470,726,103	1,111,023,830	(106,991,198)	26,507,967	7,293,111
26	RELIANCE	22,480,683,629	13,020,954,778	630,442,076	1,374,293,444	37,792,708
27	RESHAM	1,180,805,643	824,910,071	(13,737,243)	123,020,619	4,544,061
28	PUNJAB COTTON MILLS	326,823,957	264,608,370	(66,545,075)	(46,462,415)	1,016,400
29	GHAZI FABRIC	2,453,538,396,000	1,445,884,868,000	(130,636,168,000)	205,108,941,000	28,807,276,000
30	SAJJAD TEXTILE	395,888,043	376,960,201	(70,884,639)	(4,371,945)	4,171,389

Textile Sector of Pakistan (LSE listed companies) 2010

(In Pak Rupee)

Sr. No	Textile Company	Total Assets	Fixed Assets	Profit before Tax	VA/OP+EC+D+A	Salaries and Wages
1	NAGINA	1,513,769,276	844,624,071	176,388,103	399,269,572	13,785,176
2	ZAHID	6,775,288,720	5,405,262,312	71,481,612	519,122,175	11,200,126

3	kohinoor weaving	8,691,983,556	5,491,985,554	(363,474,805)	324,598,369	98,056,491
4	REDCO	1,353,623,263	874,852,814	5,047,571	59,606,820	4,956,600
5	Ibrahim fibers	21,779,468,504	16,319,644,220	3,893,804,553	2,749,289,313	68,330,533
6	sana industries	403,008,309	166,399,553	58,489,263	99,181,725	9,143,380
7	nagia cotton	1,255,840,567	754,338,200	262,549,759	486,758,761	26,147,211
8	Masood	12,297,115	3,954,541	904,428	2,635,319	99,657
9	KOHINOOR INDUSTRIES	821,120,287	794,214,700	(35,849,023)	(43,042,930)	13,210,973
10	SAMIN	2,285,863,554	847,865,417	(13,547,095)	81,503,246	18,287,567
11	N.P SPINNING	756,315,590	229,248,651	122,967,546	178,746,542	10,198,661
12	KOHINOOR TEXTILES	17,057,299	10,501,191	376,448	20,000,809	73,637
13	MIAN TEXTILE	800,351,210	696,298,790	(36,070,642)	10,380,766	4,872,688
14	SHAZAD	3,466,440,470	3,080,805,220	164,837,930	1,857,692,022	36,269,659
15	M.FARROQ	1,927,756,000	1,438,592,000	(433,152,000)	(190,235,000)	(58,298,000)
16	ARUJ	248,990,810	120,374,393	6,834,116	31,256,533	1,876,704
17	SHAHTAJ	1,555,262,048	689,140,513	133,327,666	333,745,788	22,691,008
18	YOUSAF WEAVING	1,432,904,492	907,681,892	27,898,297	234,685,717	22,412,019
19	SALEEM DENIM			(1,165,147)		144,000

		27,764,360	27,349,744		-	
20	TATA TEXTILE	3,395,127,200	1,978,347,468	457,293,469	947,612,338	2,586,787
21	ICC TEXTILE	1,381,652,024	999,661,244	(144,206,879)	11,390,809	11,566,864
22	SALLY TEXTILES	1,206,033,388	758,822,678	145,967,242	256,788,104	6,599,691
23	SAIF TEXTILE	472,148,000	(1,906,578,000)	103,101,000	710,696,000	48,259,000
24	RAVI TEXTILE	404,423,088	286,530,136	(36,079,960)	(452,613,908)	4,661,584
25	RUBY TEXTILE	1,544,196,289	1,067,201,514	34,302,038	146,733,782	9,889,615
26	RELIANCE	27,944,090,004	22,771,636,235	111,887,765	1,910,843,333	52,588,820
27	RESHAM	1,284,068,247	910,812,502	277,175,952	420,740,657	6,042,944
28	PUNJAB COTTON MILLS	315,089,366	252,064,577	(25,328,777)	(46,462,415)	3,357,000
29	GHAZI FABRIC	2,481,800,171,000	1,412,428,830,000	133,165,139,000	448,716,946,000	34,312,323,000
30	SAJJAD TEXTILE	431,715,862	414,697,447	81,141,754	(23,324,321)	3,184,230

