

**INTELLECTUAL CAPITAL AND ORGANISATIONAL
PERFORMANCE: THE TEXTILE INDUSTRY IN
PAKISTAN**

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PAKISTAN**

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INTELLECTUAL CAPITAL AND ORGANISATIONAL PERFORMANCE: THE TEXTILE INDUSTRY IN PAKISTAN

ABSTRACT

Intellectual capital (IC) has been argued as one of the key elements for organisation value creation, and has brought drastic productive change in competitive business environment. IC is used in organisation to gain benefits from intangible resources. This concept is well-utilised in developed world and implemented in various manufacturing and service organisations. However, little attention is paid to IC and still empirically under-researched in developing countries especially in Pakistan. This study focuses on the role of IC on organisational performance in textile industry in Pakistan. Further, this study also investigated the individual dimensional effect of IC on organisational performance. In seeking empirical evidences of IC and its dimensions, an interactive and comprehensive model is developed. This study model is based on previous theories and theoretical models. IC as overall and its dimensions: human capital, structural capital, relational capital, and technological capital are applied as independent variable. In investigating the relationship between IC (its dimensions) and organisational performance, organisational performance is measured with management's perception on internal sales, export growth, and profitability, output per worker, value added per worker, cost of production and new product development. Besides, this research model also utilised the mediating role of knowledge process capability and innovation capability between IC and organisational performance. Knowledge process capability is the combination of knowledge acquisition, knowledge documentation, knowledge creation, and knowledge transfer and knowledge application while innovation capability is composed on product innovation and process innovation. The target population of current study is large textile companies. However, there are no authentic sources which could indicate all large textile companies in Pakistan. Therefore, various sources are utilized to make a complete list of large textile companies. A written survey

questionnaire is used for collecting primary data. Simple random sampling is used for collecting the samples. A total of 354 usable questionnaires are collected from 240 companies. The structural equation modelling (SEM) method is applied to estimate the model. The core findings of this study showed that IC has a significance influence on organisational performance. Similarly, all dimensions of IC have significant positive effect on organisational performance except structural capital. Further, knowledge process capability and innovation capability are also found to mediate the relationship between IC and organisational performance. In addition, the mediating role of knowledge process capability with dimensions of IC reveals that all dimensions are found to be significant. Finally, innovation capability is found to mediate with only two dimensions of IC (human capital and relational capital) and organisational performance. This study contributes to the existing body of knowledge by utilising various dimensions of IC and its impact on organisational performance that is under-researched in Pakistan as a developing country. Further, this study has imperative implications in understanding the utilisation of IC in manufacturing and service industries of developing countries. Finally, this study also found constructive suggestions for researchers, top management, decision makers, and the policy makers to improve the likelihood of adopting IC in their respective organisations.

Keywords: intellectual capital, knowledge process capability, innovation capability, organisational performance, Pakistan

MODAL INTELEK DAN PRESTASI ORGANISASI: INDUSTRI TEKSTIL DI PAKISTAN

ABSTRAK

Modal intelek (MI) merupakan salah satu elemen penting untuk penciptaan nilai di organisasi, serta telah memberi perubahan produktif yang drastik di dalam persekitaran perniagaan yang berdaya saing. MI digunakan di dalam organisasi untuk mendapatkan manfaat daripada sumber tersirat. Konsep ini dipraktikkan dengan baik di negara maju dan dilaksanakan di organisasi pembuatan dan perkhidmatan. Walau bagaimanapun, kurang perhatian diberikan kepada MI dan masih tidak diterokai secara empirik di negara-negara membangun terutama di Pakistan. Kajian ini memberi tumpuan kepada peranan MI terhadap prestasi organisasi industri tekstil di Pakistan. Seterusnya, kajian ini juga menyelidik kesan dimensi MI individu terhadap prestasi organisasi. Dalam mencari bukti empirikal MI dan dimensinya, satu model yang interaktif dan komprehensif telah dibangunkan. Model kajian ini adalah berdasarkan teori-teori terdahulu dan model-model teori. Keseluruhan MI dan dimensinya: modal insan, modal struktur, modal hubungan, dan modal teknologi digunakan sebagai pembolehubah bebas. Dalam mengkaji hubungan antara MI (dimensi) dan prestasi organisasi, prestasi organisasi diukur berdasarkan persepsi pengurusan terhadap jualan dalaman, pertumbuhan eksport, dan keuntungan, hasil pengeluaran setiap pekerja, nilai tambah setiap pekerja, kos pengeluaran dan pembangunan produk baru. Selain itu, model penyelidikan ini juga menggunakan peranan perantaraan keupayaan proses pengetahuan dan keupayaan inovasi di antara MI dan prestasi organisasi. Keupayaan proses pengetahuan merangkumi pengambilalihan pengetahuan, dokumentasi pengetahuan, penciptaan pengetahuan, dan pemindahan pengetahuan serta aplikasi pengetahuan manakala keupayaan inovasi melibatkan produk inovasi dan proses inovasi. Sasaran populasi kajian ini adalah organisasi tekstil yang besar. Walau bagaimanapun tiada sumber yang tepat untuk menunjukkan semua organisasi tekstil yang besar di Pakistan.

Oleh itu, pelbagai sumber digunakan untuk mendapatkan senarai lengkap organisasi tekstil yang besar. Borang soal selidik bertulis digunakan untuk mengumpul data primer. Pensampelan rawak mudah digunakan untuk mengumpul sampel. Sejumlah 354 borang soal selidik diperolehi daripada 240 organisasi. Kaedah pemodelan persamaan struktur (SEM) digunakan untuk menganggarkan model. Hasil utama kajian ini menunjukkan bahawa MI mempunyai pengaruh penting terhadap prestasi organisasi. Namun begitu, semua dimensi MI mempunyai kesan positif yang signifikan terhadap prestasi organisasi kecuali modal struktur. Selain itu, keupayaan proses pengetahuan dan inovasi juga menjadi perantara hubungan antara MI dan prestasi organisasi. Di samping itu, peranan pengantara keupayaan proses pengetahuan dengan dimensi MI menunjukkan bahawa semua dimensi adalah penting. Akhirnya, keupayaan inovasi menunjukkan perantara hubungan dengan dua dimensi MI sahaja (modal insan dan modal hubungan) dan prestasi organisasi. Kajian ini menyumbang kepada pengetahuan yang sedia ada dengan menggunakan pelbagai dimensi MI dan impaknya terhadap prestasi organisasi di negara membangun seperti Pakistan. Selain itu, kajian ini mempunyai implikasi yang penting dalam memahami penggunaan MI di industri pembuatan dan perkhidmatan di negara-negara membangun. Akhir sekali, kajian ini juga dapat memberi pandangan dan cadangan yang membina kepada para penyelidik, pengurusan tertinggi, pembuat keputusan, dan penggubal dasar untuk meningkatkan penggunaan MI di sesebuah organisasi.

Keywords: modal intelek, keupayaan proses pengetahuan, keupayaan inovasi, prestasi organisasi, Pakistan

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LIST OF SYMBOLS AND ABBREVIATIONS

APC	Average path coefficient
APTMA	All Pakistan Textile Mills Association
ARS	Average R-squared
ATC	Agreement on Textile and Clothing
AVE	Average Variance Extracted
AVIF	Average Block Variance Inflation Factor
GDP	Gross Domestic Product
GoF	Goodness-of-fit
GSP	Generalised System of Preferences
IC	Intellectual Capital
ICM	Intellectual Capital Management
ICT	Information and Communication Technologies
KBV	Knowledge-Based View
KPC	Knowledge Process Capability
MCM	Market Capitalisation Method
MFA	Multi Fibre Arrangement
MI	Modal Intelek
R&D	Research and Development
RBV	Resource-Based View
ROA	Return on Assets
SECI	Socialisation, Externalisation, Combination and Internalisation
SECP	Security and Exchange Commission of Pakistan
SEM	Structural Equation Modelling
UM	University of Malaya
VIF	Variance Inflation Factor
WTO	World Trade Organisation

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CHAPTER 1: INTRODUCTION

1.1 Introduction

This study particularly focuses on intangible assets: Intellectual Capital (IC) and its effects on textile industry performance in Pakistan. To add to this, each dimensional effect of IC is also examined in this study. Further, the mediating role of knowledge process capability and innovation capability is also determined to see their influence between IC and organisational performance.

This first chapter presents a brief introduction of thesis. It starts with the background of study, including textile industry profile, elaborating the problem statement, and determines the research questions and objectives. This chapter also includes significance of research, as well as scope of research study. Finally, organisation of thesis and a brief summary of the chapter are explained.

1.2 Background of Research

The industrial sector in Pakistan contributes 20.8 percent to gross domestic product (GDP) (total GDP, US \$ 236.62 billion 2014). The manufacturing sector is the key component playing a dominant role in the socio-economic progress of the economy, containing 64.92 percent share in the overall industrial sector. Among manufacturing industries, textiles & clothing sub-sectors occupy a pivotal position in Pakistan's economy, accounting for 8 percent of total GDP with significant potential for growth and contributing nearly 55 percent of Pakistan's exports. It contributes 40% of total workforce (Wasti, 2015-2016).

The mainstream economies such as USA, EU, Korea, China, India, Bangladesh, and Vietnam have improved performance in textile market with growth in their world

exports (WTO, 2015). However, Pakistan's textile industry export performance is stagnant in the international market which is a serious concern for country's economy. In international competitive business environment in order to accomplish customer's demand; companies develop employees' skills, competences, capabilities, and equip them with information and communication technologies (ICT). Such employees become significant sources of innovation and strategic renewal. They produce value added products; but Pakistan traditionally remained stagnant in early stage of production and has not taken advantage of high value added products (Latif & Javid, 2014). However, the government of Pakistan has announced its textile policy 2014-2019 with the vision to become a leading country in the field of export of value added textile products and increasing productivity in international market (Wasti, 2015-2016). But the question is how to increase productivity and export?

In intense competitive environment of textile industry, organisations face many challenges to sustain in the international economy. A number of empirical literatures discuss the role of physical assets for the organisational growth and competitiveness. These physical assets have shown a vital role for companies' performance. However, to survive in international markets of textile, companies need to invest on intangibles assets which are more influential and crucial for companies' performance, and the factor that plays a pivotal role for the performance of company is IC (Kapelko & Lansink, 2014; Sivalogathan & Wu, 2015). The organisational performance depends on its competitive advantage, whereas sustained competitive advantage comes from the uniqueness of resources. This point is well explained by resource-based theory (Barney, 1991; Bontis et al., 2000). According to this theory, a company with more inimitable resources has more chance of stronger competitive advantage. The best inimitable resources can be the company's IC which is divided into four dimensional concepts i.e. human capital; structural capital; relational capital and technological capital (Bontis,

1999; Bueno et al., 2004; Roos et al., 1997; Stewart, 1997). In this research study, human capital is regarded as employees' knowledge, skills, satisfaction and motivation (Bontis et al., 2000). Structural capital refers to organisation structure, procedures, processes and administrative programmes (Bontis et al., 2000; Roos et al., 1997). Relational capital explains on relations with customers, suppliers and their loyalty towards organisation (Kim & Kumar, 2009). Finally, technological capital indicates information and technological knowledge, operations, and research and development (R&D) (García-Muiña & Pelechano-Barahona, 2008; Khaliq et al., 2015).

Despite the importance of IC, empirical literatures weakly discuss its role to promote the performance of textile sector. Neither the government nor the companies' emphasises on IC rather they focus most resources on physical assets. By investigating the relationship between IC and textile performance, this study is linked with the broader agenda to the government of Pakistan's textile policy in the development of textile industry.

In this following section a brief view of world textile history is discussed, followed by Pakistan's textile industry background, next the demographic profile of Pakistan textile industry and textile policy is highlighted.

1.2.1 World Textile Industry

Trade in textile has increasingly been subject to protection, especially for developing countries. The very first trade agreement was Multi-Fibre Arrangement (MFA) that was effective from 1974-1994. The MFA was used to impose quotas, through bilateral agreements or unilateral actions, because market disruption in the importing countries could increase due to rise in textile imports. While quotas imposed on exporting member countries and as they were restricted, it became compulsory for importing countries to observe consultation and follow the rules for determining a situation of

market disruption. As a matter of fact the sole purpose of the MFA was to protect against imports from developing countries.

The Agreement on Textile and Clothing (ATC) replaced the previous MFA agreement. The ATC agreement was lunched to the member countries for the period of ten years (1995-2005). These ten years were set in as a result of World Trade Organisation (WTO) agreements which give time and space to the importers and exporters to adjust themselves to the new international trade era. These ten years were divided into four stages which commenced from January 1995 and ended on January 2005. In each phase, it was obligatory to the importing countries to follow General Agreement on Tariffs and Trade rules by restraining a specified percentage of products. Further, it was mandatory to rise the quotas of remaining restrained products with an approved growth rate (Latif & Javid, 2014; Malik & Ejaz, 2009).

The key motive behind ATC was to enhance global trade, get market access to member countries of the WTO and to give enough time to importer and exporter for adjustment in the new system. Further, discrimination against imports should also be avoided while taking measures for trade policy. At international level, the role of the WTO is to deal with the rules of trade between nations. The WTO works for trade liberalization, provide a platform for the governments to negotiate trade agreements and provide an environment for the settlement of a trade dispute. Furthermore, one of the central purposes of WTO is to make ease in trade by removing obstacles. The conflict of interest does occur in trade relations. In such scenario the WTO arrange favourable atmosphere for negotiation. Based on some neutral processes and procedures the differences are settled (Malik & Ejaz, 2009).

1.2.2 Textile Industry in Pakistan

The Pakistan textile industry has some fundamental advantage to other textile exporting countries. Pakistan is the third largest producer of yarn and ranks fourth for the production of cotton in the world. It is an added advantage for an exporting country to have local raw material which is a positive point for reducing the cost of business. The textile value chain starts from ginning, spinning, weaving, processing & finishing. Further, the value chain ends by making knitted fabrics & clothing with latest fashion garments. The production chain continues and the finished product of one sub-sector is the basic raw material for the other. All sub-sectors contribute for value addition and job creation (Latif & Javid, 2014; Wasti, 2015-2016).

The economy of Pakistan is considered as semi-industrialized. The industrial sector contributes twenty four percent to GDP. The total labour force in Pakistan is approximately 57.42 million (Labour Force Survey, 2014-2015). Pakistan and India got independence from British rule in 1947. Pakistan at that time was divided into West Pakistan and East Pakistan (Now Bangladesh). The west was renowned as a cotton producing area and jute was produced in East.

Basically, textile industry in Pakistan is comprised of three main sectors i.e. spinning, weaving and made-up sector. In production point of view the most important segment of textile is spinning. The capacity utilisation of the standalone and composite units of spinning are 89% and 60%, respectively. Compared with other textile producing countries, Pakistan's textile industry has advantages for quality yarn production. The country produces quality cotton yarn with various varieties. The value chain begins with spinning and moves to the next level.

The next sector is weaving which is further divided into two segments. The first one is mill segment (Integrated and Independent Weaving Units), and the second segment is

Non-mill segment which is comprised of power looms unit. In the late fifties the mills segment captured the momentum with the announcement of first five year textile plan. At that time, the Pakistan Industrial Development Corporation was formed for this sector's development. As a result, the textile units, including bleaching, printing and processing reached at 180 units in mid-sixties. All these units were located in Karachi and only a small number were in Punjab. However, in 1968 majority of weaving mills closed due to sudden increase in excise duty collections. Thus, the number of weaving mills dropped down in numbers and installed capacity reached from 26,000 looms in 1979 to 7,723 looms only in 2013.

Finally, the textile made up is one of the value added sectors contribute over fifty percent of textile exports. This sector consists of various sub-groups such as ready-made garments and hosiery & knitwear. This sector further comprises of fashion apparels including towels, tents & canvas, cotton bags and bed wear. In addition, the made-up sector showed that hosiery & knitwear have the capacity of 12,000 knitting machines. Moreover, development of export also enhanced by manufacturing local machineries and importing machineries through various modes. Furthermore, the ready-made is divided into various small, medium and large units. Particularly, this segment is developing due to formation of new large units. The said segment of textile has a value added textile chain which has an income tax exemption and allowed free import of machineries for exports. Further, towel looms consists of 7500 units and due to limited local demand this sector is dependent on export outlets. The trend is now being changed and the demand of high quality product is quite high. Finally, the canvas and tents sector has production capacity of more than 100 million sq. meters. Pakistan supplies cheapest canvas and tents. Among total production, sixty percent is exported and forty percent is consumed locally by food department and armed forces.

In the recent years, patterns of performance are not consistent. After the closure of trade barriers, the textile sector has faced extreme competition from other exporting countries. The deteriorating security situation and rise in the cost of domestic utilities coupled with electricity shortage, lack of skills, human capital, communication technology and customer & supplier relations have constrained growth prospects of the textile sector. There is rapid change in the market conditions of key importing countries. The regional competitors are changing their focus towards value added products. Hence, the expected vigilant entrepreneur will take benefits from the changing dynamics of the industry.

The Pakistan textile industry has not taken advantage to produce value added products, rather, remained stuck in the early stages of production. Though the textile sector is contributing well at national level, but its world export share is not satisfactory which is a massive concern for this industry. According to WTO, Pakistan textile industry trade in world level is stagnant. Table 1.1 shows the comparison between world textile and Pakistan textile export. World textile and clothing export have increased from \$706 (2011) to \$766 (2013) billion, and Pakistan textile & clothing increased from \$13.7 (2011) to \$13.8 billion (2013) which shows almost a stagnant performance.

Table 1.1: Export of Textile and Clothing

	(US \$ Billions)								
	2005	2006	2007	2008	2009	2010	2011	2012	2013
World Textile	202.4	220.4	240.4	250.2	209.9	250.7	294	286	306
World Clothing	276.8	309.1	345.8	361.9	315.1	351.5	412	423	460
Total	479.5	529.5	586.2	612	524	602.2	706	709	766
Pakistan Textile	7	7.5	7.4	7.2	6.5	7.8	9.1	8.7	9.3
Pakistan Clothing	3.6	3.9	3.9	3.9	3.4	3.9	4.6	4.2	4.5
Total	10.6	11.4	11.2	11	9.9	11.8	13.7	12.9	13.8
Percentage of World Trade	2.23	2.15	1.91	1.81	1.88	2	1.94	1.81	1.8

Source: WTO

1.2.3 Demographic Profile of Textile in Pakistan

Pakistan is comprised of five provinces, namely Balochistan, Punjab, Sindh, Khyber-Pakhtunkhwa, and Gilgit Baltistan. Besides provinces, there are three other territories: federally administrated tribal area (FATA), Islamabad capital territory and Azad Kashmir. It is a Muslim majority country which covers an area of 796,096 square kilometres (Saleem & Higuchi, 2014; Bhutta et al., 2008). The textile companies in Pakistan are mostly located in Punjab and Sindh, and the remaining ones are located in Khyber-Pakhtunkhwa, Balochistan, and Islamabad.

1.2.4 Current Scenario of Textile in Pakistan

In 2014, Pakistan attained the status of generalised system of preferences (GSP) in which through this mechanism, Pakistan can obtain access to export its products to European market. The basic objective of GSP is to support developing countries to enter in European Union market. Sadly, Pakistan textile industry has not grabbed benefits from such vital opportunity. One basic reason may be that textile export countries are investing for product innovation and making value added goods which are also the priority of European market (Wagan, 2015).

1.2.5 Textile Policy 2014-19

The government in Pakistan has established a new textile policy (2014-19). The main reason behind the textile policy is to make this sector competitive and sustainable. The government will ensure that the textile policy's benefits spread at national and international level and it will have a productive impact on textile companies through different measures including the development of clusters. The current textile policy's central theme is to enhance dependence on special factors that provide comparative advantage. Further, to raise the use of new technology, i.e. ICT, for the purpose to improve all textiles value chain. The main vision of this policy is to become a leading

provider of value added textile goods. The textile sector has to perform better to be sustainable in international market by providing high quality textile products. Hence, the government has intended to provide a cash subsidy for textile sector. Some of the key goals of textile policy are as follows:

- To double textile product sale per annum in the next five years.
- To double value addition product in five years.
- To provide additional machinery and technology.
- Enhancing (ICT) usage by initiating various schemes.
- To improve the garment sector.

However, such policies need time, but so far nothing has been implemented. Based on international trade figures, there is increasing world demand of manmade fibres, finished value added products i.e. garments. On the other hand, Pakistan textile industry's supply is mainly based on cotton. Moreover, textile sector suffered from low per capita productivity, and one of the main reasons is the lack of skilled workers. Compared to its main competitors, Turkey and India, the Pakistan's textile industry performance remains low (Wasti, 2015-2016).

Textile industry in international level is moving from traditional to knowledge-based intellect. Due to fast changing business environment textile sector faced strong pressure of competition internationally (Vila & Kuster, 2007). The developing countries like Pakistan have to bring changes in textile sector in order to meet international standards. However, current Pakistan textile policy is a good initiative but so far it remains good on documents only and not practically implemented. Moreover, IC is considered as a pivotal tool for achieving competitive advantage in present knowledge-based economy and it can be applied in any kind of industry (Bontis, 2001; Khaliq, Shaari, et al., 2011). In addition, IC is also gaining much importance in textile sector performance

(Sivalogathan & Wu, 2015). It may be possible by providing skills to employees, bringing changes in organisation processes and procedures, and developing long-term and strong relations with customers and suppliers. Lastly, the technological change is securing a good position in any organisation for making quick accessibility to the needs of people. Hence, it becomes a challenge for the textile industry of developing countries and specifically for Pakistan to survive in today's knowledge-based era.

1.3 Problem Statement

In the current global arena, textile companies are facing immense pressure of competition in business environment. To sustain in international market, companies need to be competitive by enhancing value added products. Although Pakistan textile industry has a plethora of contribution in GDP and workforce, the deteriorating situation of Pakistan textile industry in international market has posed serious concerns for its competitiveness, and export performance of textile is facing a declining trend (WTO, 2015). Pakistan's textile lagged behind in global textile market, it needs to diversify its market and provide value added products with competitive cost. Likewise, this industry also lacks investment for human resource development and innovation that is necessary for organisation's economic growth performance (Kazmi & Takala, 2014; Khaliq et al., 2015).

Similarly, experts consider among others, lack of intangibles such as IC is a major reason for organisation's performance challenges (Bontis, 1998). IC (human, structural, relational, and technological capital) is one of the key elements for organisation's value creation, and has brought productive change in competitive business environment (Andreeva & Garanina, 2016; Lev, 2000; Subramaniam & Youndt, 2005). According to Zangouinezhad and Moshabaki (2009), as global competition heightens, a firm's IC could be the key asset for future survival.

The major elements of the production-based economy are land, labour, capital, and physical assets. But, IC has changed the traditional organisational behaviour and is seen as an added value to physical assets (Bueno et al., 2004). However, in a rapidly challenging competitive market, simply owning knowledge resources may not guarantee sustained competitive advantages, because changes can be disruptive and unpredictable. That's why a careful approach is required to measure IC and performance (Eisenhardt & Martin, 2000; Hsu & Sabherwal, 2011). Theory of knowledge-based view (KBV) considers knowledge management process to be the key source for leveraging knowledge resources and performance (DeCarolis & Deeds, 1999; Grant, 1996b; Hsu & Sabherwal, 2011). IC focuses on new methods to create value and KM process can provide the needed inputs for the knowledge flow. Effective use of these two can bring success and viability for organisation (Smith et al., 2005; Wiig, 1997). In addition, innovation is also a crucial factor in competitive environment. According to Sivalogathan and Wu (2015), competition without innovation capability has negative impact on companies growth. Similarly, there is fragmented relationship between IC and innovation capability (Leitner, 2015). Moreover, innovation has deep impact on the economy but there is a lack of literature available on the subject to measure how IC of the firm contributes to innovation (Santos-Rodrigues et al., 2010).

Despite the vital significance of IC and its role on organisational performance, it is still empirically under-researched (Andreeva & Garanina, 2016; Khalique et al., 2015). Generally, the greater part of IC studies focuses on developed nations, and scarce on developing countries. There is acute shortage of IC research on Asian countries, particularly in Pakistan (Khalique et al., 2015). Therefore, there is a need of study to see the direct and indirect effects of IC and its dimensions on textile industry performance.

1.4 Research Questions

Based on the above problem statement, this study attempted to statistically test the relationship between IC and organisational performance of textile industry in Pakistan. Besides, individual dimensions of IC (further illustrations in Chapters 2 and 3) i.e. human capital, structural capital, relational capital, and technological capital are also utilized to understand their relationships with organisational performance. In addition to this, the mediating effect of knowledge process capability and innovation capability between IC and organisational performance is also explored. Hence, the research questions of this study are as follows:

1. What is the relationship between IC and organisational performance in textile industry in Pakistan?
2. What is the relationship between the dimensions of IC (Human, Structural, Relational, and technological capital) and organisational performance in textile industry in Pakistan?
3. How do knowledge process capability mediate between IC (overall and by dimensions) and organisational performance?
4. How does innovation capability mediate between IC (overall and by dimensions) and organisational performance?

1.5 Research Objectives

With regard to research questions, the central objective is to investigate the overall and individual effect of IC on organisational performance of textile industry in Pakistan. In addition the mediating role of knowledge process capability and innovation capability is also highlighted. The research objectives are as follows:

1. To investigate the relationship between IC and organisational performance in textile industry in Pakistan.

2. To examine the relationship between IC dimensions (Human, Structural, Relational and technological capital) and organisational performance in textile industry in Pakistan.
3. To analyse the role of knowledge process capability between IC (overall and by dimensions) and organisational performance.
4. To examine the role of innovation capability between IC (overall and by dimensions) and organisational performance.

1.6 Significance of Study

A number of developed countries i.e. United Kingdom, United States of America, Scandinavia, Australia, and Canada have adopted the concept of IC in their respective organisations and achieved their goals from such intangible assets. The concept of IC is also applied in South East Asia such as in Malaysian manufacturing and service industries (Bontis et al., 2000). A few studies have been conducted in south Asian region. For example Pal and Soriya (2012) applied IC concept in some of the Indian textile and pharmaceutical companies. Furthermore, Khalique et al. (2015) used IC concept; it was merely an initial attempt and was applied in electrical and electronics firms of just two small cities of Pakistan. However, this study conceptualised IC in a broader perspective and applied it at textile industry in Pakistan. Further, each dimension of IC was also highlighted. This study also integrated IC, knowledge process capability, and innovation capability in one framework to find out organisational performance.

In addition, globalisation, technological advancement, and intangible assets are reshaping the businesses all over the world. Similarly, countries that want to be part of the international competitive environment have to adopt such competitive assets in their respective organisations. And, Pakistan is not an exception. To face such globalisation

effect, the government of Pakistan has taken the initiative to boost textile industry by introducing its textile policy 2014-2019. Therefore, a wide use of IC may flourish textile sector in Pakistan.

1.7 Contribution of Study

(a) *Theoretical:*

Most of the studies included three variables in IC: human capital, structural capital, and relational capital. This study added technological capital, as a separate variable and see the contribution of this variable on organisational performance. Based on previous theories, and theoretical models, a new conceptual model of IC was developed. The new model also investigates the mediating role of knowledge process capability and innovation capability between IC and organisational performance.

(b) *Empirical:*

The research findings of this study present a positive significant impact of IC (its dimensions) on organisational performance. The mediating effect of knowledge process capability and innovation capability positively influenced with IC and organisational performance.

(c) *Policy Contribution:*

This study conceptualises IC benefits in context of textile industry in Pakistan. This study is also linked with the broader objective of government textile policy to promote employees skills, ICT and value added products. Further, it provides guidelines to the top management, decision makers, and the policy makers to highlight the IC role in the textile industry in Pakistan. As in other developed and developing countries are implementing IC strategies and promoting their organisations skills, the same can be applied by Pakistani industries in order to gain competitiveness in international market.

1.8 Scope of Study

The scope of this research is limited to textile industry in Pakistan and particularly focuses on large textile companies. It is a cross sectional study and data has been collected in the duration of March 2016 to December 2016. Four dimensions of IC such as human, structural, relational, and technological capital are analysed to promote organisational performance. Furthermore, knowledge process capability and innovation capability are also highlighted in this study. The current study is limited to two main provinces, i.e. Punjab and Sindh. In these two provinces, three big cities such as Lahore, Faisalabad, and Karachi are surveyed.

1.9 Organisation of Study

This thesis is comprised of five chapters along with references and appendices. Chapter one explains the background of research settings and its importance. The research is particularly based on textile industry, thus profile of textile industry which includes demographic of textile is explained. Next the research questions and objectives are elucidated. The study's significance and boundary of research is also examined. Additionally, the outline of the thesis is mentioned following a chapter summary.

Chapter two, namely literature review discusses the detail history of IC, its dimensions, and measurements. This chapter also explains the operationalization of organisational performance. Further, knowledge process capability and innovation capability are delineated and their mediation role is also elaborated. The literature review also reviews previous theories and theoretical models. Based on previous theoretical model, a conceptual model has been formed which is based on resource-based theory and KBV. Lastly, the chapter ends with the development of hypotheses.

Chapter three, namely methodology details about research design. The population of study and sampling procedures are determined. Further, the procedure and all sources of data collection are explained in detail. Additionally, variables descriptions and measurements are elaborated. The questionnaire of study is developed. Furthermore, the validity and reliability of the questionnaire is assessed through human resource experts and pilot testing. Finally, the data analysis technique is discussed.

Chapter four discusses results and data analysis. This chapter contains the results of descriptive statistics, constructs validity and reliability. This chapter also discusses about block variance inflation factor which deals with multicollinearity issues. Next, SEM is applied for analysing latent variable relationships. Finally, the results of tested hypothesis are reported.

Chapter five reviews the discussion and conclusion. This chapter presents the key findings of research. The implications of study are also determined. The new findings as discovered by this study are then compared with previous studies. Further research limitations are discussed. Finally, based on this study, future research recommendations are recommended.

1.10 Chapter Summary

The first chapter summarizes the background of study and the reason of conducting this research in context of Pakistan. In addition, research questions and objectives are highlighted. Moreover, this chapter includes study's importance and its theoretical and empirical contributions followed by a brief review about organisation of thesis. The succeeding chapter will explain latent variables used in this study. And based on previous theories and related models, a new conceptual model is established for this study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The primary motivation of this study is to apply the concept of Intellectual Capital (IC) in textile industry in Pakistan, and determine its effect on organisational performance. This chapter comprises of thirteen sections. The first section describes the brief overview of the chapter. Second section highlights IC and its dimensions in detail. Third section explains IC measurement. In section four, the conceptualization, and operationalization of organisational performance is elaborated. Section five discusses about knowledge process capability and its types in detail. In section six, innovation capability is explicated. Section seven and eight explain regarding resource-based theory and knowledge based theory respectively. Similarly, the mediation role knowledge process capability and innovation capability are highlighted in section nine and ten respectively. Section eleven followed by a discussion of previously developed models and new conceptual model is developed. Section twelve elucidates previous empirical studies and based on those studies hypotheses are developed. Finally, a brief chapter summary is enlightened.

2.2 Intellectual Capital (IC)

Interest to invest in intangibles has gained much attention in recent decade. Investors made much focus on tangible assets are now shifting their investment on intangibles. Managers, now a days simultaneously focusing on tangibles and intangibles assets in order to meet the demands of various companies and customers. Therefore, companies are focusing on intangible management, such as how to identify measure and manage those resources (Sánchez et al., 2000; Stanfield, 2002). Consequently, managers in today's competitive era should hold market information either which intangible resources have more value for the organisations. Scholars, Norton and Kaplan (1996)

and Stewart (1997) are specifically regarding the application of information to the field of intangible assets. They are of the view, if a company cannot manage its resources than defiantly they will not have capability to measure it. In recent years, intangible assets like IC has been much focused in service and manufacturing industries (Bontis, 2001) and for organisation value creation, IC is considered as an important intangible asset. IC is regarded as one of main intangible assets for organisation's competitive advantage. Instead of focusing tangible assets with traditional factor of production, organisations now days are more focused towards IC.

The concept of IC was first used in 1969 by John Kenneth Galbraith (Bronfenbrenner, 1976). In beginning of 1990s IC was not an operationalised concept but with the passage of time experts and managers realised the benefits of this concept in organisations. They were of the view that it's a hidden value of any organisation which needs to be highlighted in balance sheet, and other considered it as difference between market value & book value. Thereafter, academicians realised that IC also relates to knowledge management, and they emphasised, it is not possible to understand one without the other; but they are more like two sides of the same coin.

In recent years, IC has gained increasing interest when its competitiveness is recognized by management of organisations (Fincham and Roslender 2003). Companies in knowledge-oriented world need to give more focus on IC if they want to be a part of knowledge economy. The companies with greater dependence on IC would want to enhance the value of their organisation. An increasing number of knowledge intensive companies are dependent on IC to maximize the success of their businesses i.e. software developers, law firms, and consulting firms. Similarly, IC concept is also being utilized in education, health and other manufacturing sectors (Bisogno et al. 2018; Pirozzi and Ferulano 2016; Bontis 1998).

IC is one of the critical sources for generating competitive advantage. The value of IC should be recognized by the top management of organisations; they should know how much potential IC has for their organizations, and employing such opportunities leads to organizational success (Bontis 2001). Considerable values reside in the depth and range of an organisation's capabilities and competencies and maximizing those resources is essential for its development. IC is a new concept which needs much attention from the top management of a company, to know its benefits and transfer such knowledge to the employees. Similarly, knowledge performs a pivotal role to building IC. Knowledge resides in every part of organisation either internal or external. This can be in the form of internal knowledge or knowledge of the external environment. All these constitute a company's IC. However, the potential of IC to generate wealth requires much more attention from managers, practitioners, and academics.

In addition, knowledge management and IC are usually associated in international literature (Kianto et al., 2014). As Stewart (1999) explained IC as a bundle of knowledge originates in companies which enhance value addition, and provide competitive advantage through employee's intelligence. Although IC is not a monetary capital but it's an intellectual material which integrates knowledge, information and experience and can add value for wealth creation. According to Seleim and Khalil (2011) these two variables are closely interlinked and are interdependent constructs. They added that businesses are not formed to spread and advance knowledge, rather to produce competitive products and provide quality services. But, for value creation of companies, IC and knowledge management are indispensable. Hence, managerial efforts are needed for formulating and implementing IC and knowledge management benefits in organizations.

Several scholars conceptualized the concept of IC and elaborated it with various segments. Brooking (1996) classifies IC into four segments such as market assets, human centred assets, infrastructure assets and intellectual property assets (Figure 2.1). According to this model IC is dependent on the goals of organisations and offers a complete package for organisations to understand the value of it in the organisations. Further, he gave three measurement model i.e. cost based, market based and income approach. Brooking made an IC indicator by asking twenty questions, which conclude the four parts of IC; and the organisation which gives less answer in the affirmative, then more effort is needed for them to strengthen their IC.

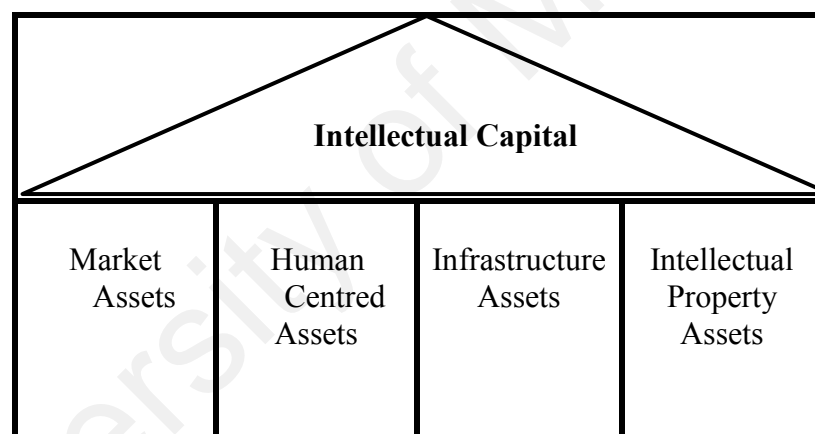


Figure 2.1: Brooking model

Source: Brookings (1996)

The proper utilization of IC concept was first operationalised by Edvinsson (1997) in Skandia Bank, where he was selected as the first IC director. He started inquiry concerning of intangible assets (IC) that existed in the form of non-financial assets and explained IC as the possession of knowledge, applied experiences, organisational technology, customer relationships and professional skills. Figure 2.2 shows the developed model where he showed financial assets in assets side whereas in debt side disclosed the non-financial or IC. He divided IC into two parts, human capital and

structural capital (both of them were missing in balance sheet). Structural capital further breaks down into customer capital and organisational capital. Lastly, innovation and process capital were included in organisation capital.

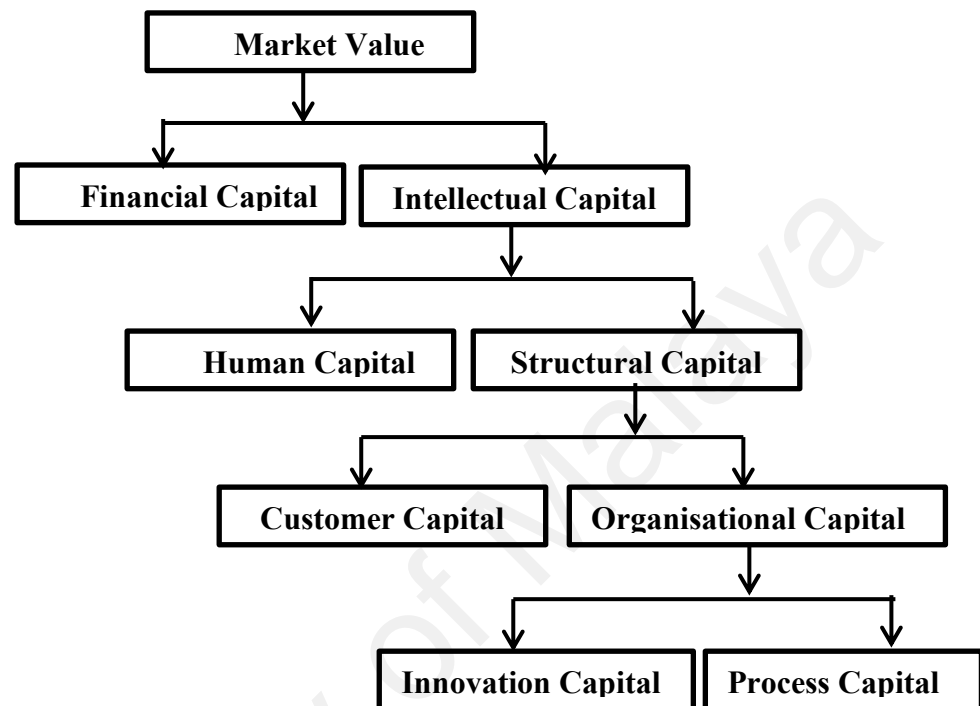


Figure 2.2: Skandia Framework

Source: Edvinsson, L. (1997)

According to Edvinsson (1997) human capital which cannot be owned by shareholders but they can hold intellectual assets. He categorises human capital as experience, general know-how, skills and creativity and intellectual assets as technologies, inventions, processes, data, publications, computer programs, patents, copyright etc. Moreover, the human capital is incomplete without the support of structural capital. It's the infrastructure that the firm develops to commercialise their human capital. It includes direct support such as computer desks and telephones and indirect support (intangible support) information systems, computer software, work procedures, marketing plans and company know-how.

IC is a topic of interest for those who want to gain profit from knowledge intensive services, and it's the ability of organisations that leverage their IC in order to gain profit. Furthermore, for the development of IC, two perspectives are very crucial such as value creation and value extraction. Value creation focuses on human capital of the firm that how it can be organized, directed and leveraged to create knowledge. The other portion described, as how companies increase profits, and also direct their energies to intellectual assets, intellectual property and intangible assets.

Companies that utilize their knowledge to gain competitive advantage are called knowledge firms and such knowledge is derived from their employees' capability. However, IC can be better understood if we understand knowledge in business context. At last Edvinsson described the benefits of Intellectual Capital Management (ICM). The organisations have learned the importance of IC because of which organisations are gaining profits. More specifically knowledge firms are now benefiting from ICM.

IC is a sum of hidden assets of a company not fully captured in balance sheet, and knowledge that goes with employees when they leave the organisation. They divided IC into human capital and structural capital. In addition, Roos et al. 1997 model categorised IC into two distinctive streams such as strategic stream and measurement stream shown in Figure 2.3. The model proposes creation and usage of knowledge and the second part focuses on development of information system, measuring non-financial data with the financial data. IC is one of the important parts of business organisations to be utilized by managers.

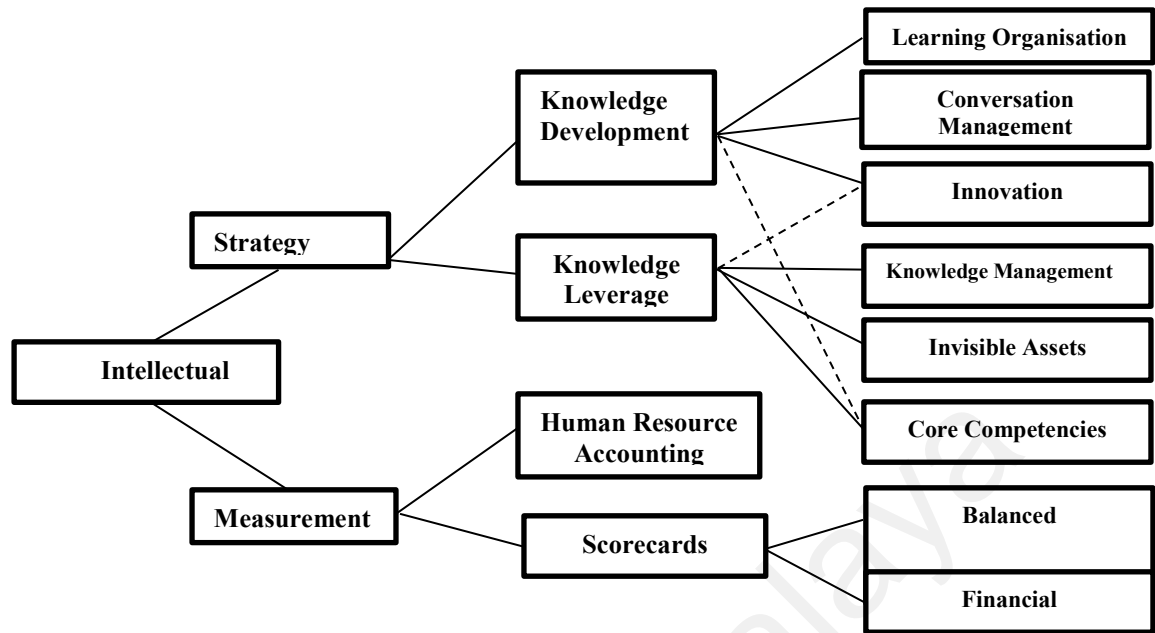


Figure 2.3: IC conceptual roots

Source: Roos et al. (1997)

Furthermore, Stewart (1997) defined IC as the total stocks of the collective knowledge, information technology, intellectual property rights, experience, organisation learning & competence, team communication systems, customer relations, and brands that are able to create values for a firm. The model in Figure 2.4 indicates that IC is divided into three parts: human capital, structural capital and customer capital. Stewart (1997) elucidated human capital as competencies, skills, and knowledge of individuals in a company, and structural capital deals with databases, networks, process, and patents. Finally, customer capital states to meet customer's requirement by making organisational relationships with customers and suppliers. All these components are interrelated among each others either in positive or negative manner.

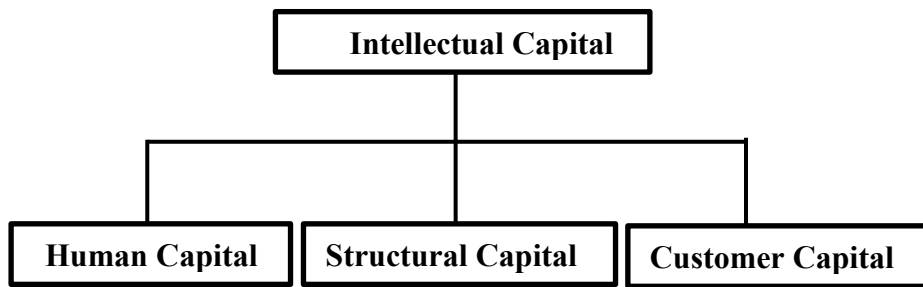


Figure 2.4: Components of intellectual capital

Source: Stewart (1997)

On the other hand, Bontis (1998) developed a model (Figure 2.5) of IC that was comprised of human capital, structural capital and customer capital. He suggested that employees should be encouraged to learn new things, share new ideas, and their knowledge needs to be utilized otherwise knowledge will be wasted and employees feel demotivated. Moreover, a data base should be formed which can cover all competitive intelligence information, and managers should be hired that will be responsible for IC development.

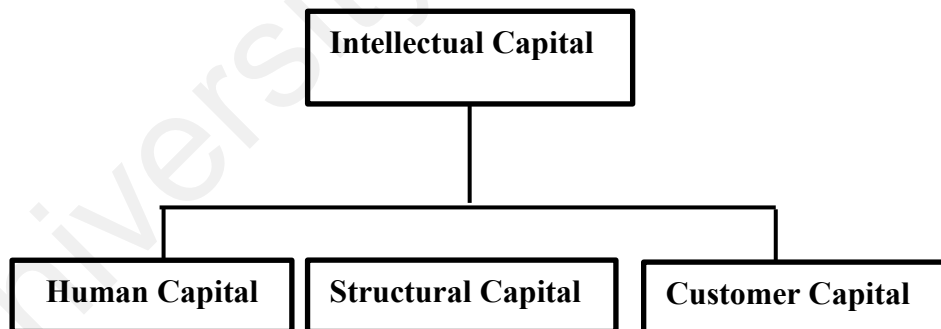


Figure 2.5: Components of intellectual capital

Source: Bontis (1998)

However, there is no agreement among scholars about the concept and components of IC and its various/exact dimensions of IC in organisations are not known (Bontis, 2001; Dean & Kretschmer, 2007). Taxonomy is given in Table 2.1 that explains various conceptualization of IC.

Table 2.1: IC components

Author	Components of IC
Brooking (1996)	<ul style="list-style-type: none">• Market assets• Human centered assets• Infrastructure assets• Property assets
Edvinsson (1997)	<ul style="list-style-type: none">• Human capital• Structural capital
Stewart (1997)	<ul style="list-style-type: none">• Human capital• Structural capital• Customer capital
Roos and Roos(1997)	<ul style="list-style-type: none">• Human capital• Organisational capital• Relational capital
Bontis (1998)	<ul style="list-style-type: none">• Human capital• Structural capital• Customer capital
Bontis (1999)	<ul style="list-style-type: none">• Human capital• Structural capital• Relational capital
Sveiby (2000)	<ul style="list-style-type: none">• External structure• Internal structure• Individual competence
Wang and Chang (2005)	<ul style="list-style-type: none">• Human capital

	<ul style="list-style-type: none"> • Innovation capital • Process Capital • Customer Capital
Ngah, & Ibrahim (2009)	<ul style="list-style-type: none"> • Human capital • Structural capital • Customer capital
Castro et al (2013)	<ul style="list-style-type: none"> • Human assets • Technological assets • Relational assets

Source: Compile by author

Hence, after analysing numerous scholastic studies on IC dimensions; this study focuses on human, structural, relational, and technological capital. Recent studies have discussed the importance of technological capital, but its true conceptualization and utilization is lacking. This study will try to fully implement technological capital including all other IC dimensions in context of textile industry.

2.2.1 Human Capital

In early 1950s the main factors of production were physical capitals: labor, land and management, but something was lacking, and gap filled by Schultz (1961) known as “residual factor” and identified it as human capital. Scholars pondered the concept before utilising it in research. “It may seem odd now, but I hesitated a while before deciding to call my book human capital” Becker (1992, p. 85). The reason of such behaviour was people, who criticised the term, because they were of the view it treated people like machines or slaves. But now it’s being accepted as a broad concept and being utilized in both manufacturing and service industries. In recent year the value of

human capital has been increased in a good pace, because researchers rebalance their focus between money and people (Mayo, 2000).

Human capital is comprised of employees who are the most central part in the organisations. It refers to the knowledge, competences, capabilities, commitment and attitude possessed by employees that can add economic value to organisation benefits (Becker, 1962; Edvinsson & Sullivan, 1996). Further simplified by Marimuthu et al. (2009) it is a process that relates to training, education and other professional initiatives which rises the level of knowledge, abilities, skills, values of employees and ultimate effect leads to the employee's satisfaction. Human capital is a significant source of innovation and strategic renewal, it can be in form of working in office, brainstorming in lab, reengineering new process and improving new constructive skills. Human capital characterises the employee's tacit knowledge embedded in the mind of the employees which generates competence, attitude and creativity (Bontis, 1999; Chen et al., 2004). After in-depth analysis of scholastic work, this study defines human capital as the competencies of employees, such as education, professional skills, specialised knowledge; attitudes (i.e. leadership, motivation, behaviour pattern, loyalty and commitment). Finally, intellectual agility (i.e. innovative ideas, creativity, flexibility and adoptability) (Bontis, 1999; Bontis et al., 2000).

The human capital theory believes that for production of goods & services, employees learning capabilities are as important as other physical resources. Human capital due to its inimitability, intangibility and socially complex nature, often contribute to competitive advantage of an organisation (Hatch & Dyer, 2004). Effective utilization of such resources provide outcomes (Profit) and satisfactory result for individual, organisation and society at large (Schultz, 1961). Various Pundits of human capital explain the benefits of this broad concept, such as it's an investment that yields

return (Bontis, 1996) increased workforce quality (Mincer, 1962) improved profit, faster rate of growth and increasing stock of knowledge (Romer, 1989).

Practitioners proposed various ideas for the development of human capital. Firms that use screening test in hiring process enjoy higher performance. In addition, they are able to identify employees with aptitude, attitude, and skills that contribute organisation value creation. Moreover, organisations that emphasise human capital development through on job training, find their employee more productive, and can meaningfully participate in the learning activities of the organisations (Becker, 1962; Hatch & Dyer, 2004). Mayo (2000) proposed that employers need to work on employees by motivating them, enhancing competencies, better recruitment and team effectiveness; this will develop new competencies, knowledge transfer and greater learning environment. However, demotivated employees most of the time leave organisations and it creates losses because new employees need to relearn instead of new learning, therefore organisations bear extra cost. Hence, employees' capabilities should be utilised otherwise they feel demotivated and their knowledge remain with them and with the passage of time become outdated that is a loss for organisation in long run.

2.2.2 Structural Capital

Structural capital is a storehouse of knowledge which covers processes, procedures, manuals, databases, organisational charts, administrative programmes and anything whose value is greater than material value (Bontis, 1998; Khalique, Isa et al., 2011; Ross et al., 1997). Further, structural capital is explained as “what remain in company when employees go home for the night” (Ross et al., 1997, p. 42). Basically, structural capital is a platform for employees to be creative in organisations, and as compared with human capital it totally belongs to organisation. It provides environment for organisational innovative learning, codification of information to knowledge,

knowledge growth which leads to more productive organisational performance (Bontis, 1998; Stewart & Ruckdeschel, 1998). Bontis (1998) added that over all IC will not capture its total potential if the system and procedures applied by organisation are not up to the mark.

Furthermore, employee may have better level of understanding or intellect, but the overall IC will not reach to highest level until and unless organisation improves its poor system and procedures. This can only improve if an organisation applies structural capital which motivates employees to learn, apply new ideas, and to learn again when they are failed. It allows the concept of IC to be measured in an organisation. Structural capital covers the organisation procedures, innovative learning, and codification of information to knowledge (Bontis, 1998).

Furthermore, structural capital is classified as organisational culture, organisational learning, operating processes, and information system. Such information system helps to electronically exchange information to the internal and external environment. This can also be supportive for continuous forecast of sales, better production of planning and less inventory stockpiles will lead to competitive advantage (Maja and Zabkar, 2001). Moreover, it improves manufacturer's supplier selection and learns about competitors' process technologies (Korany, 2007). Keeping in views of various experts literature, this study defines structural capital as bundle of organisation knowledge, i.e. processes, procedures, administrative programs, manuals, databases, and organisational charts. This concept also incorporates supportive learning culture, innovative ideas, shared knowledge and decision making power of employees in organisation (Bontis et al., 2000; Ross et al., 1997).

2.2.3 Relational Capital

Relational capital is defined as the relations that a company maintains with customers, suppliers, and stakeholders (Bontis, 1998). Researchers consider relational capital as essential tools that link organisation with external environment. It coordinates customers' needs by obtaining and using customer's information, competitor's capabilities and provision of other significant market agents and authorities (Deshpande & Webster, 1989; Keskin, 2006).

Cohen and Kaimenakis (2007) explicated the concept of market orientation and customer orientation. Market orientation expresses the behaviour and process of overall market; it highlights the market culture in order to create customer value. Moreover, it implements the marketing concepts through market intelligence generation, market dissemination and implementation of marketing strategies (Kohli & Jaworski, 1990). On the other hand, customer orientation refers to the information regarding customers' needs and it also explains the organisational culture. Furthermore, customer orientation also explain basic sets of values to reinforce customer's basic needs (Appiah-Adu & Singh, 1998).

According to Bontis (1998) managers can get a wealth of knowledge from their own clients. They are the ultimate buyer of the product, and organisations gain knowledge from their buying behaviour. Organisations fail to sustain their competitiveness due to lack of information regarding customers, suppliers, and other stakeholders' requirements. Managers often fail to recognise the true value of relational capital which controls half of the business. In short it is as important as rest of IC and contributes to organisation growth.

Among numerous definitions, this study explains relational capital as cooperative relationship with customers, suppliers, stakeholders, government and other agencies.

Further, making strong clients network to boost customer loyalty towards organisation, and learning about competitors' capabilities. Lastly gaining government support for innovative subsidies and training programs (Bontis, 1998; Ngah & Ibrahim, 2011).

2.2.4 Technological Capital

Technological capital serves as a decisive role for organisational success in competitive environment. As Martín-de Castro et al. (2013) defined technological capital as R&D efforts in an organisation and technological knowledge storage in databases, patents and their utilization. This capital also explained by Khaliq et al. (2015) includes ICT knowledge, R&D, and protection rights. Further, Pérez-López and Alegre (2012) explained the concept as ICT competency which is divided into IT knowledge, operations, and infrastructure. ICT knowledge is a useful tool to make the knowledge available to internal and external environment of organisation. Such technological knowledge provides a better platform for organisations to improve their process, procedures, system, and increase the growth of them by making good relationships with customers and suppliers.

Keeping in view of previous conceptualization, technological capital refers to R&D, ICT knowledge, technological operations, and infrastructure. For large organisations to be competitive, they need to invest in R&D. In addition, organisations will have more chance for new product innovation and new ideas development. ICT knowledge is also a productive tool to make knowledge available to internal and external environment for the organisations. This can assist the flow of knowledge among employees, which help them for up to date knowledge. Technological capital provides a productive platform for organisations to improve their processes, procedures, system and increase their growth by making good relationship with customers and suppliers.

In many developing countries, textile producers were simply unaware of how key information technologies were changing the patterns of trade in textiles and garments. Many barriers can be seen in developing countries for the utilisation of ICT in manufacturing industries. The reason could be the lack of knowledge of available technology, low level of IT equipment or incompatible system and lack of awareness of upcoming technologies (McNamara, 2008). The implementation of technology needs to be part of overall management goals, which include devising business strategy, nurturing customer relationships and overseeing production and product development. Thus, an appropriate management structure needs to be introduced which should integrate technological capital within organisation in an organized manner.

Technological capital should no longer be an extra option for manufacturing industries of developing countries if they want to compete in a global textile and garments market, however they have to equip themselves with such technologies. In the global textile market, the competition for developing countries has increased much after the demise of MFA that was a quota system imposed on the amount of developing countries exports. Organisations need to be competitive by providing innovative products; and, for such reason they need to be equipped with ICT that will boost their linkages with global trade partners. ICT can be one of the positive tools that will help companies in developing countries to compete more effectively in the global textiles sector by providing innovative products (McNamara, 2008).

Finally, this study attempts to integrate the four dimensions of IC (human capital, structural capital, relational capital, and technological capital) into textile industry settings. In addition, the current study investigates the IC concept utilisation in developing country like Pakistan.

2.3 IC Measurement & Reporting

The main focus of this study does not concern with the financial value of IC. The prior studies have already put much emphasis on financial measures, but did not produce satisfactory outcomes. However, due to intangibility nature, the exact formula for IC may never be obtained, because it's hard to measure it with economic variables (Bontis, 1998). The Key importance of IC is to provide necessary and on time response to the top management of a company. It empowers managers to manage IC of a company according to specific situations, which enable companies to accomplish long-term competitive performance. Furthermore, the significance of IC lies to facilitate companies by providing on time information feedback. It helps to retrieve and utilize knowledge to attain long-term competitive advantage (Arthur, 1990). Instead of measuring the economic value of IC, this study particularly endeavour to assess tendency and management of the IC elements for the management of company's intangible resources, which ultimately enhance organisational performance.

Measurement of IC is not the part of objectives for this study; however, this section elaborates some important IC measures in order to gain some insights. Sveiby (1997, 2000, 2001) proposed several methods of intangible valuation which were further extended by various researchers include Direct intellectual capital method, Market capitalization method, Return on assets method, Scorecard method, Balanced Scorecard, Skandia Navigator, and Intangible Assets Monitor.

2.3.1 Direct IC Method

In this method intangible assets dollar valuation is performed by identifying its various components. Once the following components of intangibles are identified, then they can be evaluated either individually or aggregated coefficient. This method provides snapshot of company's IC. Further, it helps to combine monetary and non-

monetary value. One of the drawbacks of this method is its evaluation, when more values are investigated and more values are achieved.

2.3.2 Market Capitalization Method

In this method the value of IC or intangibles determined by calculating the difference between companies' market capitalization and book value of its shareholders' equity. This method is suitable for exhibiting the financial estimation of IC. However, it does not provide information regarding IC components.

2.3.3 Return on Assets Method

This technique calculates IC or intangibles by looking the average pre-tax earnings of the company for a period of time divided by average tangible assets of the company. It is useful to determine the economic value of IC. This method is more traditional and based on basic accounting rules.

2.3.4 Scorecard Method

In this method of intangible valuation, different IC components are first identified; moreover indicators & indices are generated and reported in scorecard or in graphs. Scorecard method seems similar to the direct IC method except no valuation is made of intangibles. This method provides quick results which are understandable by the company. It may be hard to analyse the information, due to the difficulty of getting single numeric results.

2.3.5 Balanced Scorecard

The balance scorecard measures the organisation performance by using four perspectives.

- Customer perspective
- Financial perspective
- Internal business process perspective
- Learning & growth perspective

These perspectives simultaneously measure and monitor the financial results and intangible assets. The said approaches determine the importance of financial objectives and also combine three perspectives of performance measurements for future growth. It also insures that investing on intangibles is more significant than investing and managing physical assets. Moreover, Fincham and Roslender (2003) explained the customer perspective that customers' expectations need to be fulfilled, since they are beneficial part of trade. The internal business process perspective acknowledged the internal processes to be maximised in order to gain more value. Along with this perspective the financial perspective focuses on shareholders requirements of financial reporting and finally, learning & growth perspective concerned with future growth and value creation.

BSC approach is linked with organisational mission & vision and designed to achieve information and motivate continuous efforts towards organisational goal achievement. The measurement model is shown in Figure 2.6.

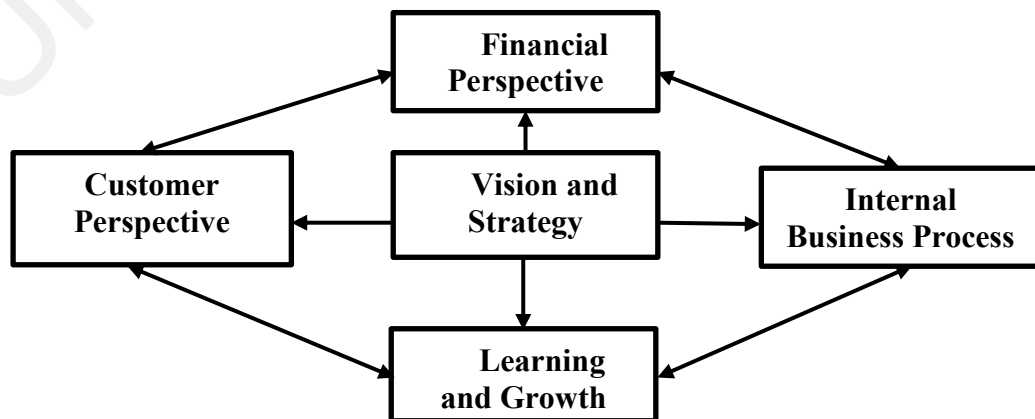


Figure 2.6: Kaplan & Norton measurement model

Source: Kaplan & Norton, 1992

It showed the pros & cons of balance scorecards, such that, it has clear correlations between indicators and financial performance. On the other hand, model does not consider human assets and knowledge creation process appropriately.

2.3.6 Skandia Navigator

Edvinsson (1997) developed IC reporting model. It was the first large company which made effort to measure the knowledge assets. The measure reflects past, present and future of an organisation. The navigator model is composed of five areas; financial focus, customer, process, renewal & development and human focus (Figure 2.7). This model is presented in shape of house, the upper part of the model covers financial perspectives in which values are shown in balance sheet and discusses the past of the organisation. Present is focusing on IC (covering customer, human & processes). Finally future targets the R&D.

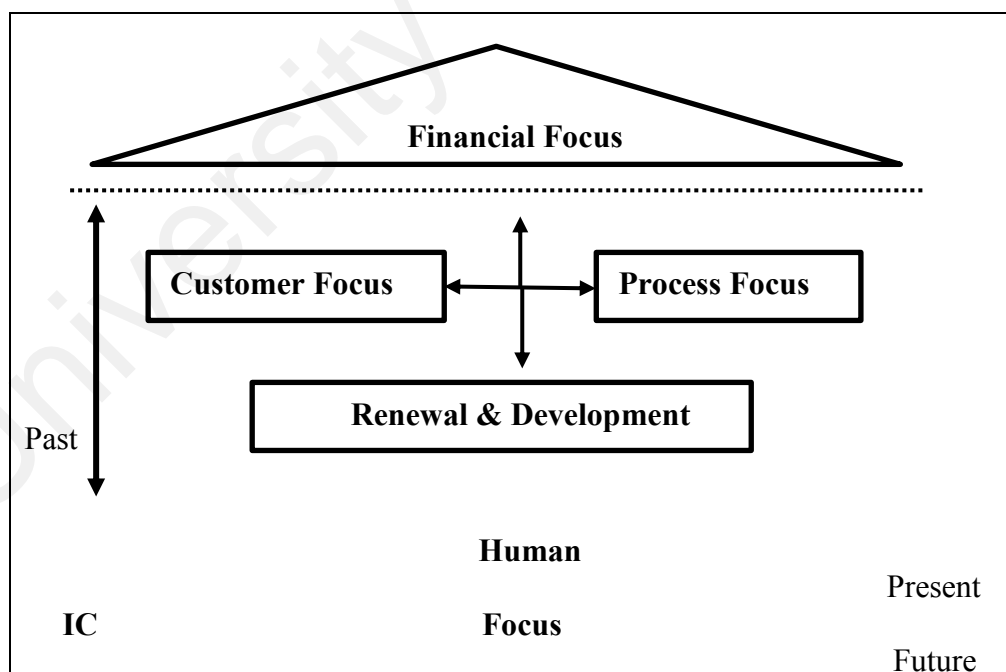


Figure 2.7: The Skandia Navigator

Source: Edvinsson & Malone, 1992

Basically, they created 164 metrics measures (91 IC and 73 traditional metrics), but believed that many of them may be redundant, moreover condensed them into 112 metrics. These indices use direct count, dollar amount, percentages, and survey results.

Bontis (2001) summarized some of the metrics in a table and also discussed some of strengths & weaknesses of Skandia Navigator.

Table 2.2: Sample of Skandia IC measures

Financial focus	<ul style="list-style-type: none"> • Revenue/employees (\$) • Revenues for new customers/total revenue (\$) • Profits resulting from new business operations (\$)
Customer focus	<ul style="list-style-type: none"> • Days spent visiting customers (#) • Ratio of sales contacts to sales closed (%) • Number of customers gain versus loss (%)
Process focus	<ul style="list-style-type: none"> • PCs/employee (#) • IT capacity- CPU (#) • Processing time (#)
Renewal & development focus	<ul style="list-style-type: none"> • Satisfied employees index (#) • Training expense/administrative expense (%) • Average age of patents (#)
Human focus	<ul style="list-style-type: none"> • Managers with advanced degrees (%) • Annual turnover of staff (%) • Leadership index (%)

Source: Bontis (2001)

According to Bontis (2001) a good taxonomy is created by Skandia that motivates other organisations to look beyond traditional assumptions of business value creation.

Moreover, the said model also focuses on customer by analysing customer type, role, duration, support, & success. Skandia also provides a broad coverage of organisational structural and process factors which focus renewal and development contributions to organisational value creation.

One of the weak points in Skandia is no dollar assigned to IC rather uses proxy measures of IC. Ross et al. (1997) found that every organisation should have corrective knowledge either which intangible asset has value for them and for that reason appropriate metrics should be evaluated. They also pointed that Skandia uses balance sheet approach for intangibles but it only offers a snapshot in time and does not show a dynamic flow of organisation.

2.3.7 Intangible Assets Monitor

The intangible assets monitor developed by Sveiby (1997) classifies IC into three categories: internal structure, external structure, and individual competence. Internal structure covers: organisation management, legal structure, manual system, R&D, and finally individual competence covers education & experience. On the other hand, external structure covers brands, customers' and suppliers' relations. The traditional accounting measurement covers internal structure but cannot cover external and individual competence. Nonetheless, the measurement of two is not difficult to design rather hard to interpret as they correlate with changes in business performance.

Sveiby (1997) believed that measurement of intangibles can be subdued, and proposed a model, and pointed out three measurement indicator such as; growth/renewal, efficiency and stability for each of three intangible assets. Furthermore, he suggested that for each indicator manager has to select one or two variable. Bontis et al. (2000) reproduced the same model which is shown in Table 2.3.

Table 2.3: Sample measure for intangible assets

	External structure	Internal structure	Competence of people
Growth and renewal	<ul style="list-style-type: none"> • Organic volume growth • Growth in market share • Satisfied customer • Quality index 	<ul style="list-style-type: none"> • Investment in IT • Time devoted in R& D • Attitude index of personnel • Towards managers, culture, customers 	<ul style="list-style-type: none"> • Share of sales from competence-enhancing customers • Growth in average professional experience • Competence turnover
Efficiency	<ul style="list-style-type: none"> • Profit per customer • Sales per employee 	<ul style="list-style-type: none"> • Proportion of support staff • Sales per support staff 	<ul style="list-style-type: none"> • Change in added value per employee • Change in proportion of employee

Source: Bontis et al. (2000)

According to Sveiby (1997) the main purpose of defining these indicators is to get management control. Besides that, for external presentation company should describe itself clearly to shareholders and creditors & customers in order to develop a trust among them. As it's hard to show all intangible separately in balance sheet, therefore he proposes that explanatory text should be given for intangibles and key indicators.

2.4 Organisational Performance

Organisational performance is a multidimensional concept (Ar & Baki, 2011). Researchers face various challenges for the measurement of organisational performance. Despite the research efforts, the conceptualization and operationalization of performance measurement is still progressing (Neely et al., 1995; Sousa, 2004).

Similarly, there are some practical concerns regarding organisational performance measurements, either it should be measured financially or non-financially, and subjectively, or objectively (Devinney et al., 2005).

Besides, the concept of organisational performance is not certain and indicators change time to time (Lunardi et al., 2014). On such cases scholars suggested that for exploring organisational performance concepts, it's crucial to identify its conceptualization and operationalization for a specific study.

2.4.1 Conceptualization and Operationalization of Organisational Performance

In examining the concept of organisational performance, it is important that it should be well explained and distinguished from other related organisational concepts. Venkatraman and Ramanujam (1986) distinguished business performance into three different categories. The first narrowest conception is financial performance which includes indicators such as sales growth, profitability, and so forth. The second broader conceptualization of business (organisational) performance includes operational performance (Product quality, employee satisfaction, marketing effectiveness, manufacturing value added) and financial performance. While, the last category is organisational effectiveness, which is applicable only when numerous and contradictory objectives regarding other stakeholders are incorporated (Venkatraman & Ramanujam, 1986). Consistent with authors, this study utilises the organisational performance which comprises of financial and non-financial measures.

On the other hand, Devinney et al. (2005) explained three different methods for operationalization of organisational performance. The first method of organisational measure is based on a single measure. The second method utilises different dissimilar indicators, but relate them one by one under common independent variable. Third, the most common method, which adopts various dissimilar measures and combine them

into one dependent variable. This study is based on the last method of operationalization by combining various measures into a single dependent variable.

2.4.2 Type of Performance Measures

Based on previous literature, performance measures are grouped into two parts: first, financial, and non-financial measures; second, objective and subjective measures.

The financial performance measures are the oldest method of performance measurement (Kaplan & Norton, 1996). They were of the view that the organisational performances are mainly financial such as profit and directly linked with long-term goals of organisation. While some of the scholars also applied the non-financial measures for organisational performance.

On the other hand, the objective performance measurement method is bias-free and prejudice. It is not based on personal judgement. Most of the accounting and financial firms utilize objective measures for measuring organisational performance. However, many complications are also attached with objective measures in survey research, particularly when the sample is large.

On the contrary, the subjective measure is based on respondent personal judgement. The subjective measure is favourable, because many times managers are not willing to provide objective financial data (Sousa, 2004). The validity of subjective measure is based on respondent to recall the event and information and answer the asked questions. Moreover, Ketokivi and Schroeder (2004) reported some potential issues related to this method. For example, the answers are based on respondent that how honestly he /she respond. Secondly, the measurement is inconsistently defined. However, many scholars suggest that the problem related to subjective measures may not be that much critical, because, generally respondents are top executive or managerial level employees that are

considered to be the representative of organisations (Venkatraman & Ramanujam, 1986).

The current study is based on subjective (perceptual) measures in collecting data for analysis. Based on Ketokivi and Schroeder (2004) suggestions, this study comprises of various items regarding organisation performance. Furthermore, Kannan and Aulbur (2004) extensively discussed IC role in perceptual research. They pointed out that such subjective measures are crucial for employees performance, human capital development and overall organisation performance. Further, various studies used subjective measurement of IC and organisational performance (Asiaei & Jusoh, 2015; Sharabati et al., 2010).

Companies' operations and activities in international market drives the export performance (Cavusgil & Zou, 1994). According to Shoham (1998) export performance is comprised of effectiveness of export, efficiency of export and continuous export engagement. To calculate the export, the first was export intensity which is combination of export to total sales ratio. The second item was export dollar sales and finally, market share for product combination. Further, to achieve managerial satisfaction, export sale intensity and sale growth were included. One of the dimensions of performance is profitability. Shoham (1998) added that profitability can be measured with return on assets and return on investment and further gross and operating export profit. In addition, one of the key motives of any organisation is to earn profit and such profits can be earned through national and international trade. Furthermore, White et al. (1998) highlighted two main points such as how management perceive export profitability and management be satisfied with export performance. The management perception is utilized in export growth when a new product is introduced in exports markets. On the other hand management's satisfaction on export performance means that the company's

management is well aware about the goals and expectation of their export performance. Hence, they can judge either export performance is achieved or not.

Productivity is also indispensable for long-term competitive advantage. According to Drucker (1999) a business has no proper direction if it has not defined its productivity objectives. Further, a business has no control if they did not defined productivity measurement. Hence, productivity objectives and measurement are imperative for companies to sustain in a competitive environment. Besides, companies can enhance productivity if they have sound technical competence, effective management system and a responsive environment (Clements-Croome & Kaluarachchi, 2000). Further, Organization of Economic Co-operation and Development [OECD] (2001) incorporated measurements such as cost saving, efficiency, calculating technological change and benchmarking production processes as measurements of productivity.

In this study, organisational performance is measured with management's perception on internal sales, export growth, and profitability (Shoham, 1998; Sousa, 2004; White et al., 1998). Schlegelmilch (1986) indicated that managerial aspirations and expectations about the contribution of exporting to the achievement of basic goals have a direct bearing on the decision to engage in international trade. In addition, this study also gauges output per worker, value added per worker, cost of production and new product development (Clements-Croome & Kaluarachchi, 2000; Schreyer, 2001; Singapore, 2011).

2.5 Knowledge Process Capability

Knowledge is considered as something broader, richer, and deeper than data or information. Knowledge is broadly defined as “a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experience and information. It originates and is

applied in the minds of knowers. In organisations, it often becomes embedded not only in documents or repositories, but also in organisational routines, processes, practices and norms” (Davenport & Prusak, 1998, p. 5).

Drucker (1993) named the new economy as knowledge society, and knowledge is not another resource of traditional factor of production such as land, labour, and capital but, the only meaningful resource today. The most critical skill of this era is to manage the knowledge based intellect (Quinn, 1992). Those organisations that did not develop their knowledge assets failed to survive (Antal, 1994). Knowledge has become one of the crucial requirements of today’s economy and in order to leverage organisational competitiveness, businesses are investing in knowledge management resources.

The concept of knowledge management is more specifically defined by Darroch (2003) as it’s a process which produces, distributes, and utilizes knowledge within and between organisations. Further explained by Bukowitz and Williams (2000) knowledge is created by intellectual or knowledge based assets. Maier (2005) further elaborated that the management functions are accountable for knowledge strategies selection, implementation, and evaluation. The main motive is forming such an environment that fit with both internal and external knowledge in order to enhance organisational performance. Among various scholastic definitions, this study relies on Filius et al. (2000) thoughts by defining knowledge management process as, employees acquire knowledge from internal & external networks; they document solutions for the problem in the brainstorming sessions. Moreover, frequent changes take place in procedures, policies and knowledge is distributed formally and informally among employees and from mentor to employees. Knowledge creation takes place through discussing problems and assigning employees to new high profile projects. Lastly, knowledge is

applied in the form of using customers' and employees' experiences for product or service development.

Knowledge management practices are pretty crucial for organisational competitiveness, and employees utilize such knowledge to increase organisational performance. Wiig (1997) broadly explained knowledge management into four parts such as investigate knowledge, build knowledge, organize and focus knowledge; and apply and exploit knowledge. Davenport and Prusak (1998) distinguished it into knowledge generation, knowledge codification and coordination, and knowledge transfer. Nonaka and Takeuchi (1995) explained knowledge management which was based on a model named the SECI (socialisation, externalisation, combination and internalisation) which helps to create knowledge for organisations.

Further, Gold et al. (2001) elaborated the knowledge management concept into two parts namely: knowledge infrastructure, and knowledge process capability. The knowledge infrastructure is comprised of technology, structure, and culture whereas knowledge process capability focuses on acquisition, conversion, application, and protection. However such processes help organisation to capture, reconcile, and share knowledge in a better manner. In addition, Bukowitz and Williams (2000) defined knowledge process into two segments, such as a tactical knowledge process and strategic knowledge process. In strategic knowledge management the goal is to align with organisational knowledge management strategy, and that is described as assessment of knowledge based assets and building, and sustaining knowledge based assets. On the other hand tactical knowledge management is based on gathering information and utilizing that information to create value. Filius et al. (2000) described tactical knowledge as knowledge acquisition, knowledge documentation, knowledge transfer, knowledge creation, and knowledge application. Point to be noted here that

these five KM processes are not necessarily sequential but rather iterative and overlap (Choi & Lee, 2003). In this study, the word knowledge management and knowledge process capability are used interchangeably. Accordingly, in current research knowledge process capability is comprised of knowledge acquisition, documentation, creation, sharing, and implementation.

2.5.1 Knowledge Acquisition

Acquisition of knowledge is the first step for utilizing knowledge in organisations. One of the key aspects of knowledge acquisitions is to upgrade the existing knowledge and effective use of new knowledge. Three major sources of knowledge are available for the firm: internal knowledge, market contracts, and relational contracts (Inkpen, 2000). Organisations can take advantage from such sources and obtain more knowledge. Acquired knowledge replaces old knowledge concepts on production process or methods, and it also has greater impact on human capital enhancement (Filius et al., 2000). The knowledge acquisition process supports organisations to promote existing knowledge or identify the gaps and problems, further helps in solving problem with new improved method or seek new knowledge from external environment (O'Dell & Grayson, 1998).

2.5.2 Knowledge Documentation

It is a process of using documented knowledge in the brain storming session to solve organisational problem, documenting, learning from success and failure of project and making frequent changes in the procedures and handbook. The knowledge documentation is divided into two parts: explicit knowledge and implicit knowledge.

Explicit knowledge is a form of knowledge that exists in black and white form. This knowledge is based within the organisation, and it's common on working environment

because it is easily codified and communicated. Organisation procedures, brochures, handbooks, and systems are all part of explicit knowledge (Wang et al., 2014). It is easily written down, transferred, followed verbally, and learned through computer software, diagrams, and patents and through information technology (Choi & Lee, 2003; Keskin, 2006).

On the other hand tacit knowledge belongs to mind. Primary means of tacit knowledge is face to face discussion that is learned through watching and performing (Choi & Lee, 2003). Human knowledge and experience is the primary source of tacit knowledge. Employees deduce knowledge through process of organisational and social learning (Holste & Fields, 2010). Tacit knowledge expands with the consent of learner (employees). This knowledge is not found in books, documents, and manual; its oral, hidden, unspoken, created through sharing, discussing (Horvath, 2000). This knowledge may expand through on job training, experience, and most probably direct interaction with people (Nonaka & Takeuchi, 1995).

2.5.3 Knowledge Creation

Knowledge creation in organisation takes place through gauging workforce performance. Moreover, evaluating organisation issues and failure, integrating innovative concepts into product and process development, developing learning groups and rewarding skills employees (Filius et al., 2000). Successful organisations consistently create new knowledge, disseminate it widely throughout the organisation, and quickly embody it in new technology and product. One of the most influential theories of knowledge creation is SECI model, developed by Nonaka and Takeuchi (1995). The new knowledge is created with interaction between its tacit and explicit knowledge.

Nonaka and Takeuchi (1995) explain how firms create new knowledge for organisations and how that knowledge could be shared among employees, customers and suppliers. They developed a model and named it SECI model (Socialisation, Externalisation, Combination, and Internalisation) that comprises with the association of tacit and explicit knowledge. Sharing of knowledge begins with socialization which refers to the sharing of experience of one to another. By generating tacit to tacit knowledge in the form of learning and technical skills that transferred through communicating, modelling, coaching, workplace culture and sharing experience with customer & suppliers and engage dialogue with competitors. Moreover, the externalization process occurs through transferring the tacit knowledge to explicit knowledge by using various models and concepts. The next dimension is the combination which combines two forms of explicit knowledge. In this process, various reports are documented and feed through a database system, which can be used among groups in organisation. The final dimension is internalization which shifts explicit knowledge into tacit knowledge. This is documented form of knowledge that is created by others; used and learned by another individual and groups (Lemon & Sahota, 2004; Nonaka & Takeuchi, 1995).

Nonaka and Toyama (2005) asserted that the knowledge creation is a continuous process that promote itself constantly. Knowledge is created by interaction with organisation's members and between organisation's process and procedures & external environment. However, they believed knowledge needs to be shared with employees, customers and suppliers that only possible if the top leadership shows interest for sharing ideas.

2.5.4 Knowledge Transfer/Sharing

According to Filius et al. (2000) knowledge transfer is a form of knowledge that takes place formally or informally through advisors and professional meetings. Basically SECI model provides the creation of knowledge and that needs to be transferred/shared among organisation's members. In general, knowledge sharing is a process through which employees interact with each others, communicate, share knowledge and promote coordination (Haas & Hansen, 2007). Knowledge sharing provide a platform for employees to develop understanding, share relevant knowledge and promote existing knowledge in organisation (Lin, 2006). It basically develop understanding among employees to share their knowledge with each other within organisation (Ipe, 2003). It's not an easy task, however it needs organisation's support, good environment, trust, organisation culture and on the other hand employee's willingness to create, use and share their knowledge (Ipe, 2003; Ngah & Ibrahim, 2011). The firms gain competitive advantage through knowledge sharing activities such as creating competencies, imitating new ideas, problem solving and learning new technique (Law & Ngai, 2008).

2.5.5 Knowledge Applications

The last form of knowledge process capability is knowledge application. Filius et al. (2000) attested that the existing knowledge is applied in organisation for the new innovative applications and cutomers experinces in order to enhance product and service quality. These knowledge applications create innovative products and services which are useful to customers (Woodman et al., 1993). Organisational innovation can be increased by improving human capital, through employee knowledge creation and innovative performance. The knowledge process capability is directly linked with the

employee's knowledge, because, such knowledge process is essential for refining employees' knowledge.

2.5.6 IC and Knowledge Process Capability

The IC resources are available in the form of intangibles, but for the utilization a strong mechanism of knowledge process is required to manage and control such resources (Kianto et al., 2014). Among other IC dimensions, human capital plays a crucial role for knowledge process development. As explained by Seleim and Khalil (2011) the stronger the human capital of an organisation, there are more chances for knowledge process activities such as knowledge accumulation and knowledge transfer. Human capital performs a lead role to process such knowledge in organisations (Argote et al., 2003). Further, Jaw et al. (2006) demonstrated that knowledge flow through human capital boosts organisational performance. Senior managers capabilities, teaching, and leadership quality should be used to produce an open-mind and conducive learning environment to encourage employees for completing their tasks.

Similarly, companies' structural reform helps knowledge creation. According to Nonaka et al. (2000) managers should create a learning environment by giving time, space and attention. Organisation can provide a good working space, a good database to reduce work hours, and forms of interaction to discuss common organisational goals. Such structural facilities promote prevailing knowledge (Huang & Jim Wu, 2010), and influence innovation in the organisations (Subramaniam & Youndt, 2005).

Likewise, relational capital is quite important for organisation's knowledge flow. According to Bontis (1999) the frustrated managers oversight wealth of knowledge that is available in form of customers and suppliers. Moreover, customers and suppliers have wealth of knowledge and their efficient and effective utilization supports the organisations to accomplish the desired objectives (Bontis, 1998). They have half of the

knowledge of the market and if such knowledge is well-utilized, organisations perform much better than their competitors.

On the other hand, the role of technological capital is very important in today's competitive and knowledge-based business organisations. Technological capital promotes organisational effort for knowledge processes i.e. knowledge acquisition, creation, integration and use (Sambamurthy & Subramani, 2005). It's an effective way to transfer the knowledge within and outside of organisations in quick pace. The findings of López et al. (2009) suggests that ICT is positively associated with knowledge process capability. Supplementary, Pérez-López, & Alegre (2012) results found that IT plays a dominant role to enhance management process which leads to organisational performance. Furthermore, ICT expedites the process to transfer the documented knowledge from top to lower level management. Hence, IC somehow relies on knowledge process capability to increase the organisation performance.

2.5.7 Knowledge Process Capability and Organisational Performance

The knowledge process capability supports performance of organisations. As Mills and Smith (2011) study attested that knowledge process capability is categorised as knowledge acquisition, conversion, application, and protection. Except knowledge conversion, rest of knowledge process capability dimensions support organisational performance. According to Song (2008) a strong and positive relation exists between knowledge creation practices and performance improvement, and further emphasised that 40% of organisational performance could be due to knowledge creation. In addition, Zack et al. (2009) study postulated that the knowledge management practices also support organisational performance.

In an organisation, employees should be provided platform to create and transfer their knowledge within and outside of organisations (customers and other stakeholders).

Further, special attention should be paid for knowledge application and its benefits towards organisation. According to Gold et al. (2001) knowledge process capability is essential for organisational effectiveness. Besides, organisations should consider their capabilities in advance when they launch knowledge management programs, irrespective of such programs to provide any guarantee of success (Davenport et al., 1996). Because, same knowledge cannot be applied in every organisation, that's why it's important for top management of an organisation to see the feasibility of such knowledge to their respective organisation.

2.6 Innovation Capability

In today's competitive knowledge-based economies, organisation strives to improve their product quality and processes. Innovation is one of the primary tools through which organisations accomplish sustainable growth (McEvily et al., 2004) and to survive in volatile environment, firms have to be innovative. Organisations need to bring innovation in order to survive in international market, because it is the base of organisational survival. Drucker (1985) was one of the first scholars to address the importance of innovation in organisations.

Innovation is a very broad concept and scholastic literature shows various definitions. Trott (2008, p. 15) defined "Innovation is the management of all the activities involved in the process of idea generation, technology development, manufacturing and marketing of a new (or improved) product or manufacturing process or equipment". He further argues that it is the engine of growth. Further, Damanpour (1991) explained as it is a process of embracing of an idea which is new for an organisation, and it can be in the form of programme, policy, system, device, process, product, or service. Subramaniam and Youndt (2005) named it as innovative capability which is further divided into incremental and radical innovation. The incremental innovation means the

utilization of existing products, processes, services, and existing technology to polish and strengthen the organisation. Such innovation does not require new technologies or changes in customer behaviour. On the other hand, the radical innovation generates innovation which obsoletes the prevailing product and service; and focuses on new technology and new market infrastructure. However, Oke et al. (2007) argues that radical innovation is characterised by uncertainty, knowledge intensity, and boundary crossing. Hisrich and Peters (2008) describe four aspects which are crucial for organisation's creativity such as consumers, existing products and services, distribution channels and government. The feedback and complaints from consumers will trigger ideas to fulfil the needs and wants of customers. Further, existing products, processes, and services will give new ideas to organisations to improve and upgrade their products and services from time to time. The members of distribution channels are also excellent source of market information because of their familiarity with the needs of the market. Lastly, the government regulation and support can be a source of new product ideas that push entrepreneurs to be innovative and creative.

Measuring innovation is a complex operation and there is no commonly agreed upon methods or measures that exhaustively represent all the manifestation of innovation (Zucchella & Siano, 2014). However, this study focuses the definitions of Sivalogathan and Wu (2015) which state that an innovation capability can be defined as the ability to continuously transform knowledge and ideas into new products, processes, and systems for the benefit of the firm and its stakeholders. Moreover, Massa and Testa (2008) summarize innovation capability into two major categories, i.e. product and process innovation. Product innovation is the process of creation and subsequent introduction of a product that is either new or improved from previous products whereas process innovation means the implementation of new or significantly

improved production, marketing distribution and selling processes. That is why a strong correlation exists between product and process innovation (Salavou et al., 2004).

2.6.1 IC and Innovation Capability

The aspects of IC influence the innovation capability. According to Subramaniam and Youndt (2005) study IC dimensions partially affect innovative capability. Martín-de Castro et al. (2013) employ three measures such as human, technological, and relational capital to check their effect on product innovation, hence results showed positive approach towards product innovation. In addition, Sivalogathan and Wu (2015) argue that in knowledge based economy IC plays a very dominant role and the components of IC have positive impact on innovation capability. Human capital with diverse knowledge, ideas, and skills consequently develop product innovation. Donate et al. (2016) revealed that human capital development is not overnight process rather it takes years and it is a core of innovation capability. In fact, the innovation capability of an organisation could be largely affected if less attention is paid on human capital development. Similarly, organisations with well-organized structure, data bases and processes also support innovation (Subramaniam & Youndt, 2005; Zerenler et al., 2008).

Moreover, for an organisation the robust relations with external party (customers and suppliers) are most influential for competitive advantage (Chahal & Bakshi, 2015). Further, involving customers that have close relationships with organisation will lead to better progress of superior product and process innovation (Santos-Rodrigues et al., 2015). Organisation's employees with joint effort of customers also enhance the product innovation because such innovations ultimately lead towards customers' satisfaction.

In addition, organisations need to consider different dimensions simultaneously. An organisation with modern ICT tools performs better to innovate new products, makes changes in existing products to reduce cost. ICT support allows organisations to monitor their competitors and quickly change their strategies according to the existing business situation. Similarly, ICT also provides support to trace customers demand and feedback that is very much important to develop new products according to customer demand (Mohsin et al., 2013). The quantitative and qualitative review of exposition of Indjikian and Siegel (2005) presented a detail discussion on a strong link between ICT and performance in developed countries but in developing and transition economies the role is not up to the satisfactory level. The reason may be lack of basic ICT knowledge and skills in the organisation. However, industry to industry situation may differ.

2.6.2 Innovation Capability and Organisational Performance

Innovation capability performs the role of value addition for organisation's success. Regardless of other factors, organisations with product and process innovation upgrade their performance faster than those which do not and such product and process innovation improve organisation's growth and productivity (Freel & Robson, 2004; Roper et al., 2008). Although, introduction of new product reduces the productivity of a firm for short period of time, with passage of time it becomes established and the focus of process innovation improves productive efficiency (Roper et al., 2008).

Moreover, in competitive environment innovation and exporting appear to work jointly to improve performance (Love & Roper, 2015). In case of textile industry the international competition is quite high and foreign markets are in need of quality products, in such scenario the companies with process innovation and exporting capability can achieve substantial performance. Nevertheless, all types of innovation are

not required for international business, because sometimes it depends upon the company's capabilities and international market requirements (Vila & Kuster, 2007).

2.7 Resource-Based View (RBV): IC and Organisational Performance

“Resource is meant anything which could be thought of strength or weakness of a given firm” Wernerfelt (1984, p. 172). He stressed that resources are not only limited to products rather they include the other tangible and intangible assets. Besides, Barney (1991) further elaborated the resource-based perspective, as it provides sustained competitive advantage which is generated by the unique bundle of resources at the core of the firm. Such resources ought to be valuable, rare, inimitable, and non-substitutable. Valuable in a sense that it improves firm efficiency and effectiveness by implementing firm's specifying strategies. The valuable resource possessed by the firm should also be rare among potential competitors. Inimitability of resource means that it cannot be copied easily by its competitors and at last, such resources should not have their perfect substitutes in a competitive business environment.

Resources have been found to be important antecedents to products and ultimately to companies performance (Wernerfelt, 1984). The RBV theory addresses the issue that how to achieve competitive performance to the other organisation. Similarly, the acquisition and exploitation of such distinctive resources leads to superior performance.

Furthermore, the RBV cannot be defined with just the term resource (Wade & Hulland, 2004). Further, Grant (1991) and Barney (1991) explained that how resources and capabilities are distinct from each other. In the production processes, the resources are inputs that comprised of tangibles (material, equipment, and plant) and intangibles (internal processes, product quality, reputation, and human capital resources). These resources define the organisational capabilities. Further, such capabilities define organisation's capacity to apply these resources (tangible and intangible) and utilising

organisational processes to achieve the required results (Amit & Schoemaker, 1993). Thus “resources are the source of a firm’s capabilities, [and] capabilities are the main source of competitive advantage” (Grant, 1991, p. 119).

The RBV identifies that some resources may enhance performance and others may not, and the combination of resources might vary across companies. In such scenario, it’s a challenge for companies to distinguish resources which directly impact company’s performance (Wade & Hulland, 2004; Zack et al., 2009). Apart from traditional tangible resources, numerous scholars investigate the intangible resources such as IC (human, structural, relation, and technological capital) and their effect on organisational performance (Asiaei & Jusoh, 2015; Bontis, 1998; Bontis et al., 2000). Therefore, the RBV theory is used to depict the relationship between IC dimensions and organisational performance.

2.8 KBV: Mediation of Knowledge Process Capability and Innovation Capability

Knowledge is one of the crucial requirements of today’s economy. Researchers are convinced that it can be one of the most competitive sources of international competitiveness. Drucker (1993) named the new economy as knowledge society, and knowledge worker as a single greater asset. He further emphasized that knowledge is beyond the scope of traditional factors of production such as land, labour, & capital. Organisations fail to survive if they are unable to develop their knowledge assets.

According to knowledge-based theorist, one of the crucial resources of the organisation is knowledge. Proponents of KBV claim that such resources are difficult to imitate, very complex, immobile and heterogeneous in nature. Hence, such resources determined the competitiveness of organisation. KBV theory posits that knowledge is the central basis of value creation in organisation. Further, multiple entities are involved to apply such knowledge in organisation i.e. culture & identity, systems, documents,

routines, policies and employees. KBV experts postulate that compared with tangible resources, intangible resource are more likely contribute for organizational superior performance (Bogner & Bansal, 2007). KBV features include renovation of the traditional organisational structure through empowerment and development of new organisational forms. Strategy scholars have begun to outline a KBV of the organisation, which suggests that managing organisational knowledge effectively can provide organisations with a source of sustainable competitive advantage. Furthermore, such knowledge resources also promote innovation in companies. Such knowledge improves employees learning abilities which ultimately enhance organisation performance by producing advance and competitive products.

The organisation basically provides an environment for integrating knowledge and its employee's role to acquire and create knowledge for the organisation. The individual people in organisation have the knowledge, and organisation merely does the structural arrangements to provide basic necessities to the specialized knowledge workforce. Furthermore, the skills employees consume these organisational processes, resources and engage in creating knowledge and deploying it through out organisation (Grant, 1991; Roberts, 1998).

Traditionally, organisations focus on physical (tangible) assets, like land, buildings, and stocks, but with the passage of time organisations shift towards technological advancement, various machineries installed to make the pace of work easy and efficient. However, relatively little time and attention has been given to intangible assets (Mayo, 2000), but today most of businesses are focusing on knowledge based economy and intangible assets such as IC. Managers need to understand the intangible assets (IC) and utilization of these resources create organisation's value creation and competitive advantage. According to the KBV theory, compared with tangible assets, knowledge

related resources contribute more to attaining organisational performance (Grant, 1996a, 1996b). Kianto et al. (2014) and Chen et al. (2009) expressed their opinion that organisations with productive background of IC can utilize their benefits with the proper usage of knowledge process capability, and such knowledge process capability leads to organisational performance (Pérez-López & Alegre, 2012; Valmohammadi & Ahmadi, 2015).

2.9 Previously Developed Frameworks

A number of models have been developed in order to conceptualize the relationship between IC and organisational performance. These models summarize various possible dimensions of IC and their linkages to organisational performance. Among them some important studies are discussed below. Besides some of serious concern, the following studies are well conceptualized the underlying conception. Starting from Huang and Hsueh (2007), developed, and tested a model (Figure 2.8) in engineering consulting industry in Taiwan. They framed a framework by using three dimensions of IC (structural capital, human capital, relational capital) and two dimensions of business performance (financial and operating performance indexes). This model explains the relationship between IC dimensions and business performance. However, this framework ignored some important IC dimensions such as technological capital which could be useful for better performance of organisations. Technology capital is one of the pivotal requirements either in advance technological companies or in traditional companies. Moreover a mediating variable can also be used to drive a better result which is missing in the model.

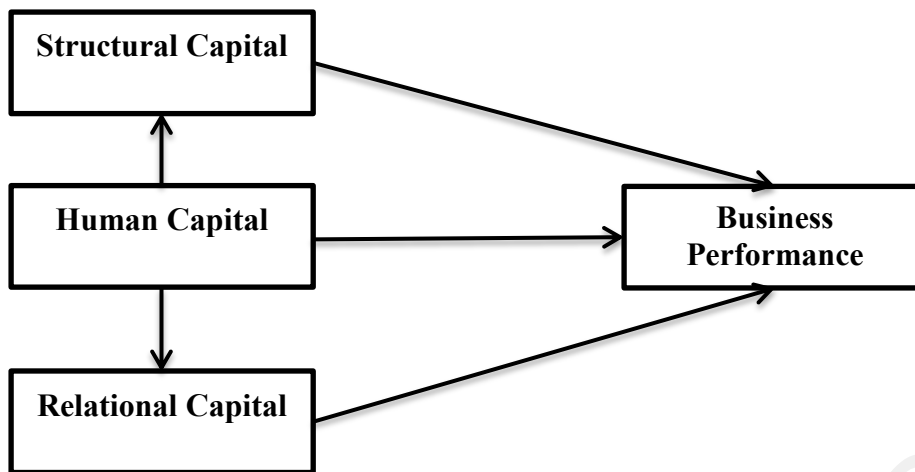
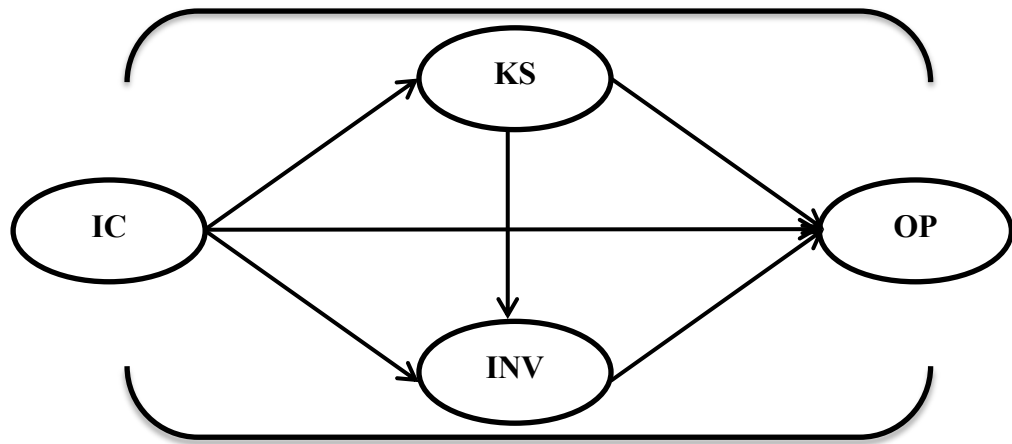


Figure 2.8: Huang & Hsueh Model

Source: Huang & Hsueh (2007)

Moreover, Ngah (2011) developed a model and tested it in Malaysian's manufacturing sector of small and medium enterprises. This model showed the mediation effect of knowledge sharing and innovation between IC and organisational performance. This model overcomes the weakness of previous the model by showing the mediation effect, but this model does not check the individual effect of IC dimensions, rather considers IC as one construct. Further, this model just focused on knowledge sharing, ignoring other dimensions of knowledge management such as knowledge acquisition, knowledge documentation, knowledge creation, and knowledge application. Applying these dimensions may give productive results for organisational performance. Moreover, in this model author focuses only SME's firms, ignoring other large companies. The author also suggested that ICT can be an important tool for employees in order to gain more access to knowledge of an organisation which helps in better performance.



Key: IC- Intellectual Capital; KS- Knowledge Sharing; Innovation; Organisation Performance

Figure 2.9: Ngah Model

Source: Ngah (2010)

Further, Gholami et al. (2013) also developed a framework (Figure 2.10) and applied it in multiple industries in Iran. In their proposed model, they utilized five dimensions of Knowledge management (Knowledge application, storage, creation, sharing, and knowledge implementation) affecting six dimensions of organisational performance (Productivity, financial performance, staff performance, innovation, work relationship and customer satisfaction).

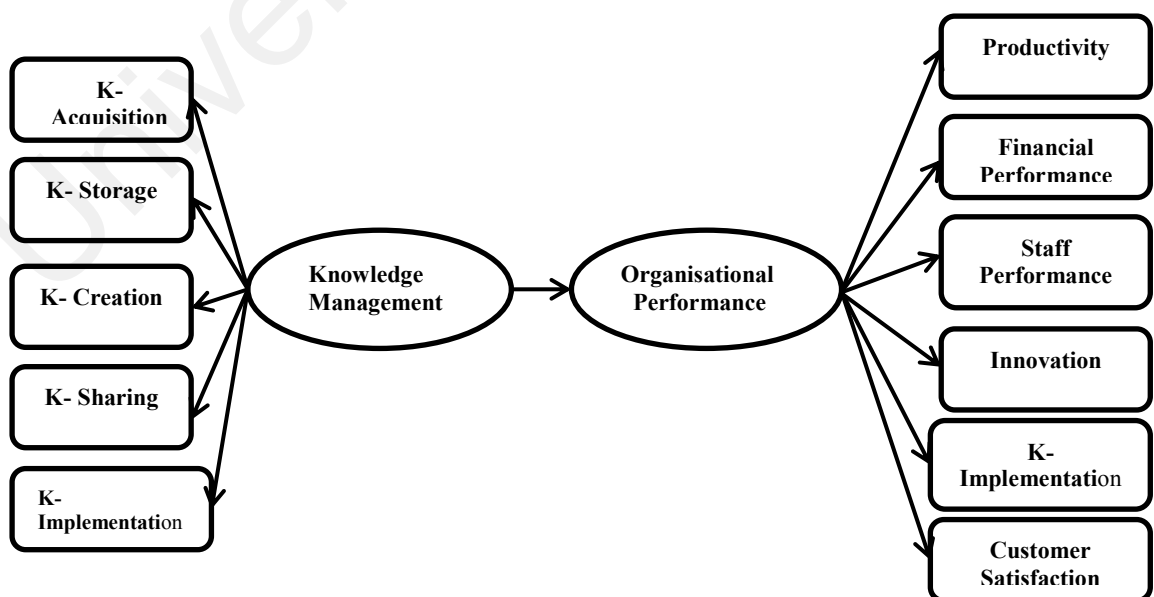


Figure 2.10: Gholami et al. Model

Source: Gholami et al. (2013)

In this model Gholami et al. (2013) proposed that in dynamic and complex environment organisations need to acquire, create, share and implement knowledge to gain organisational performance, but this model fails to recognize the methods through which organisations can get and apply such knowledge. These knowledge management dimensions assist flow of knowledge through organizations, but this needs an input such as human capital to apply this knowledge throughout organisation. Because, top managers can boost employees' skills, motivate and encourage them for sharing their knowledge for organisation's benefits. Similarly, for applying knowledge management structural capital is also required to process such stored and documented knowledge in various sectors of companies. Moreover, for gaining external knowledge the relational capital is required. This capital gets information from suppliers, customer, and other stakeholders and then company is in position to apply knowledge management. Finally, Gholami et al. (2013) authors suggest that technology is crucial for processing the knowledge towards company.

Another model developed by Ling (2013) in which he discussed the link between IC and global performance; also uses knowledge management strategy as a moderator. This study is based on Taiwan's companies dealing in international business context. However, this study just uses three forms of IC (human, structural, and relational capital) and does not utilize technological capital that could add more value in global performance. Ling (2013) added that the IC dimensions utilized in this study are just starting point, in addition to this; more variables can be added in IC for usage in global arena.

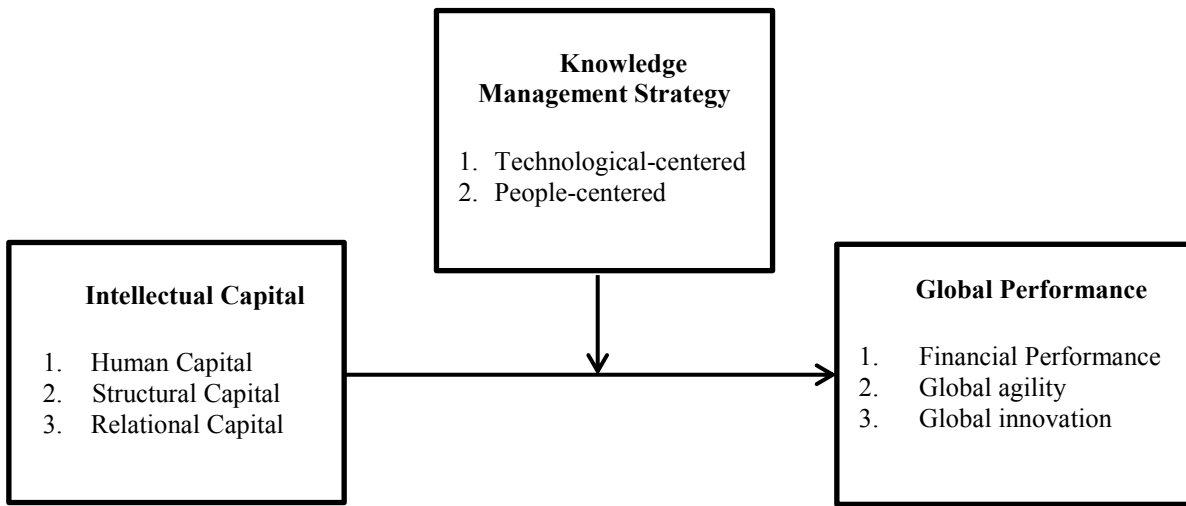


Figure 2.11: Ling Model

Source: Ling (2013)

In addition, Ling (2013) model used knowledge management strategy as a moderator. Results of this model highlighted that the moderating effect of knowledge management was negative with some of the dimensions of IC, such as human capital and relational capital. Furthermore, in knowledge management strategy, focus was on technology-centered and people centered, but many studies suggest that knowledge process (acquisition, documentation, creation, sharing, and implementation) could provide better knowledge flow when interlinked with IC. It was suggested that knowledge process capability influences the relationship between IC and organisational performance rather than making the relationship stronger. On the contrary, knowledge process capability could be utilized as a mediating variable between IC and organisational performance.

Recently, Khalique et al. (2015) tested a model in electrical & electronics SME's sector, and utilized various dimensions of IC and their affects on organisational performance. They added that, their study was just an exploratory attempt to apply IC and more needs to be done in developing countries like Pakistan. Furthermore, they just chose two small cities with small part of SME's manufacturing sector such as electrical

and electronics. Moreover, this model neglects mediation role between IC and organisational performance, which has been suggested by researchers.

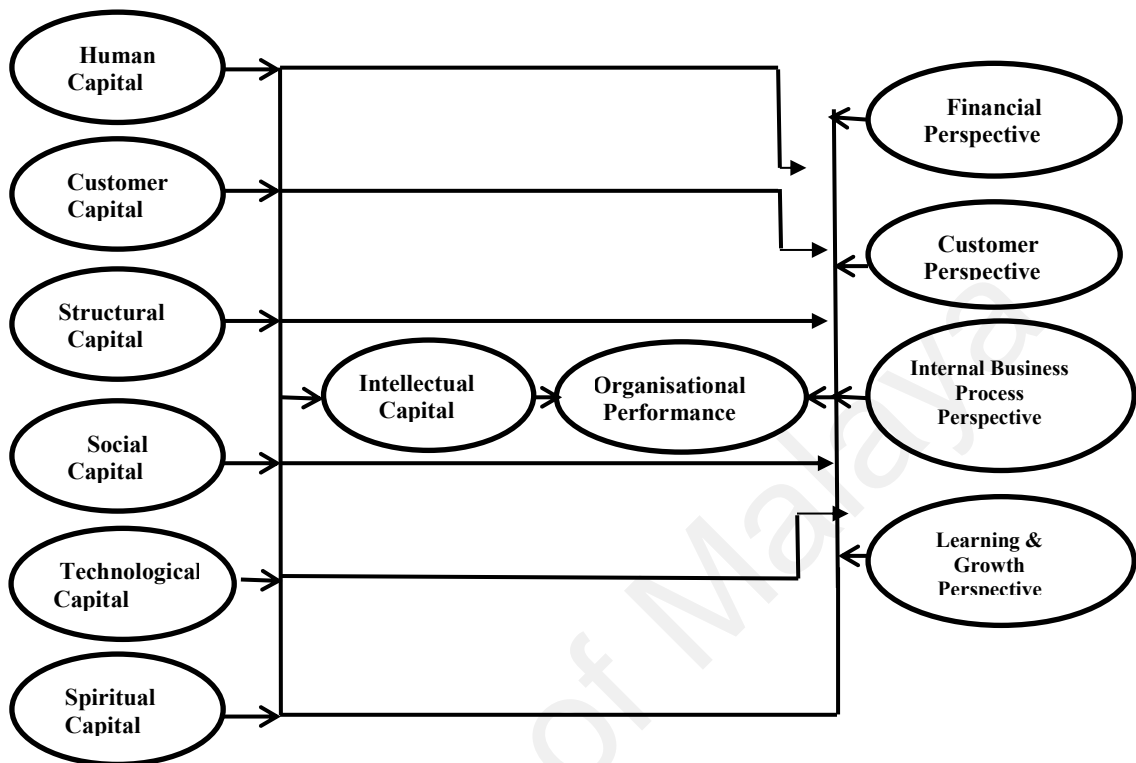


Figure 2.12: Khalique et al. Model

Source: Khalique et al. (2015)

2.10 Derivation of Conceptual Model

Before explaining the conceptual model, it is important to explain the context through which this model is developed. The main motive of corporate businesses is to improve performance and sustain in a global business environment. For such reason organisations need to increase their export performance and employee productivity. To survive in an international competitive environment, organisations need to produce value added products. As it is mentioned in Pakistan textile policy (2014-2019) that textile exports diminish due to export of low value added products.

However, for organisational survival, studies devoted considerable attention to intangible resources such as knowledge, know-how, professional skills and expertise,

customer relationships, information technology, databases, organisational structures, innovations, social values, faith and honesty (Asiaei & Jusoh, 2015; Khaliq et al., 2015). Ling (2013) added that companies should pay more attention to the management of IC to succeed in the global market.

Further, many studies suggested that knowledge process capability and innovation capability may influence the relationship between IC and organisational performance (Hsu & Sabherwal, 2011, 2012; Santos-Rodrigues et al., 2010; Subramaniam & Youndt, 2005; Verbano & Crema, 2016). Hence, this study applies IC with its appropriate dimensions for promoting organisational performance and also investigates the mediating role of knowledge process capability and innovation capability. From various previous research literatures this study developed a conceptual model (Figure 2.13).

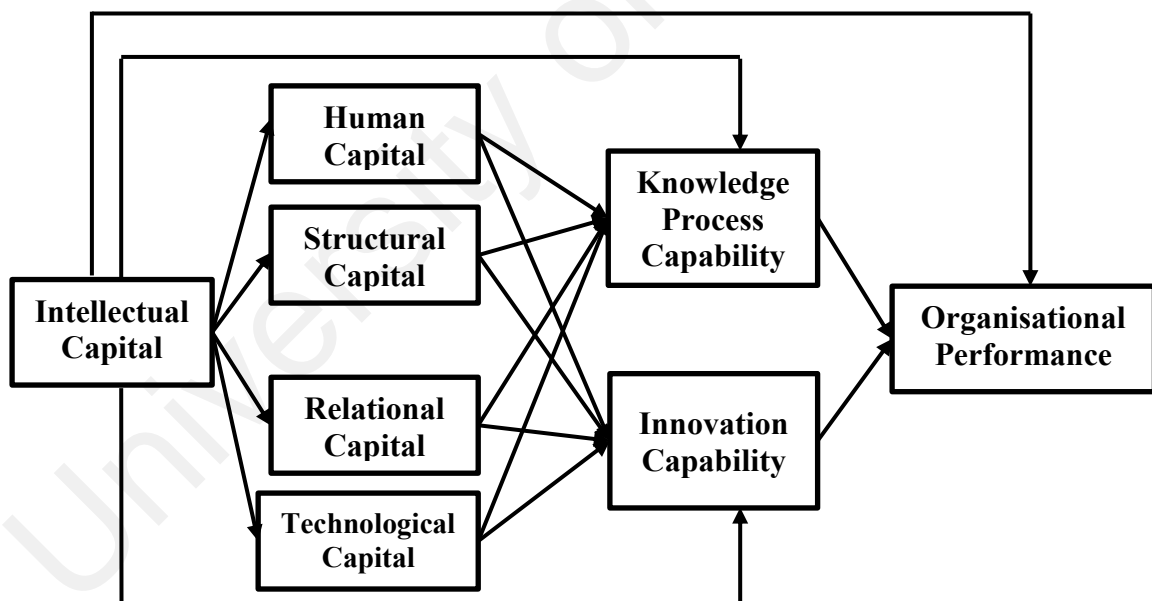


Figure 2.13: Conceptual Model

In this conceptual model IC with its sub-dimensions: human capital, structural capital, relational capital and technological capital are used as independent variables. Compared with previous models, this model investigates overall and also dimensional effect of IC on organisational performance. This study also added another dimension in

IC, such as technological capital. Though technological capital is explained in previous studies, but these studies were exploratory in nature and did not fully explain its proper usage and benefits. Further, some studies merged technological capital with previous IC dimensions. However, the current study will investigate technological capital as a separate concept in IC and explain it in detail. On the other hand, organisational performance is incorporated as dependent variable.

Further, finding the weaknesses in previous models, this model added knowledge process capability and innovation capability as mediating variables. Knowledge process capability is the combination of knowledge acquisition, knowledge documentation, knowledge creation, and knowledge transfer and knowledge application. IC and knowledge process capability are interlinked and work together and provide support to organisational performance. Similarly, innovation capability has its own importance. In this study innovation capability is a combination of product innovation and process innovation. Product and process innovation have much importance in international trade, because companies need competitive and innovative products to compete in international market. Further, influence of innovation capability between IC (its dimensions) and organisational performance may lead to productive outcomes.

2.11 Hypotheses Development

Once the variables of the study are identified and relationships among variables are established through previous theoretical frameworks and prior studies, the confirmation of relationship among variables either true or not, various statistical tool are applied. The processes of testing such statements are termed as hypothesis development (Sekaran & Bougie, 2016). Thus, based on previous empirical studies and theoretical model, following hypotheses are developed.

2.11.1 IC and Organisational Performance

The intangible assets have as much importance as the tangibles. The empirical finding of Bontis et al. (2000) show a substantive and significant relationship between IC and organisational performance. Asiaei and Jusoh (2015) proposed four IC dimensions i.e. Human, structural, relational and social capital and checked their effect on organisation performance and results were positive. However, the results of Pal and Soriya (2012) in Indian pharmaceutical and textile industry revealed that profitability positively associated with IC and organisational performance, but no satisfactory outcomes with organisation productivity were found.

Furthermore, scholastic studies also showed indirect effect of IC on organisational performance. IC associated with knowledge process, produced productive benefits for organisation. Huang and Jim Wu (2010) argue that knowledge productivity in an organisation is significantly enhanced by IC dimensions. In addition IC dimensions also supports for knowledge transfer (Chen et al., 2009).

Moreover, in today's competitive market, innovation has become an essential segment to heighten organisational performance. For example, Subramaniam and Youndt (2005) study demonstrate that dimensions of IC selectively influenced innovative capabilities. Innovation capability is linked with IC which brings radical effect on organisational competitiveness (Chahal & Bakshi, 2015) which positively relate to firm performance (Calantone et al., 2002). However, the mediation of knowledge process capability and innovation capability is supported by theoretical discussion but, lacks empirical support. Hence, this study draws and tests following hypotheses.

H1. IC has positive relationship with organisational performance.

H2. Knowledge Process Capability mediates the relationship of IC and organisational performance.

H3. Innovation capability mediates the relationship of IC and organisational performance.

2.11.2 The Dimensions of IC and Organisational Performance

The critical differentiators of business organisations are employees, not building cash or equipment (Fitz-Enz, 2000). Human capital is a fundamental asset in an organisation. According to Marimuthu et al. (2009) this capital does not only increase profitability of a company but also becomes a valuable asset for an organisation to pave the way for future creativity. Authors argued that well-utilized knowledge, skills, and abilities of individuals provide positive and significant organisational performance (Bontis et al., 2000; Hsu & Fang, 2009; Wang et al., 2014). These individuals need platform and resources to interact, and share experience which provide competitive advantage for an organisation. Senior managers' abilities of adaptation, teaching and leadership create an open-minded and trustful environment to motivate employees for completing their tasks (Rastogi, 2003). Wang et al. (2014) surveyed and found positive relationship between human capital and organisational performance. However, Khalique et al. (2015) counted a study in electrical & electronics firms that signify negative results between human capital and organisation performance.

On the other hand, structural capital is the non-human reserve of knowledge which supports organisations to improve performance in competitive environment (Bontis, 1998; Stewart, 1997). Further, such structural knowledge enhances organisation performance (Huang & Jim Wu, 2010; Valmohammadi & Ahmadi, 2015). Moreover, structural capital does not only improve the way organisations gather, produce and communicate knowledge but also attain a better position to generate better quality

products and processes with minimum cost and deep insight leading to business success (Zangouinezhad & Moshabaki, 2009).

The significant importance of relational capital paves the way for organisational performance, and such notion is supported by researchers. Similarly, customers and suppliers which externally linked with organisations are also suitable drivers for performance. Through relational capital, organisations expand network of learning and get updated means for performing tasks. By building relations with customers and suppliers, organisations become more innovative by learning from other experiences (Cousins et al., 2006; Dewhurst & Cegarra Navarro, 2004). In addition, literature also shows negative effects of relational capital on performance (Andreeva & Garanina, 2016; García-Merino et al., 2014). Researchers argue, there may be various reasons for such possible negative output. First, relational capital has delayed effect on organisational performance, because it takes time to build constructive relations with external agents and suppliers. Secondly, it might be due to peculiar country's culture effect where companies have already developed high relational capital and there is no longer competitive advantage.

Among other dimensions of IC, technological capital also offers a constructive role for organisational success. The role of technological capital cannot be denied in competitive and knowledge-based business environment. According to Khalique et al. (2015), technological capital contributes to organisational performance. ICT has become one of the basic requirements in order to adjust in new business era, and such technology improves business practices, enhance efficiency and competitiveness (McNamara, 2008a). Besides, Pérez-López and Alegre (2012) results found that ICT plays a dominant indirect role to enhance management process which leads to

organisational performance and further added that no direct relation exists between ICT and organisational performance.

Thus, this study attempts to investigate the impact of different dimensions of IC and its contribution on organisational performance in the context of textile industry. On the basis of above discussions and relationships, hence, the following hypotheses have been developed:

H4. Human capital has positive relationship with organisational performance.

H5. Structural capital has positive relationship with organisational performance.

H6. Relational capital has positive relationship with organisational performance.

H7. Technological capital has positive relationship with organisational performance.

2.11.3 Role of Knowledge Process Capability between IC dimensions and Organisational Performance

The concept of IC has been well-utilized in developed nations but the same concept is also making roots in developing nations. Previous studies recommended constructive relationships between IC and organisational performance. As time moves on scholastics work is linking IC dimensions with knowledge process capability. Jaw et al. (2006) reported that Knowledge flows through human capital progresses organisation performance. Further, to create an open-minded and trustful environment for employees to complete their task; managers of an organisation should hold the abilities teaching, leadership, and adoption. The true spirit of a manager is to continuously mobilize and deploy the collective knowledge, brainpower, talent, and passion to employees in the face of incessant challenges and opportunities. Such support enhances workforce energies and talent towards achieving company's visionary goals (Rastogi, 2003). As a

consequence, such linkage between human capital and knowledge process capability may lead to performance of organisation.

Similarly, the process of knowledge also demands a practical organisational setup i.e. proper processes, procedures, structure, data bases and other required accessories. However, structural capabilities backed organisations from internal and external challenges. Such capital promotes knowledge capability (Huang & Jim Wu, 2010) which enhances organisational performance (Valmohammadi & Ahmadi, 2015). Nonaka et al. (2000) asserted that it's incumbent upon managers to provide such circumstances which assist for knowledge creation in organisations. It can be done by providing time, space, cyberspace, meeting rooms and other facilities which help for knowledge usage in organisations.

In the same way, the intraunit and interunit relational capital are quite important for organisation's knowledge flow. Carmeli and Azeroual (2009) results showed the positive relationship between relational capital and knowledge capability; such knowledge leads to constructive benefits for organisational performance. Customers and suppliers do have wealth of knowledge and their efficient and effective utilization supports organisation to accomplish desired ends. As Bontis (1999) asserted that managers of a company can avail knowledge from their customers and suppliers, because they have much information of external business environment.

Finally, technological capital is also executing a compelling role to utilize knowledge process capability in organisations. López et al. (2009) outcome suggests that ICT positively associated with knowledge process capability. For applying such technology companies must develop a knowledge strategy to provide the basis for the technology use. According to Sambamurthy and Subramani (2005) technological capital stimulates knowledge process in an organisation. Additionally, technology capital has become a

necessity for advanced and traditional companies which supports for knowledge exchange in organisations.

Based on prior discussion, it is found that there is lack of literature to check the role of knowledge process capability between IC and organisational performance; hence, this study will try to fill the gap to test the following hypotheses.

H8. Knowledge Process Capability mediates the relationship of Human capital and organisational performance.

H9. Knowledge Process Capability mediates the relationship of structural capital and organisational performance

H10. Knowledge Process Capability mediates the relationship of Relational capital and organisational performance.

H11. Knowledge Process Capability mediates the relationship of Technological capital and organisational performance.

2.11.4 Role of Innovation Capability between IC dimensions and Organisational Performance

Innovation capability supports companies for competitive performance. There is a constructive relationship between human capital and innovation capability. Companies should develop employee capabilities that in turns bring innovative ideas in organisations. Companies accomplish productive innovation, which enhances the competencies of their employees. Human capital of an organisation should be considered as an asset rather considering it a cost. Top management proper attention on human capital enhance organisation innovative capability (Wang et al., 2008) The empirical results of Dakhli and De Clercq (2004) propose human capital work as a

catalyst for organisation's innovation which influences organisational growth and productivity. Furthermore, the outcome of Donate et al. (2016) revealed, human capital increases the innovative capability of organisations and added that human capital development is not one day effort rather built over years and it is core of innovation capability. In fact, the innovation capability of an organisation could be largely affected if less attention is paid on employees' development.

On the other hand, structural capital supports innovation. Subramaniam and Youndt (2005) found positive relationship between structural capital and incremental innovation (product innovation). However, researchers also found out negative results of structural capital with innovative capability. For example, Carmona-Lavado et al. (2010) found insignificant direct relationship between organisational capital (structural capital) on product innovation.

The literature also supports that involving customers who have close relationship with company, leads to progress of superior product and process innovation. Santos-Rodrigues et al. (2015) found positive relationship between relational capital (Collaboration network & clients) and product and process innovation. On the other hand, Zerenler et al. (2008) study suggests, among other IC dimensions customer (Relational) capital has a greater contribution to innovation. Furthermore, productive relations with customers and suppliers are quite encouraging for companies' performance. Companies can grasp enormous ideas from their clients which can be applied for product and process innovation (Santos-Rodrigues et al., 2015). As they are ultimate buyer of product, that's why their concepts and ideas can uplift organisational performance in long run.

On the other hand, the role of technology cannot be overlooked for innovation capability. Such as ICT is a cost-reducing and cost-efficiency technology which brings

about competitive advantage through developing innovative products (Higón, 2012). The quantitative and qualitative review exposition of Indjikian and Siegel (2005) explain strong link of IT and performance in developed countries but in developing and transition economy results are not satisfactory. There is lack of IT knowledge and skills. Moreover, organisations can utilize the benefits of technological capital for product and process innovation. Similarly, technological capital generates new product designs which make the company's product unique from its competitors. With the use of technology, organisations can approach their customers and suppliers in a fast track.

Thus, the above discussion shows various conceptualization between IC dimensions and innovation capability. And further innovation capability relationship towards organisational performance is also explained. The present study attempts to understand the mediating role of innovation capability between IC (its dimensions) and organisational performance. The following hypotheses are drawn to be empirically tested.

H12. Innovation capability mediates the relationship of human capital and organisational performance.

H13. Innovation capability mediates the relationship of structural capital and organisational performance.

H14. Innovation capability mediates the relationship of relational capital and organisational performance.

H15. Innovation capability mediates the relationship of technological capital and organisational performance.

2.12 Chapter Summary

This chapter describes IC in detail. It also explains the dimensions, measurements, and reporting types of IC. The conceptualization and operationalization of organisational performance is elaborated. A discussion on mediating role of knowledge process capability, its dimensions and innovation capability is highlighted. Besides, this chapter also explains RBV and KBV theories, and based on these theories various previous theoretical models are discussed. In connection with those models, a new conceptual model is developed. At the end, fifteen hypotheses are developed which will be empirically tested in upcoming chapter.

University of Malaysia

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter commences with study research design which explains about research approach and overall research methodology. In section two, target population is highlighted followed by explanation on selection of sampling frame and sampling techniques. Section three explicates the operational definition of variables and their measurements. Questionnaire design, its validity and reliability is evaluated in section four. Further, section five briefly explains about pilot study. Data analysis techniques and their usage are explained in section six.

3.2 Research Design

Research studies are typically based on two types such as quantitative research and qualitative research or both of them considered together in a single study (Neuman, 2002). In quantitative approach, survey or others measurements report data in shape of numerals, while in qualitative approach information are gathered from companies and individual ideas through case studies, interviews, focus group, or participant observations (Yauch & Steudel, 2003). The quantitative approach is based on objective numbers and values which can be generated through applying statistical techniques. The results of such analysis are drawn on charts, graphs, tables, and so forth. Further, this viewpoint is aligned with deductive reasoning. Deductive reasoning begins with a general theory and ends with certain observations. On the other hand, qualitative approach usually applies inductive method. In inductive method, a researcher is not affected by previous theories but rather try to find a new model through observation, which will lead to identification of the underlying theory.

Based on the above discussion, this study is oriented towards confirmatory research based on previously developed theories. So, the quantitative approach is applied in this

study for the following reasons. First, this study is based on previous developed existing theories. Second, this study measures various variables and quantifies those variables by developing hypotheses which is based on a conceptual framework.

This study is basically a correlational study in which various variables are utilized, and those variables are related to a conceptual model (Cooper & Schindler, 2008). The correlational studies are adopted when the associations among variables are taken into consideration. The cross sectional approach is utilized in this research, because data from respondents are collected from March 2016 to December 2016. For the purpose of data collection, survey research is used to answer the non-experimental questions. There are three main characteristics of survey research. First, the required information is collected from respondents in a structured format. Second, most of the time survey research is applied for quantitative method which needs standardized information for defining and describing the variables or findings the relationships between variables. Third, the data is accumulated through a sample that is a portion of the population. The sample enables the researcher to generalise findings from the population (Malhotra & Grover, 1998).

A survey questionnaire has several benefits, such as a large sample from a population is collected in a short span of time. Second, a good number of samples can be collected from population that is useful to generalize results of the study. Third, numerous questions can also be asked in a short span of time (Scandura & Williams, 2000). Finally, this form of research enables quick response from the respondents, and easy to organize because everything is predefined in structured questionnaire format (Sekaran, 2006; Zikmund et al., 2013b).

Apart from its benefits, this technique also has drawbacks. Sometimes respondents give a false response in order to gain favourable attention. Further, insufficiency of

detailed information and explanation in questionnaire decreases the factualness of the response. However, to minimise the drawbacks, previously developed scales are used to collect data in this study because of their validity and reliability. Moreover, to improve the authenticity, questionnaire is checked through industry professionals.

3.2.1 Population and Unit of Analysis

The population is comprised of group of individuals, events or things that a researcher want to examine (Sekaran & Bougie, 2016). The population of current study is textile industry in Pakistan. One of the reasons behind selection of this industry is due to its contribution in country economy and this industry contributes forty-six percent (46%) to manufacturing industry (Wasti, 2015-2016). The target population of the current study is large textile companies. This study focused on IC usage and its effects on textile industry performance. Larger companies were focused because, compare with small and medium enterprises, large companies have bigger organisational setup which are more focused on human resources development, have more budget to work on human capital development and so forth. Further, Darroch and McNaughton (2002) elaborated that small firms may not need those knowledge related resources as required by large firms.

Moreover, the central purpose of this research is to find out the unit of analysis (Sekaran & Bougie, 2010). This study is based on IC (human, structural, relational and technological capital) and its effects on organisational performance, and further, the role of knowledge process capability and innovation capability is also evaluated. On such basis, three levels of HR managers are selected as unit of analysis. The respondents in managerial level positions are considered knowledgeable, responsible, and more trusted individuals in organisation. The current study selected more than one respondent from each company. As Ifinedo (2007) asserted, single respondent from an organisation may

lead to respondent bias. It would be hard to avoid personal bias when a single respondent gives evaluation for his/her specific company. Hence, more than one respondent in an organisation enhance research validity.

3.2.2 Sampling Frame and Sampling Method

Sampling frame means a list of every element in a target population from which sampling is derived. Hence, all large textile companies formed the sampling frame. However, there were no authentic sources which could indicate all large textile companies in Pakistan. Sapsford and Jupp (2006) asserted, for completing the sample frame, a great care should be taken. Hence, some main sources were available such as APTMA and SECP, but they did not categorise them as small, medium, and large companies. Further some companies were already closed however their names are still available in the list. These sources were incomplete to be considered as total list of large textile companies. Therefore, a comprehensive search was carried out to complete the list of large textile companies that will derive the current study sampling frame. Therefore, the following sources were utilized for making the complete list.

- Searching the website of APTMA which is a trade association of textile companies comprised of Spinning, weaving, and composite mills.
- Exploring the website of SECP. The SECP is a transparent regulatory body based on international legal standard that raises good governance principles in corporate sector.
- Searching the annual report of Pakistan Stock Exchange (PSX) for the list of large textile companies.
- Reviewing the annual report of the State Bank of Pakistan, circulated in official website.

- Reviewing the websites of government organisations and statistical departments, i.e. Pakistan Bureau of Statistics, Ministry of textile.

Based on the above sources, a comprehensive list of 425 large textile companies were determined. There was a total of 1984 respondents from the 425 textile companies. After contacting all companies, 240 companies agreed to participate in the survey with total respondents of 543 but only 374 was returned. However, the total useable was only 354 respondents. Simple random sampling was utilized for respondents' selection. The Simple random sampling guarantees that the total respondents of the population are in the list, hence the desired number of subjects are selected randomly.

3.3 Variables Description and Measurement

This study included four main variables: IC which is further divided into four sub-dimensions, i.e. human capital, structural capital, relational capital, and technological capital were used as independent variable. Organisational performance was measured as dependent variable. Finally, knowledge process capability and innovation capability were considered as mediating variable. Similarly, all variables were measured with five point Likert scale ranging from "1= strongly disagree to 5= strongly agree". The operational definitions and explanation of instruments discussed below.

3.3.1 IC

Bontis (1998) developed IC scale and refined by Bontis et al. (2000). The very first developed scales includes 53 items, ranging from "1= strongly disagree" to "7= strongly agree". It was further refined by Khalique et al. (2015) with five point Likert scale and added some extra variables. However, based on this study, four IC dimensions such as human, structural, relational, and technological capital are used. In this study, IC is

measured with five point Likert scale ranging from “1= strongly disagree” to “5= strongly agree”. Moreover, IC is a multicultural instrument which is used in various organisations such as banking, telecommunication, manufacturing companies, and so forth. The operationalization of IC is as follows:

Variables	Definitions
Human capital	Human capital refers to the competencies of employees, such as education, professional skills, specialized knowledge; attitudes (i.e. motivation, satisfaction, loyalty and commitment). Finally, intellectual agility (i.e. innovative ideas, creativity, flexibility and adoptability) (Bontis, 1999; Bontis et al., 2000; Khaliq et al., 2015).
Structural Capital	Structural capital refers to bundle of organisation knowledge, i.e. processes, procedures, administrative programs, manuals, databases, and organisational charts. This concept also incorporates supportive learning culture, innovative ideas, and decision making power of employees in organisation (Bontis, 1998; Bontis et al., 2000; Ross et al., 1997).
Relational Capital	This study explains relational capital as cooperative relationship with customers, suppliers, stakeholders, government and other agencies. Further, making strong clients network to boost customer loyalty towards organisation, and learning about competitors’ capabilities. Lastly, gaining government support for innovative subsidies and training programs (Bontis, 1998; Ngah & Ibrahim,

	2011).
Technological Capital	Technological capital refers to R&D, ICT knowledge, technological operations, and infrastructure. It also means to utilize ICT knowledge for productive ideas development and completing tasks in minimum time. Khalique et al. (2015) instrument used to measure technological capital.

3.3.2 Organisational Performance

Organisational performance was measured by two combining scale. First scale focused on export performance and the other one on productivity. The instrument for export performance which was developed by White et al. (1998) and used by Stoain et al. (2011) and Grandinetti and Mason (2012). Similarly, productivity measurement developed by Schreyer (2001) and Singapore (2011) which were further utilized by Teng (2014) and Sullivan et al. (2013). Organisational performance was measured by ten items with five point Likert scale ranging from “1= strongly disagree” and “5= strongly agree”.

Variables	Definitions
Organisational Performance	The firm’s activities in international market illustrate its export performance. The export performance are computed with internal sales, profitability, expand growth, and management

	<p>satisfaction towards exports. Our export measurement is based on White et al. (1998). Further, to build long-term competitive advantage, productivity is indispensable. Productivity focuses value added per worker, output per worker, new product development and cost of production. Productivity measures have been adopted from organisation of economic cooperation and development [Schreyer (2001) and Singapore (2011)].</p>
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3.3.3 Knowledge Process Capability

Filius et al. (2000) developed an instrument that includes five sub-parts i.e. knowledge acquisition, knowledge documentation, knowledge transfer, knowledge creation, and knowledge application. The instrument was further refined and used by Seleim and Khalil (2007); Birasnav et al. (2013); Seleim and Khalil (2011) and Birasnav (2014).

A five point Likert scale ranging from “1= Strongly Disagree and 5= Strongly Agree” was used. After consulting experts and textile managers, nine items were included in this research in order to match study requirement.

Variables	Definitions
Knowledge Process Capability	<p>Knowledge process capability is defines as, knowledge that is acquired by employees from internal & external sources; solutions of the problems are documented in the brainstorming sessions. Further, changes appear in policies, procedures and knowledge is disseminated among employees and from mentor to employees. Similarly, knowledge creation appears through discussing problems and assigning workforce to new projects.</p>

	Lastly, knowledge is utilized by using customers' and workforce experiences for product or service development (Filius et al. (2000).
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3.3.4 Innovation Capability

The scale for innovation capability is developed by Atuahene-Gima (1995) and Henard and Szymanski (2001). Later, the scale is refined and used by Åstebro and Michela (2005); Ellis (2006); Calantone et al. (2006); Troy et al, (2008). Innovation capability is measured by seven items which are ranging from “1= strongly disagree” and “5= strongly agree”.

Variables	Definitions
Innovation capability	Innovation capability can be defined as the ability to continuously transform knowledge and ideas into new products, processes, and systems for the benefit of the company and its stakeholders (Sivalogathan and Wu, 2015). It is further described into two major categories, i.e. product and process innovation. Product innovation is the process of creation and subsequent introduction of a product that is either new or improved from previous products whereas, process innovation means the implementation of new or significantly improved production, marketing distribution and selling process (Massa and Testa, 2008).

This study adopted variables and its items from previously well-defined and validated scales. Table 3.1 explains the details related to instruments used in this study that developed, refined, and used the instrument in various research studies.

Table 3.1: Data Collection Instruments

Scales	Developed	Refined	Used
IC			
Human Capital	Bontis, N. (1998)	Bontis et al. (2000)	Khalique et al. (2015)
Structural Capital			
Customer Capital			
Technological Capital			
Organisational Performance	White et al., (1998) Schreyer & Pilat (2001) Singapore, (2011)		Stoain et al. (2011) Sullivan et al. (2013) and Teng (2014)
Knowledge Process Capability	Filius et al. 2000	Seleim & Khalil, (2007)	Birasnav et al. (2013) Seleim & Khalil (2011) and Birasnav (2014) Calanton e et al. (2006)
Innovation Capability	Atuahene-Gima (1995) Henard, & Szymanski (2001).	Åstebro & Michela (2005)	Troy et al. (2008)

3.4 Survey Questionnaire Design

Questionnaire is considered one of the basic and popular methods of data collection (Hair et al., 2010). In this study a written survey questionnaire is used as data collection tool, and questionnaire was sent to target respondents (large textile companies) in Pakistan. The three levels of HR managers were selected for data collection. They were asked to provide information regarding IC and its ultimate effect on organisation performance.

In the beginning of the questionnaire, a cover letter was provided which explain a brief description of researcher. The purpose of survey and its benefits were also

highlighted. Further, it was confirmed to the respondents that their responses would be confidential.

The questionnaire is divided into five sections. The first section is demographic profile which is further divided into two sub sections, namely company profile and individual profile. The second section describes IC. IC is explained with sub-dimensions i.e. human capital, structural capital, relational capital and technological capital. In this section, thirty-seven (37) questions were asked. Third section covers knowledge process capability and innovation capability which are explained with nine (9) and seven (7) questions respectively. Finally, organisational performance was explained with ten (10) questions. The detailed questionnaire is provided in Appendix A.

3.5 Validity & Reliability of Questionnaire

Before commencing the model estimation, the validity and reliability of a survey questionnaire is indispensable. Validity illustrates the accuracy of a construct. It shows how a concept is accurately measured (Zikmund et al., 2010). The focus of this study is face and constructs validity, which is further explained through convergent and discriminant validity. On the other hand, reliability shows measurement consistency that is error free. It measures items in the instrument and ensures its consistency across time and minimizes biasness in instruments of the study (Sekaran, 2006). In this study, reliability is measured by composite reliability and Cronbach's alpha.

Likert scale is used for survey collection. It's a psychometric response scale mainly employed in questionnaires is to get respondent's agreement with the statements. Respondents are asked to show their agreement on given statement which is based on ordinal scale (Bertram, 2007). Generally a 5-point scale ranging from

“Strongly Disagree” on one end to “Strongly Agree” on the other end with “Neither Agree nor Disagree” in the middle.

The several advantages of the Likert scale has been discussed by the researchers as they argued that likert scale are the most universal method for survey collection. These types of scale are easier to be understood and respondents can easily analyse and synthesize the meaning and the contents of survey questions. Another significant benefit of such scale is that the responses are easily quantifiable and subjective to computation of quantitative analysis for further implications. Moreover, the coding mechanism of the participant’s responses is very easy to compute. Likert surveys are also quick, efficient, and inexpensive methods for data collection (Likert, 1932). In addition, Tavakoli (2012) described Likert-type scales as most reliable whereby respondents answer each statement included in the questionnaires protocol. Consequently, it also provides more information and data.

On the contrary, researchers also highlighted several limitations of the Likert-type scale. In fact, the participant doesn’t have to take an absolute standard meaning that they can stay non-committal throughout a whole series of questions. This possibility of being neutral can skew the results. Respondents tend to choose middle point because it is the easiest and least controversial. Unfortunately, this may eliminate what could be a valid answer and can also skew the results. Moreover, one important limitation is that, it is unlikely that the respondent can validly react to a short statement on a printed form in the absence of real-life qualifying situations (Tavakoli, 2012). Thus, the possibility of measurement errors arises which may have significant influence on data analysis. In a nutshell, Likert scales are regarded most useful and convenient approach for researchers in collecting the data from the respondents.

3.5.1 Face Validity

It is a basic index of validity, also named content validity. It indicates the items intended to measure a construct (Sekaran, 2006). Face validity confirms that scale logically reflects the constructs being measured. It is a very basic but important index which makes respondents understand about researcher thoughts. The instruments are adopted and validated from previous researchers. However, instrument items needed some changes in language and sentence structures in order to match with country context (Pakistan's textile industry). Due to this reason, questionnaire was sent to five professionals and human resource managers working for textile industry in Pakistan to check for any meaningless, irrelevant, and confusing items. Experts suggested some improvement in questionnaire. Based on their suggestions, questionnaire is improved for data collection.

3.5.2 Construct Validity

“Construct validity exists when a measure reliably measures and truthfully represents a unique concept”(Zikmund et al., 2013a). Construct validity is measured through convergent and discriminant validity.

3.5.2.1 Convergent Validity

Convergent validity is the degree to which two indicators are correlated. It means that the items of a variable need to correlate with each other but items should be truly different. Convergent validity is tested by factor loadings and average variance extracted (AVE). Factor loading is the degree to which the items are correlated to its indicator or construct. According to Hair et al. (2010) the acceptance level of an item loading should be equal to or greater than point five (≥ 0.5) is accepted. The value of AVE should also be equal to or greater than point five (≥ 0.5).

3.5.2.2 Discriminant Validity

Discriminant validity is defined as the extent to which indicators of one construct is not similar to indicator of other construct. Although there can be correlation between two or more constructs but it should not exceed the limit of <0.85 . Discriminant validity is assessed by latent variable correlations with square root of AVE. The recommended criterion for discriminant validity is that the square root of the AVE for each latent variable should be larger than any correlations of latent variables (Fornell & Larcker, 1981).

3.5.3 Reliability

Reliability is a measurement of indicator's internal consistency (Zikmund et al., 2010). An instrument is believed to be consistent when it produces similar results by doing different attempts. It is important to check reliability of each construct before estimating the structural model. Reliability is measured through composite reliability and Cronbach alpha. Researchers suggested different threshold value for composite reliability and Cronbach alpha. According to Zikmund et al. (2010) coefficient value 0.70 to 0.80 is considered a good value for Cronbach alpha. The recommended value by Nunnally (1978) is more than 0.70. Even a more relaxed threshold for Cronbach alpha and composite reliability is 0.6 (Nunnally & Bernstein, 1994). Based on various suggestions from researchers, a generally accepted threshold value is equal to or greater than 0.7, and this value is utilized in current study.

3.6 Pilot Study

Before conducting the actual study, the final draft of questionnaire was tested in a pilot study. Pilot test helps to avoid error in instruments design and as a whole improves the questionnaire (Sekaran, 2006). The pilot study assists the effectiveness of sampling

frame and technique. It's a valid source for conducting final study. According to Cooper and Schindler (2003) the range for pilot study can be between 25 to 100 respondents. Furthermore, Rossi et al. (2013) revealed that 20 to 50 respondents are fair enough for pilot study.

The instrument is piloted by 118 respondents from the large textile companies in Karachi. The duration of pilot study was from December 2015 to February 2016. In order to gain more valid results, all samples are chosen from the population of the actual survey. Three levels of managers (first-line managers, middle-line managers and top-level managers) are surveyed. Further, face-to-face survey was applied to data collection. This method of survey is considered as more reliable because the interviewer personally visits the respondents' location. Compared with mail survey or telephonic survey, face to face has more benefits. Most of the time it is reported that in the mail or telephonic survey externalities may affect the authenticity of answer. Because respondent might be busy in answering a call, it may result in situations where skipping questions, or answering some questions without understanding their exact meaning. Based on such issues, a face to face survey was applied.

In summation, respondents filled the questionnaire and also gave their constructive feedback for questionnaire. Based on their meaningful suggestions, some amendments were brought into questionnaire, such as questions structure, question layout, content clarity, and so forth. Further, to control biasness, pilot study participants were not surveyed for final study (Teijlingen & Hundley, 2002).

3.7 Data Analysis Technique

After designing of questionnaire was completed, and based on that structured questionnaire the required data was collected from the target respondents. Then analysis of data is performed. There are two basic approaches for data analysis, i.e. qualitative

data analysis and quantitative data analysis. However, this study is based on quantitative analysis. In quantitative analysis various statistical tools are applied to achieve the results.

The conceptual model of this study is based on multiple relationships, so SEM is used to analyze relationships among variables. It is a technique which can run multiple variables relations simultaneously (Hair et al., 2009). Most common analysis approaches in social sciences are covariance based SEM (CB-SEM) and partial least square SEM (PLS-SEM). This study applied PLS-SEM to address the objectives. However, there are some differences in these two methods which are discussed below.

3.8 Difference between CB-SEM and PLS-SEM

CB-SEM and PLS-SEM are two widely used methods to find relations between latent constructs. PLS-SEM is also called component-based SEM. The estimation procedure of PLS-SEM is based on ordinary least square while CB-SEM is based on maximum likelihood estimation method (Astrachan et al., 2014). CB-SEM is applied through different statistical software i.e. AMOS, LISREL, EQS whilst PLS-SEM utilizes Visual PLS, PLS-Graph, Smart PLS, and WarpPLS. Although both types of analysis are used for SEM measurement, but based on their characteristics scholars prefer one to another in their studies. Compared with PLS-SEM usage, the CB-SEM has more challenging requirements to be met in SEM analysis. If those necessary requirements are not fulfilled then PLS-SEM is preferred method with less restrictive assumptions (Hair et al., 2011).

In CB-SEM, researcher has to fulfil the requirement of data normality and minimum sample size. The required sample size should be two hundred and above. On the other hand PLS-SEM can perform measurements with non-normal data because it's performed with non-parametric data. Secondly, PLS-SEM's ability to work efficiently

with a much wider range of sample sizes (Afthanorhan, 2013; Hair et al., 2011). Furthermore, Hair et al. (2011, p. 144) added that the required sample should be “ten times the largest number of structural paths directed at a particular latent construct in the structural model”. In addition, for theory testing and prediction purpose, the best choice is CB-SEM to be used. On the contrary, when the model is more complex with more than five constructs, PLS-SEM can be a better choice in order to gain productive results. Similarly, CB-SEM uses various model fit indices in order to measure the quality of the model which is missing in PLS-SEM. However, this issue is resolved by PLS-SEM statistical software, the WarpPLS, which uses various types of model fit indices.

Based on this study requirements PLS-SEM aided by WarpPLS (Version 5) is applied for analysis. This method of statistical analysis permits empirical assessment of a measurement and structural model. In PLS-SEM the measurement model is also called as outer model and the structural model referred as inner model. The measurement model explains each construct which is comprised of a set of indicators. While, the structural model depicts the causal relationship among multiple constructs (Kock, 2015). Further, PLS analysis method applies two types of indicators. The first one is reflective and the other formative. In reflective latent construct (this study is based on) all indicators should be highly correlated with latent construct scores while, in formative latent construct, indicators measure certain attributes of latent construct, but the indicators need not to be correlated with each other (Kock, 2011).

3.9 The purpose for Using SEM

To understand data and variables relationships, researchers were initially dependent on univariate and bivariate to analyze data relationships. In current scenario, more complex research relationships are in demand and such requirement is fulfilled via SEM by providing multiple linear regressions. SEM can measure multiple variables in a

combine analytical model and make it easy to categorize such variable as independent and dependent variable. Variables in a study are selected on the basis of previous theories and concepts; the prime purpose of regression analysis is to test those theories and concepts (Hair et al., 2016). SEM has the benefits to compute various independent and dependent variables simultaneously. This method simultaneously measures a construct and run structural relationship among the constructs.

3.10 Stages in SEM Analysis

The SEM is comprised of four major steps: model specification, estimation, evaluation, and interpretation (reporting). An additional step model re-specification is added if the estimated model does not fit. The following steps are explained as follows.

3.10.1 Model Specification

The first step in model specification is to develop the path model of study, which is based on a theory or theories and previous specified literatures. The graphical representations of variables are identified in the study. It is decided, which variables/constructs to be included and excluded. After that, based on objective(s) of study variable relations are decided.

Based on the above discussion, the current research used IC as independent variable which is further explained in four constructs: human, structural, relational, and technological capital. Organisational performance is used as the dependent variable. Further, knowledge process capability and innovation capability are utilized as mediating variables in this study. IC is measured with thirty-seven items (human capital 12, structural capital 9, relational capital 8, and technological capital 8). Organisational performance is measured with ten items. Further, knowledge process capability and innovation capability are measured with nine and seven items respectively.

This research has four objectives. The first objective is to investigate the relationship between IC and organisational performance. Second objective is to examine the relationship between IC dimensions (human, structural, relational, and technological capital) and organisational performance. Third objective is to analyze the mediating role of knowledge process capability between IC (overall and by dimensions) and organisational performance. Fourth objective is to examine the mediating role of innovation capability between IC (overall and by dimensions) and organisational performance. These four objectives are covered by two specified models (these two models are subdivided into six models for analysis purpose, which are discussed in chapter four in detail) showed in Figure 3.1 and Figure 3.2.

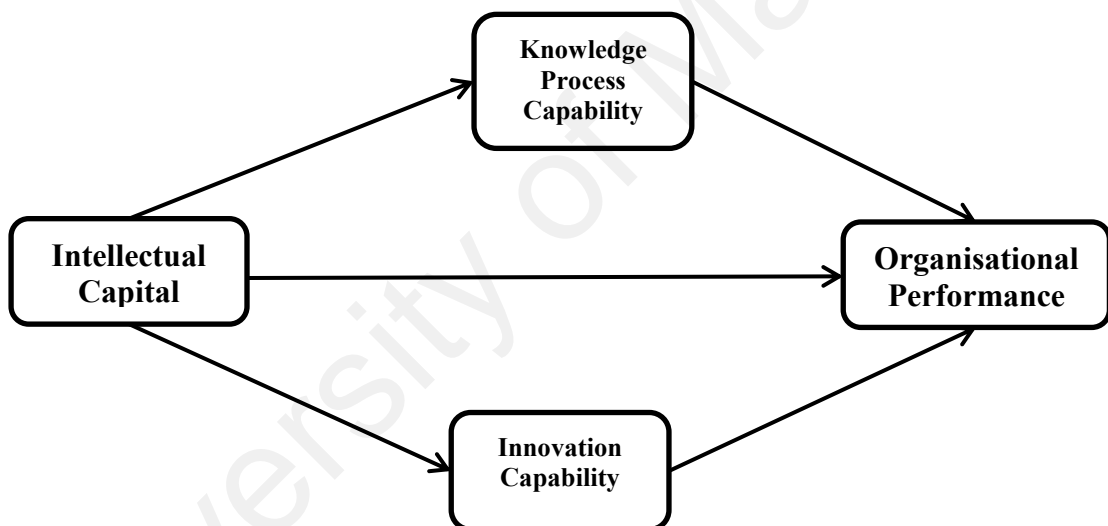


Figure 3.1: Model 1

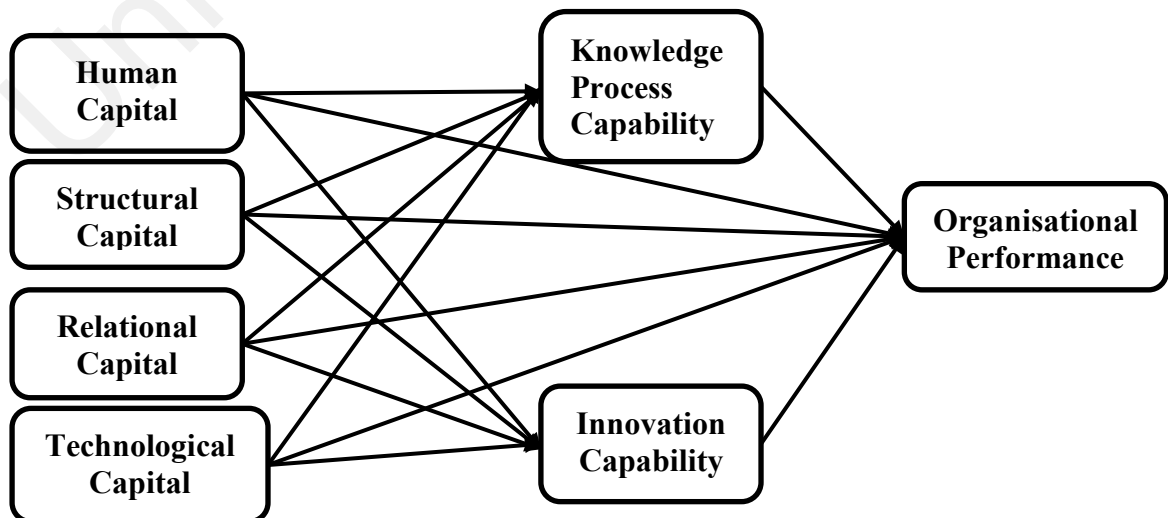


Figure 3.2: Model 2

3.10.2 Model Estimation

Once the model specification and data collection is performed, the very next step is model estimation. PLS-SEM is used to estimate the model. This technique is robust and efficient and deals with both normal and abnormal data. Compared with other estimation, i.e. maximum likelihood estimation, it has fewer distributional assumptions.

3.10.3 Model Evaluation

Model evaluation is performed in the third stage. Number of statistical packages are available for data analysis. Using appropriate statistical package helps a good model fit. Hence, PLS-SEM (specifically WarpPLS) method was chosen because of its ability to handle multicollinearity among the independent variables, robustness in the face of data noise and missing data, and the ability to create independent latent variables directly on the basis of cross-products involving the response variables thus allowing for stronger predictions (Kock, 2015).

Evaluation is done in two steps. Step one is validating the measurement model (outer model) and step two deals with the structural model (inner model). A PLS-SEM based model is analysed and interpreted with the assessment of the reliability and validity of the outer model and the assessment of the inner model.

In the first step, the measurement model goal is to establish reliability and validity of an instrument before attempting to draw any conclusions about the relationships. For internal consistency composite reliability is used and that should be higher than 0.7. For the purpose of indicator reliability, indicator loading should be higher than 0.50. On the other hand convergent validity is checked through AVE. Similarly, discriminant validity tested via latent variable correlations with the square root of AVE. Finally, multicollinearity among construct is tested through block variance inflation factor.

In the second step, the structural model is validated. It shows the correlations among constructs. The WarpPLS produces various model quality fit indices which describe model fitness. Table 3.2 shows four different types of model fit indices: Average path coefficient (APC), Average R-squared (ARS), Average block variance inflation factor (AVIF), and goodness-of-fit (GoF). The P values are provided for APC and ARS, which should be equal to or greater than 0.5. Further, the value of AVIF is acceptable if it is less than 5 and more ideally, it should be less than 3.3. Finally, GoF is measured with small, medium and large values, and the value should be greater than or equal to 0.1, 0.25 and 0.36 respectively. The remaining quality fit indices are reported in appendix D.

To further validate the structural model, four measurements are assessed. First, the structural model determines path coefficients with their respective p-values. In PLS-based SEM analysis, path coefficients are referred to as beta (β) coefficients. It shows the estimates of hypothesised relationships by adjoining the constructs. The path coefficient values are range from -1 to +1. The coefficient value closer to +1 represent strong relationships among constructs. Second, the coefficient of determination (R^2) value is determined. The coefficient of determination shows the combine effects of the independent variable on the dependent variable. The range of the effect is from 0 to 1 with 1 showing complete accuracy. Third criteria which facilitates the structural model is the effect size (f^2). The effect size reports the change in the coefficient of determination when a variable is eliminated from the model. The value of effect size are ranged from 0.35, 0.15, 0.02 represent large, medium and small effects, respectively (Cohen, 1988; Hair et al., 2014). Finally, the structural model determines Q-squared (Q^2) which is utilized to assess the predictive relevance. It is associated with each latent variable through dependent variable. The acceptable criteria for Q^2 value in connection with a dependent variable is greater than zero (Hair et al., 2011).

Table 3.2: GoF Indices

Goodness-of-fit Indices	Cut-off Values
APC	P value ≤ 0.05
ARS	P value ≤ 0.05
AVIF	AVIF ≤ 3.3
GoF	GoF: Small ≥ 0.1 Medium ≥ 0.25 Large ≥ 0.36

3.10.4 Interpretation and Reporting

After gaining the model fitness and fulfilling the requirements of structural model, the next step is interpretations and reporting of the results. Relationships among constructs are analyzed on the basis of attained results. The results of regression analysis show the direct and indirect effects among variables. The interpretation and reporting of the results are reported in the next chapter.

3.11 Chapter Summary

This chapter commenced with research design which explained the population, unit of analysis, sampling frame, and sampling technique. This is followed by variables operationalization and measurement applied in current research, questionnaire preparation, and the validity and reliability of the questionnaire. Pilot study and its benefits are described. After that, data analysis techniques are elaborated. The difference between CB-SEM and PLS-SEM is examined. Finally, the usage and stages of SEM analysis are also elaborated. The next chapter will interpret and report the analysis results.

CHAPTER 4: DATA ANALYSIS

4.1 Introduction

The chapter discusses about the data analysis. In section two data analysis is explained which includes respondents' response rate, respondents' profile, company profile and descriptive statistics. In section three, assessment of measurement model is elaborated, which includes model validity & reliability and multicollinearity. Section four discusses assessment of structural model. Six models in total will be explained which shows the direct and indirect relationship among variables. In section five, results summary is elaborated. Finally, a summary of the chapter is described.

4.2 Descriptive Analysis

In this section, information about questionnaire distribution and response rate of respondents are discussed. Frequency distribution of all demographic is highlighted and finally descriptive statistics including mean, standard deviation, and variable correlation are discussed.

4.2.1 Response Rate

Among 425 large companies, 240 companies agreed to be part of the survey. A total of five hundred and forty three (543) questionnaires were distributed. Among distributed questionnaires three hundred and seventy four (374) responses were finally collected. Fourteen (14) responses were discarded due to incomplete and inaccurate answers. Further six (6) responses were excluded due to same responses. All questionnaires were scrutinised in order to ensure the accuracy of data for analysis as shown in Table 4.1.

Table 4.1: Response Rate

Description	Number of questionnaires	Percentage/causes
Distributed Questionnaires	543	100
Received questionnaires	374	69
Incomplete questionnaires	14	Half of the questionnaires not answered
Unusable questionnaires	6	Same answers

According to Babbie (1989) for analysis and reporting purpose, fifty percent response rate is enough. In this study data analysis is done with three hundred and fifty three (354) responses which are sixty five percent (65%) of total number of distributed questionnaires. On such basis, response rate of this study is considered satisfactory.

4.2.2 Company and Respondent Profile

This section explains the companies and respondents profile. Table 4.2 elaborates on gender of respondents. Out of 354 respondents, 280 (79%) were male employees and 74 (21%) female employees. Similarly, respondents were asked to provide their current job position in company. Employee job position is categorized into three parts, i.e. First-level managers, Mid-level managers and top-level managers. The first-level managers were 114 (32.2%), Mid-level managers 156 (44.06%) and finally 84 (23.72) were categorized as top-level managers. It shows all three levels of managers have sound contribution in answering the questionnaire.

Regarding job experiences of employees, 54 (15.25%) employees had less than three years of experience. From 3 to 5 years job experience employees were 101 (28.53%). Employees with 6 to 10 years of job experience showed highest percentage 114 (32.20%). Finally, 85 (24.01%) company employees had more than 10 years of job experience. In summary, more than 60% of employees had 3 to 10 years of job

experience which showed that these employees are well-familiar and had relevant knowledge to answer the questionnaire.

Table 4.2: Company and Respondents profile

Profiling		Frequency	Percentage	Cumulative Percent
Gender	Male	280	79	79
	Female	74	21	100
Current job position	First-line Manager	114	32.2	32.2
	Mid-level Manager	156	44.06	76.27
	Top-level Manager	84	23.72	100
Years of job experience	Less than 3 years	54	15.25	15.25
	3 to 5 years	101	28.53	43.78
	6 to 10 years	114	32.20	75.98
	More than 10 years	85	24.01	100
Textile company type	Fabrics & Knitwear	60	25	25
	Garments	114	47.5	72.5
	Weaving	34	14.16	86.66
	Spinning	25	10.41	97.08
	Others	7	2.91	100
Number of Employees	Less than 300	24	10	10
	300-699	68	28.33	38.33
	700-1099	96	40	78.33
	More than 1100	52	21.66	100
Years of business operation	1 - 5 years	26	10.83	10.83
	6 - 10 years	51	21.25	32.08
	11- 15 years	46	19.16	51.25
	16 - 20 years	63	26.25	77.5
	> 20 years	54	22.5	100

Table 4.2 also ranked textile companies in different categories. Approximately, half of textile companies are taken from garments sector which counts for 114 (47.5%). Similarly, 60 (25%) companies are from fabric & knitwear sector. 34 (14.16%) companies are taken from weaving sector. Finally, 25 (10.41%) and 7 (2.91%) respondents are taken from spinning and other (fashion clothing) sector respectively.

Regarding the number of employees, 24 (10%) companies have less than 300 employees. There are 68 (28.33%) companies which have more than 300 but less than 699 employees. Further, 96 (40%) companies are taken which have more than 700 and less than 1099 employees. This group of employees has the highest proportion of companies in this study. The last 52 (21.66%) are those companies which has more than 1100 employees. In terms of years of business operations, 26 (10.83%) companies are operating from 1 to 5 years. There are 51 (21.25%) companies doing business operations from 6 to 10 years. Similarly, 46 (19.16%) companies are operating from 11-15 years. Finally, 63 (26.25%) and 54 (22.5%) companies are running their businesses from 16-20 and more than 20 years respectively.

4.2.3 Descriptive statistics

SPSS statistical software was used to find out the value of mean, standard deviation, and correlations among variables. The value of mean ranged from 3.782 to 4.148. All constructs mean values are above midpoint of 2.5. The standard deviation values ranged from 0.618 to 1.060 respectively. These values are reported in Table 4.3. Further, the moderate level of correlation coefficients among variables shows that they are not highly collinear with one another.

Table 4.3: Descriptive Statistics & Variable Correlations

Variables	Mean	SD	HC	SC	RC	TC	KPC	INC
HC	4.148	0.892						
SC	4.102	0.618	0.091					
RC	4.058	0.887	0.308*	-0.014				
TC	3.782	1.060	0.286*	0.033	0.197*			
KPC	4.144	0.862	0.246*	0.163**	0.389*	0.210*		
INC	3.641	0.962	0.338*	0.046	0.164**	0.276*	0.380*	
OP	4.058	0.887	0.363*	0.043	0.430*	0.243*	0.780*	0.381*

* and ** represent level of significance at 1% and 5% respectively.

HC: Human capital

KPC: Knowledge process capability

SC: Structural capital

INC: innovation capability

RC: Relational capital

OP: Organisational performance

TC: Technological capital

4.3 Assessment of Measurement Model

In measurement model (outer model) the latent variables validity and reliability are assessed. Before finding the structural relationships the measurement model shows the link of each construct with a set of items measuring that construct. The measurement model is explained below.

4.3.1 Validity and Reliability

Validity is measured through construct validity (convergent and discriminant validity). Further, reliability is measured by composite reliability and Cronbach's alpha. The convergent validity is measured through factor loading and AVE. The value of factor loading and AVE need to be greater than 0.5. The items with below 0.5 factor loading are removed (Hair et al., 2009). The discriminant validity is assessed by the square root of AVE and its value is higher than any of the correlation related to that construct. Finally, threshold value of composite reliability and Cronbach's alpha coefficient should be equal or greater than 0.7 (Fornell & Larcker, 1981; J. C. Nunnally, 1978).

As the threshold of factor loading is ≥ 0.5 , so the items that did not fulfil the required criteria are removed from the constructs. The removed items are the following, human capital (HC 2, 5, 12), structural capital (SC 14, 16, 17, 20), relational capital (RC 25, 26, 28), technological capital (TC 36), knowledge process capability (1, 6, 9), and organisational performance (OP 4, 5, 9).

Table 4.4 depicts results of constructs factor loadings, AVE, composite reliability and Cronbach's alpha. Factor loadings range from 0.620 to 0.890, fulfilling accepted threshold. The AVE values also achieved the required criteria which range from 0.511 to 0.709. Similarly, the value of composite reliability and Cronbach alpha are ranged from 0.839 to 0.956 and 0.759 respectively.

Table 4.4: Instruments Validity & Reliability

Variables	Items	FL	AVE	CR	Cronbach Alpha
Human Capital	HC1	0.823	0.709	0.956	0.949
	HC3	0.843			
	HC4	0.856			
	HC6	0.823			
	HC7	0.828			
	HC8	0.848			
	HC9	0.844			
	HC10	0.845			
	HC11	0.868			
Structural Capital	SC13	0.762	0.511	0.839	0.759
	SC15	0.706			
	SC18	0.753			
	SC19	0.726			
	SC21	0.620			
Relational Capital	RC22	0.803	0.590	0.878	0.826
	RC23	0.750			
	RC24	0.782			
	RC27	0.737			
	RC29	0.760			
Technological Capital	TC30	0.800	0.701	0.943	0.929
	TC31	0.765			
	TC32	0.826			
	TC33	0.890			
	TC34	0.825			

	TC35	0.871			
	TC37	0.878			
Organisational					
Performance	OP1	0.765	0.646	0.927	0.909
	OP2	0.825			
	OP3	0.770			
	OP6	0.830			
	OP7	0.813			
	OP8	0.806			
	OP10	0.816			
Knowledge Process					
Capability	KPC 2	0.825	0.695	0.932	0.912
	KPC3	0.842			
	KPC 4	0.875			
	KPC 5	0.811			
	KPC 7	0.785			
	KPC 8	0.861			
Innovation Capability					
	INC1	0.724	0.620	0.919	0.897
	INC2	0.723			
	INC3	0.848			
	INC4	0.800			
	INC5	0.795			
	INC6	0.777			
	INC7	0.838			

To ascertain the discriminate validity of model, the correlation values of latent variables with square roots of AVEs are applied. It confirms that all constructs differ from each other's. Table 4.5 illustrates square roots of AVEs for each latent variable which are shown in diagonal and within parentheses. When comparing the square roots of the AVEs with the other values on each column, the square roots of the AVEs for each latent variable are greater than any correlation relating to each latent variable. The

results indicate that the discriminant validity of the latent variables are fulfilling the required criteria (Fornell & Larcker, 1981).

Table 4.5: Correlations among latent variables with square roots of AVEs

Variables	HC	SC	RC	TC	KPC	INC	OP
HC	(0.842)						
SC	0.091	(0.715)					
RC	0.308	-0.014	(0.768)				
TC	0.286	0.033	0.197	(0.838)			
KPC	0.246	0.163	0.389	0.210	(0.834)		
INC	0.338	0.046	0.164	0.276	0.380	(0.788)	
OP	0.363	0.043	0.430	0.243	0.780	0.381	(0.804)

Note: Diagonal in parentheses represents the square root of AVE

4.3.2 Block Variance Inflation Factor (VIF)

The block VIF measures the degree of multicollinearity among the latent variables that are hypothesised to affect another latent variable. The recommended threshold for VIF is less than or equal to 3.3 (Kock & Lynn, 2012). A higher VIF between two latent variables indicates that the two latent variables measure the same thing and one of the latent variables should be removed from the model. Table 4.6 depicts the block VIFs which confirm that all constructs are below than 3.3.

Table 4.6: Block variance inflation factors

Variables	HC	SC	RC	TC	KPC	INC
KPC	1.182	1.028	1.059	1.121		
INC	1.135	1.034	1.036	1.139		
OP	1.279	1.029	1.285	1.192	1.526	1.340

Note: These VIFs are for the latent variables on each column (predictors), with reference to the latent variables on each row (criteria).

4.4 Analysis and Results of Structural Models

SEM is a robust multivariate analysis technique which is applied to analyse structural relationships and provides the necessary results to test the hypotheses. This section explains the hypothesized models with their respective model fit indices and

standardised regression results. The conceptual model of the study led to the development of 15 hypotheses in seeking the empirical evidences.

This study is comprised of six structural models. These models explain the overall and dimensional effect of IC on organisational performance. Moreover, the mediating role of knowledge process capability and innovation capability is also analysed between IC and organisational performance.

4.4.1 Structural Model- 1: IC and Organisational Performance

The structural model 1 which is shown in Figure 4.1, examines the relationship between IC and organisational performance. The model fit indices of model 1 are reported in Table 4.7 and standardized effects are presented in Table 4.8.

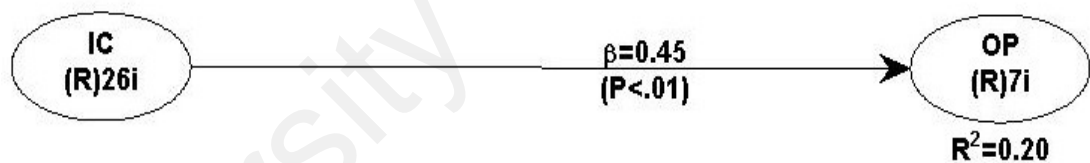


Figure 4.1: Structural Model-1

Based on WarpPLS SEM fit indices, the results illustrate that the value of proposed structural model 1 represent as acceptable fit. The value of average path coefficient (APC) is 0.450 and Average R-squared (ARS) is 0.202. Both are significant at 1%. Besides, GoF value is 0.310 which is fulfilling the criteria with a larger effect. Overall, the structural model 1 shows a satisfactory level of goodness-of-fit measures.

Table 4.7: Model Fit Indices (Model 1)

Indices	Observed value	Acceptable Fit Standard
APC	0.450*	p < 0.05
ARS	0.202*	
		GoF: Small ≥ 0.1
GoF	0.310	Medium ≥ 0.25
		Large ≥ 0.36

*represent level of significance at 1%.

Table 4.8 summarizes the output for the structural model, including the beta path coefficient (β) value, effect size (f^2) and P-value. The Table 4.8 reported that there is a significant relationship between IC and organisational performance with the $\beta = 0.450$, ($f^2 = 0.202$) and p value which is less than 0.001. In addition, the values of R-Squared (R^2) and Q-Squared (Q^2) for organisational performance are 0.202 and 0.200 respectively. R^2 values shows that model has moderate predictive accuracy according to standard suggested by (Cohen, 1988). Hence, hypothesis H1 is supported.

Table 4.8 : Standardized Effect IC and Organisational Performance (Model 1)

Hypothesis	Paths	Standardized Estimates	P value	Effect size	Decision
H1	IC-OP	0.450	0.000	0.202	Supported

4.4.2 Structural Model- 2: IC and Mediating Role of Knowledge Process Capability

The structural model 2 explains the mediating role of knowledge process capability. Before explaining structural model 2, the concept of mediation is briefly explained.

A variable is called a mediator when it influences the relation between an independent variable and dependent variable. Baron and Kenny (1986) suggested three basic steps for considering a variable as a mediator.

- i) The first condition follows that an independent variable significantly predicts a dependent variable.
- ii) The second condition is that the independent variable significantly predicts the mediator.
- iii) The last condition follows that the mediator significantly predicts the dependent variable after controlling the independent variable.

These are the basic conditions to justify that variable is a mediator. Further, to determine the full mediation and partial mediation, the following criteria need to be fulfilled. The full mediation occurs, when controlling the mediating variable, the relationship between independent variable and dependent variable is not significant and beta value is less than condition one beta value. While, partial mediation occurs, when controlling the mediating variable, the relationship between the independent variable and the dependent variable is significant and beta value is less than condition one beta value.

The structural model 2 (Figure 4.2) examines the mediating role knowledge process capability between IC and organisational performance. The model fit indices of model 2 are reported in Table 4.9 and standardized effects are shown in Table 4.10.

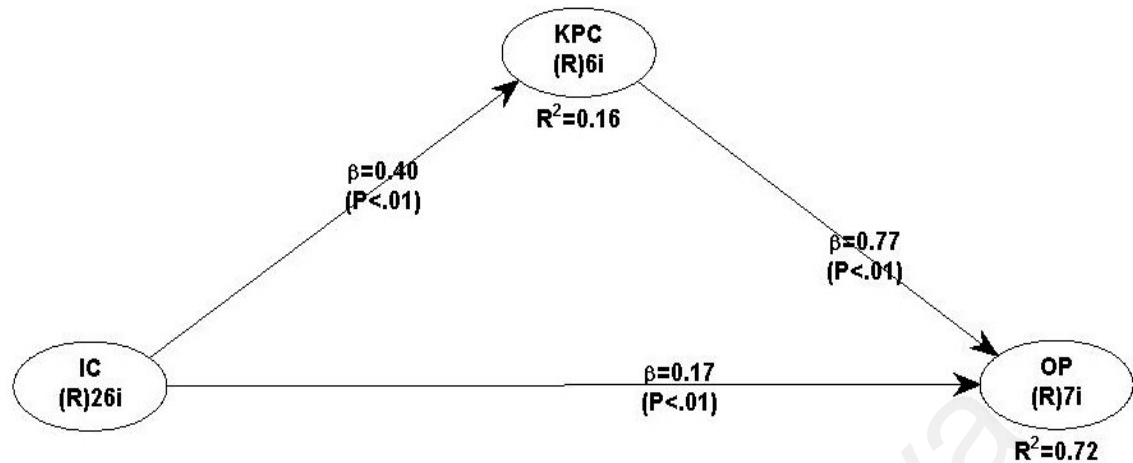


Figure 4.2: Structural Model-2

Table 4.9 illustrates the model fit indices of model 2. The results indicate that the value of proposed structural model 2 shows an acceptable fit. The value of APC and ARS are 0.444 and 0.436 respectively, which shows both are significant at 1%. Similarly, the value AVIF is 1.157 which is lower than cut-off value of 3.3. Besides, the value of GoF is 0.489 that shows a large effect.

Table 4.9: Model Fit Indices (Model 2)

Indices	Observed value	Acceptable Fit Standard
APC	0.444*	p < 0.05
ARS	0.436*	
AVIF	1.157	Equal to or lower than 3.3 GoF: Small ≥ 0.1
GoF	0.489	Medium ≥ 0.25 Large ≥ 0.36

*represent level of significance at 1%.

The mediation analysis is reported in Table 4.10. The bootstrapping was applied for testing the indirect effect (Preacher & Hayes, 2004, 2008). The WarpPLS software automatically calculates the significance level of indirect effect using bootstrapping.

The indirect effect of IC to organisational performance shows a significant relationship with $\beta = 0.305$ ($f^2 = 0.137$) and P value which is significant at 0.000. Besides, the value of R^2 is 0.715 and Q^2 is 0.703 which shows a substantial effect (Chin, 1998). Hence, this result reports that knowledge process capability is partially mediated between IC and organisational performance, accepting H2.

Table 4.10: Standardized Effect IC with Mediating Role of Knowledge Process Capability (Model 2)

Hypothesis	Paths	Direct Estimates	Indirect Estimates a*b	P value	Effect size	Results
H2	IC-OP	0.165	-	0.002	0.074	Supported
	IC-KPC-OP	-	0.305	0.000	0.137	

4.4.3 Structural Model- 3: IC and Mediating Role of Innovation Capability

The structural model 3 investigates the mediating effect of innovation capability between IC and organisational performance. Figure 4.3 depicts the estimated model. Model fit indices and standardized effect are reported in Table 4.11 and Table 4.12 respectively.

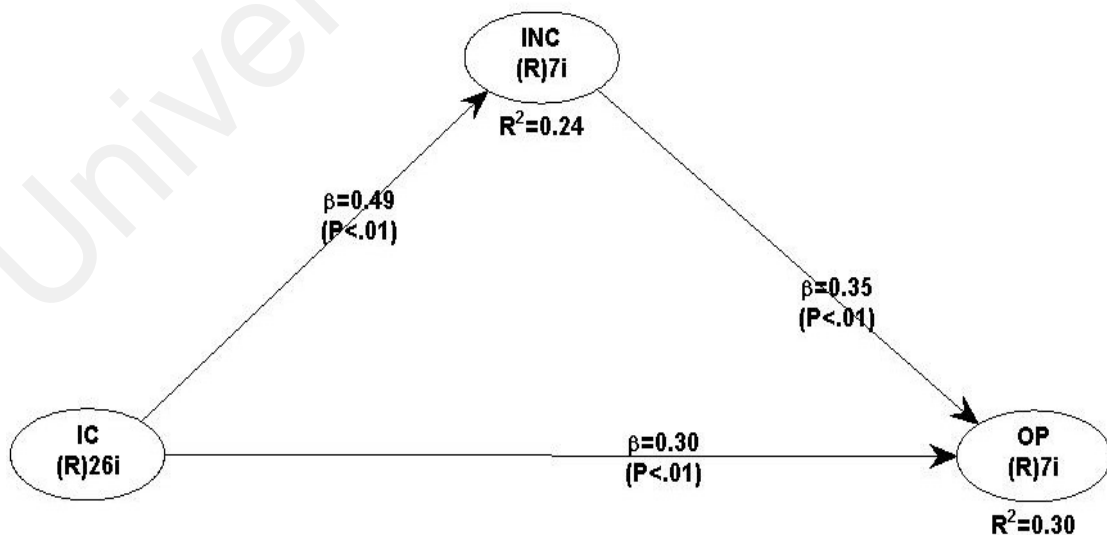


Figure 4.3: Structural Model-3

The model fit indices of structural model 3 (Table 4.11) indicate the value of APS which is 0.383 represent level of significance at 1%. Similarly, the value of ARC 0.274 is also significant at 1%. Besides, the value of AVIF is 1.211 which is lower than 3.3. Finally, GoF value is 0.379 that shows a large effect. Thus, model 3 represents a satisfactory level of goodness-of-fit measure.

Table 4.11: Model Fit Indices (Model 3)

Indices	Observed value	Acceptable Fit Standard
APC	0.383*	p < 0.05
ARS	0.274*	
AVIF	1.211	Equal to or lower than 3.3 GoF: Small ≥ 0.1
GoF	0.379	Medium ≥ 0.25 Large ≥ 0.36

*represent level of significance at 1%.

The standardized effects of model 3 are reported in Table 4.12. The results of second mediating variable (innovation capability) are highlighted. The bootstrapping was applied to check the indirect effect between IC and organisational performance and result shows a significant relationship with $\beta = 0.174$ ($f^2 = 0.078$) and p value = 0.001. Further, the value of R^2 is 0.304 suggesting that the model is acceptable. The value of Q^2 is 0.305 which is greater than zero. It illustrates that independent variable has predictive relevancy for dependent variable. Overall, results report that innovation capability is partially mediated between IC and organisational performance, accepting H3. Compared with the mediating effect of innovation capability, results in Table 4.10 depict that knowledge process capability has greater influence between IC and organisational performance.

Table 4.12: Standardized Effect IC with Mediating Role of INC (Model 3)

Hypothesis	Paths	Direct Estimates	Indirect Estimates a*b	P value	Effect size	Results
H3	IC-OP	0.303	-	0.001	0.136	Supported
	IC-INC-OP	-	0.174	0.001	0.078	

4.4.4 Structural Model- 4: IC Dimensions and Organisational Performance

The structural model 4 (Figure 4.4) examine the relationship between the dimensions of IC (human, structural, relational and technological capital) and organisational performance. The model fit indices of model 4 are reported in Table 4.13. Similarly the standardized effects are shown in Table 4.14.

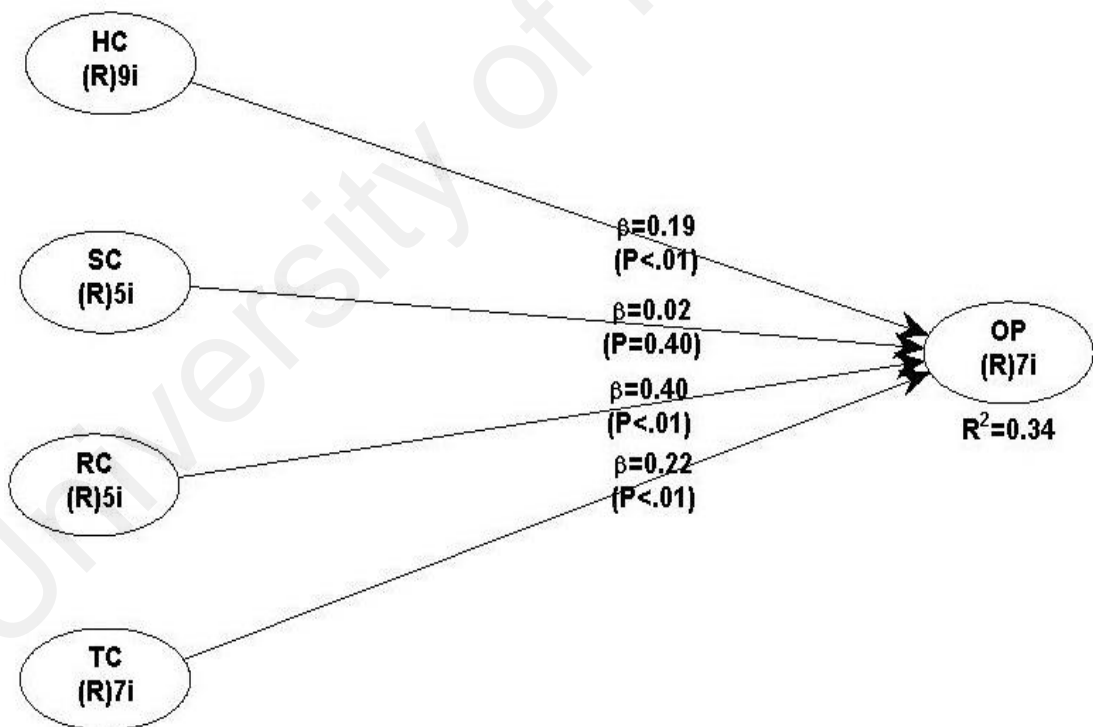


Figure 4.4: Structural Model-4

Based on structural model 4, the model fit indices reported that all indices meet standard criteria. The value of APC is 0.210 and ARS is 0.337. Both indices are

significant at 1%. The value of AVIF is 1.104 which is also lower than cut-off value of 3.3. Lastly, value of GoF shown as 0.461 which represent a larger effect.

Table 4.13: Model Fit Indices (Model 4)

Indices	Observed value	Acceptable Fit Standard
APC	0.210*	p < 0.05
ARS	0.337*	
AVIF	1.104	Equal to or lower than 3.3 GoF: Small ≥ 0.1
GoF	0.461	Medium ≥ 0.25 Large ≥ 0.36

*represent level of significance at 1%.

Table 4.14 reports the relationship between the dimensions of IC and organisational performance. A significant relationship exists between human capital and organisational performance with the $\beta = 0.189$ ($f^2 = 0.070$) and p-value which is 0.003, accepting H4. Similarly, a significant relationship is observed between relational capital and organisational performance with $\beta = 0.402$ ($f^2 = 0.192$) and p-value less than 0.001. Likewise, there is a significant relationship between technological capital and organisational performance with $\beta = 0.224$ ($f^2 = 0.074$) and p-value less than 0.001. Hence, these two relations are supporting hypothesis H6 and H7 respectively. Among all dimensions of IC, relational capital is the strongest predictor of organisational performance and structural capital is the only dimensions which is insignificant, rejecting H5. On the other hand, R^2 for organisational performance is 0.337. It means that the contributions of all variables (human, structural, relational, and technological capital) are about 0.337 of variance described in the dependent variable- organisational performance. Similarly, the value of Q^2 is reported as 0.339. The Q^2 value demonstrates that independent variable as predictive relevance on dependent variable.

Table 4.14: Standardized Effect IC dimensions and Organisational Performance (Model 4)

Hypothesis	Paths	Standardized Estimates	P value	Effect size	Decision
H4	HC-OP	0.189	0.003	0.070	Supported
H5	SC-OP	0.024	0.402	0.002	Not Supported
H6	RC-OP	0.402	0.001	0.192	Supported
H7	TC-OP	0.224	0.001	0.074	Supported

4.4.5 Structural Model- 5: IC Dimensions and Mediating Role of Knowledge

Process Capability

The structural model 5 investigates the mediating role knowledge process capability between IC dimensions and organisational performance. The estimated model is shown in Figure 4.5. The model fit indices and standardized effects are reported in Table 4.15 and Table 4.16 respectively.

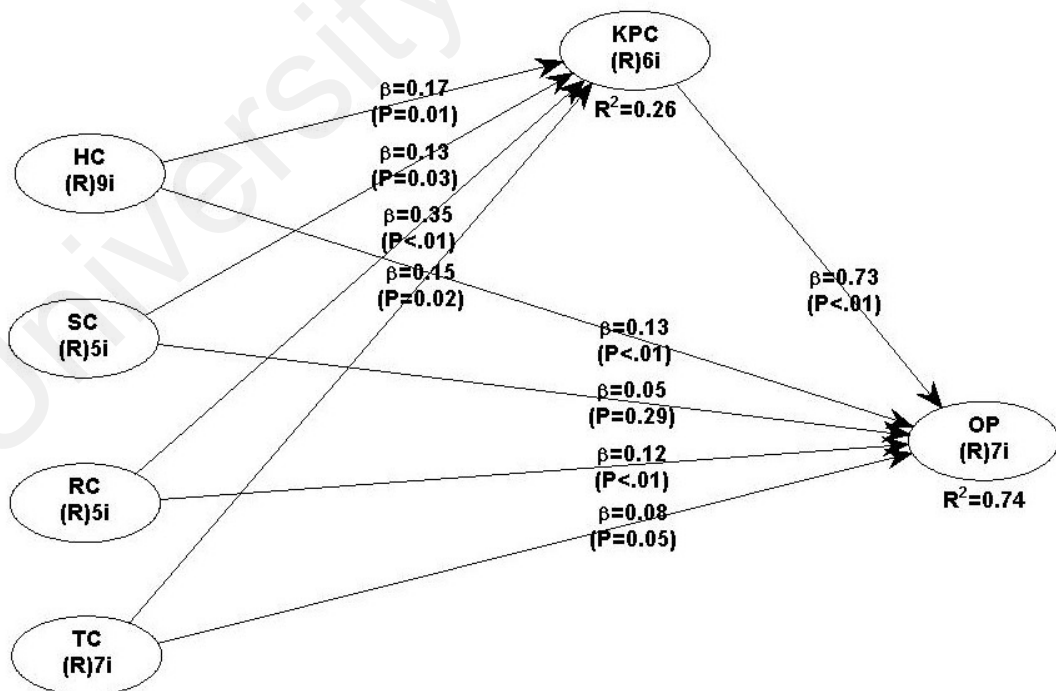


Figure 4.5: Structural Model-5

The goodness-of-fit of model 5 is reported in Table 4.15. The value of APC is 0.212 and ARS is 0.501 which are accepted with significance value of 1%. Besides, the value of AVIF is shown as 1.159 which is lower than accepted cut off of 3.3. Finally, the value of GoF is recorded as 0.567 that is greater than accepted large effect of 0.36.

Table 4.15: Model Fit Indices (Model 5)

Indices	Observed value	Acceptable Fit Standard
APC	0.212*	p <0.05
ARS	0.501*	
AVIF	1.159	Equal to or lower than 3.3 GoF: Small ≥ 0.1
GoF	0.567	Medium ≥ 0.25
		Large ≥ 0.36

*represent level of significance at 1%.

Table 4.16 reports the mediating role of knowledge process capability between IC dimensions and organisational performance. In this table knowledge process capability role is individually investigated with IC dimensions. However, the reason is to check which dimension has more influence on organisational performance by including knowledge process capability. The mediating role is derived by finding out the indirect estimate ($a*b$) which is a combination of independent to mediating variable and further mediating to dependent variable relation. As explained in previous models, bootstrapping is applied to derive indirect estimate.

The indirect effect between human capital and organisational performance is recorded. The results illustrate $\beta = 0.122$ ($f^2 = 0.045$) and p-value which is 0.001. Hence H8 is supported. The indirect effect between structural capital and organisational performance depict $\beta = 0.094$ ($f^2 = 0.006$) and p-value which is significant with a value of 0.036. Although, the direct effect between structural capital and organisational performance

(Table 4.14) showed insignificant results, but authors such as MacKinnon et al. (2002) and Rucker et al. (2011) argue that the requirement for a significant total effect (c) of $X \rightarrow Y$ is not necessary for mediation to occur. On that basis the hypothesis H9 is accepted.

Furthermore, the indirect effect between relational capital and organisational performance shows value of $\beta = 0.260$ ($f^2 = 0.124$) and p-value which is 0.001, supporting H10. Similarly, the indirect effect between technological capital and organisational performance is also significant. The outcome shows $\beta = 0.108$ ($f^2 = 0.036$) and p-value which is 0.018 supporting H11. Thus, among the four dimensions of IC, relational capital has the highest influence on organisational performance by including mediating construct knowledge process capability. Finally, the value of R^2 is 0.744 which shows that contribution of all variables are 0.744 of the variance explained in dependent variable (organisational performance). The value of Q^2 is reported as 0.730 which is greater than zero. It means that the model has a good predictive relevancy.

Table 4.16: Standardized Effect IC Dimensions with Mediating Role of Knowledge Process Capability (Model 5)

Hypothesis	Paths	Direct Estimates	Indirect Estimates a*b	P value	Effect size	Decision
H8	HC-OP	0.133	-	0.003	0.049	Supported
	HC-KPC-OP	-	0.122	0.001	0.045	
H9	SC-OP	0.054	-	0.291	0.003	Supported
	SC-KPC-OP	-	0.094	0.036	0.006	
H10	RC-OP	0.116	-	0.006	0.055	Supported
	RC-KPC-OP	-	0.260	0.001	0.124	
H11	TC-OP	0.077	-	0.05	0.025	Supported
	TC-KPC -OP	-	0.108	0.018	0.036	

4.4.6 Structural Model- 6: IC Dimensions and Mediating Role of Innovation Capability

The structural model 6 explores the mediating effect of innovation capability between IC dimensions and organisational performance (Figure 4.6). The model fit indices and standardized effects are reported in Table 4.17 and Table 4.18 respectively.

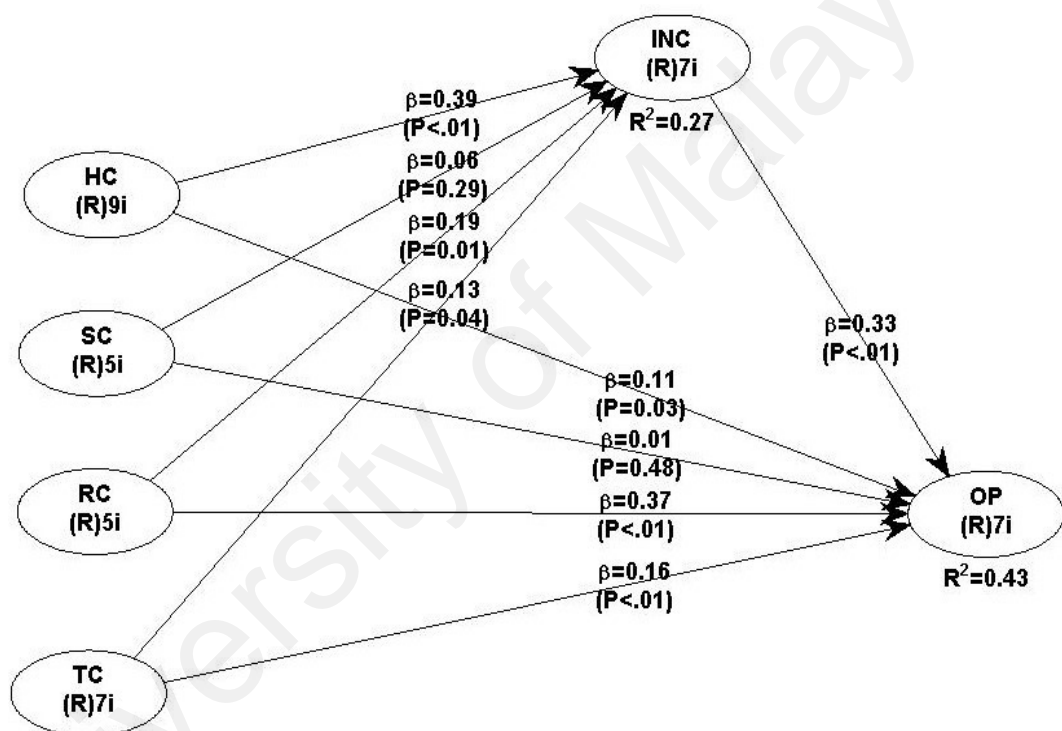


Figure 4.6: Structural Model-6

The model fit indices reported in Model 6 shows the value of APC which is 0.195 and value of ARS is 0.348, both are significant at 1%. Similarly, the value of AVIF is 1.119 which is lower than accepted cut-off value. Finally, the value of GoF is reported as 0.468 which shows a large effect.

Table 4.17: Model Fit Indices (Model 6)

Indices	Observed value	Acceptable Fit Standard
APC	0.195*	p < 0.05
ARS	0.348*	
AVIF	1.119	Equal to or lower than 3.3 GoF: Small ≥ 0.1
GoF	0.468	Medium ≥ 0.25
		Large ≥ 0.36

*represent level of significance at 1%.

Table 4.18 reports the standardized effects of mediating variable (innovation capability) between IC dimensions and organisational performance. The indirect effect between human capital and organisational performance is $\beta = 0.131$ ($f^2 = 0.048$) and p-value which is 0.001. The said result supports H12. On the other hand, no indirect significant effect is observed between structural capital and organisational performance, thus rejecting H13. Besides this, the indirect relationship between relational capital and organisational performance shows the $\beta = 0.062$ ($f^2 = 0.029$) and p-value which is 0.013. The said result accepts H14. Finally, no indirect significant effect is observed between technological capital and organisational performance, hence rejecting H15.

Table 4.18: Standardized Effect IC dimensions with Mediating Role of INC (Model 6)

Hypothesis	Paths	Direct Estimates	Indirect Estimates a*b	P value	Effect size	Decision
H12	HC-OP	0.105	-	0.031	0.039	Supported
	HC-INC-OP	-	0.131	0.001	0.048	
H13	SC-OP	0.005	-	0.478	0.001	Not
	SC-INC-OP	-	0.021	0.286	0.001	Supported
H14	RC-OP	0.373	-	0.001	0.178	Supported
	RC-INC-OP	-	0.062	0.013	0.029	
H15	TC-OP	0.164	-	0.003	0.054	Not
	TC-INC-OP	-	0.043	0.053	0.014	Supported

4.5 Summary of Results

In total, six models were developed. First of all, in the first model the relationship between IC and organisational performance was highlighted with $\beta = 0.450$. In the second model, the mediating role of knowledge process capability was recorded between IC and organisational performance with the $\beta = 0.305$. Similarly, the third model illustrated the mediating role of innovation capability between IC and organisational performance with the $\beta = 0.174$. Based on these three model results, IC has a positive significant effect on organisational performance in textile industry in Pakistan. However, by adding mediating variable knowledge process capability and innovation capability, it enhances the influence between IC and organisational performance. However, by comparing two mediators, knowledge process capability results demonstrate more influence between IC and organisational performance. In a nutshell, the results show that IC has more influence on organisational performance by adding mediating variable (knowledge process capability and innovation capability).

Besides the overall effect of IC, model four investigated the individual dimensional effect of IC, such as human capital, structural capital, relational capital, and technological capital on organisational performance. According to the structural model four relational capital had strongest predictor $\beta = 0.402$, followed by technological capital $\beta = 0.224$, human capital $\beta = 0.189$. On the other hand structural capital was found to have non-significant relationship. While, looking the influence of first mediator, knowledge process capability which shows significant indirect effect, the strongest was with relational capital ($\beta = 0.260$), followed by human capital ($\beta = 0.122$), technological capital ($\beta = 0.108$) and structural capital ($\beta = 0.094$). The second mediator, innovation capability also showed significant indirect effect between IC and organisational performance. The strongest effect was human capital ($\beta = 0.131$),

followed by relational capital ($\beta = 0.062$). The other two indirect effect i.e. structural capital and technological capital were found non-significant. In summation, the mediating role of knowledge process capability and innovation capability is investigated with overall IC and with its dimensions. In both cases knowledge process capability was found to have more indirect influence than innovation capability. Table 4.19 demonstrates the summary of hypotheses testing.

Table 4.19: Results of Hypotheses Testing

Hypotheses		Results
H1	Intellectual capital has positive relationship with organisational performance.	Supported
H2	Knowledge process capability mediates the relationship of intellectual capital and organisation performance.	Supported
H3	Innovation capability mediates the relationship of intellectual capital and organisation performance.	Supported
H4	Human capital has positive relationship with organisational performance.	Supported
H5	Structural capital has positive relationship with organisational performance.	Not Supported
H6	Relational capital has positive relationship with organisational performance.	Supported
H7	Technological capital has positive relationship with organisational performance.	Supported
H8	Knowledge process capability mediates the relationship of Human capital and organisation performance.	Supported
H9	Knowledge process capability mediates the relationship of structural capital and organisation performance.	Supported
H10	Knowledge process capability mediates the relationship of Relational capital and organisation performance.	Supported
H11	Knowledge process capability mediates the relationship of Technological capital and organisation performance.	Supported
H12	Innovation capability mediates the relationship of human capital and organisation performance.	Supported

H13	Innovation capability mediates the relationship of structural capital and organisation performance.	Not Supported
H14	Innovation capability mediates the relationship of relational capital and organisation performance.	Supported
H15	Innovation capability mediates the relationship of technological capital and organisation performance.	Not Supported

4.6 Chapter Summary

The chapter illustrated the results of data analysis. The chapter starts with introduction followed by explanations on mean, standard deviation and correlation among variables. Next, company and respondents' profile are demonstrated in a table which shows the frequency, percentage, and cumulative percentages. In addition, assessment of measurement model and structural model are discussed in detail. The structural models investigate the direct and indirect relationship between IC (its dimensions) and organisational performance. A short summary of results is also elaborated. The next chapter illustrates on the discussions and conclusions.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter details the discussion and conclusion of the study. In section two recapitulation of study is explained. Section three explicates findings and discussions of results which are then compared with preceding literatures. In section four key findings of the study are elucidated. Further, in section five, various theoretical and managerial implications are presented. Limitations of research are reported in section six. In section seven, future recommendations of the study are presented.

5.2 Research Summary

The objective of this study is to investigate the role of IC on organisational performance in textile industry in Pakistan. Based on this, the study developed the following four questions:

Question (1): What is the relationship between IC and organisational performance in textile industry in Pakistan?

Question (2): What is the relationship between the dimensions of the IC (Human, Structural, Relational, and Technological Capital) and organisational performance in textile industry in Pakistan?

Question (3): How knowledge process capability mediates between IC (overall and by dimensions) and organisational performance?

Question (4): How innovation capability mediates between IC (overall and by dimensions) and organisational performance?

Based on the above questions, this research tried to answer the following research objectives:

Objective (1): To investigate the relationship between IC and organisational performance in textile industry in Pakistan.

Objective (2): To examine the relationship between IC dimensions (Human, Structural, Relational, and Technological Capital) and organisational performance in textile industry in Pakistan.

Objective (3): To analyse the role of knowledge process capability between IC (overall and by dimensions) and organisational performance.

Objective (4): To examine the role of innovation capability between IC (overall and by dimensions) and organisational performance.

Based on earlier findings and preceding literatures, this study developed a research framework. The research framework consists of independent variable IC with its four dimensions (human capital, structural capital, relational capital and technological capital), two mediating variables (knowledge process capability and innovation capability), and one dependent variable (organisational performance) (Figure 2.14).

5.3 Discussion on Findings

Based on result analysis in the preceding chapter, the proposed objectives of this research are accomplished. The proposed model 1 to 6 indicated that hypothesized relationships (Hypotheses 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 14,) out of fifteen are supported, whilst hypothesized relationships (Hypotheses 5, 13, 15) are not significantly supported. The SEM and hypotheses, results depict that the proposed four objectives are significant. The first objective demonstrates that IC has a significant positive effect on

organisational performance. IC proves to be one of the vital tools for knowledge enhancement in textile industry in Pakistan. The second objective determined the dimensional effect of the IC (human capital, structural capital, relational capital, and technological capital), except structural capital all dimensions of IC have significant positive effects on organisational performance. The objective three and four depict that knowledge process capability and innovation capability have significant positive effects between IC and organisational performance. Knowledge process capability mediates with all dimensions of IC; however, innovation capability only mediates with human capital and relational capital to organisational performance.

In the following sections, these findings are discussed in detail.

5.3.1 Significant Variables

5.3.1.1 Relationship between IC and Organisational Performance

The proposed hypothesis H1 is supported which depicts that there is a significant positive relationship between IC and organisational performance ($\beta = 0.450$, $p < 0.001$). The results of this analysis are reported in Figure 4.1 and Table 4.8. This result shows that one unit positive change in IC, brings 0.450 unit positive change in organisational performance. This means that IC provides a conducive role for the performance of textile industry in Pakistan. Senior managers should promote intangible assets on their companies and achieve more benefits from it. Thus, these companies grasp knowledge of such intangible assets which will support companies to compete in international markets.

The results of this study are also consistent with previous studies which revealed that IC has great importance for the competitiveness of organisation. The concept of IC is utilized in western nations and as well as developing Asian countries. Riahi-Belkaoui

(2003) surveyed 81 US multinational firms which revealed that IC is a suitable source for wealth creation. Similarly, IC is also utilized in Portugal (Felicio et al., 2014), Greece (Cohen & Kaimenakis, 2007), and Turkey (Kalkan et al., 2014). Besides, results also confirm that IC is well-utilized in developing nations, and gain constructive benefits from usage of IC in their organisations. Bontis et al. (2000) study on Malaysian manufacturing and services industries demonstrate that regardless of industry, IC has significant and substantial relationship towards organisational performance. Moreover, the results are also consistent with research conducted in other developing nations such as India (Chahal & Bakshi, 2015; Pal & Soriya, 2012), Iran (Asiaei & Jusoh, 2015), and Thailand (Phusavat et al., 2011). However, this study results are inconsistent with some previous studies which state that some of the dimensions of IC have negative relationship with performance (Khalique et al., 2015; Ting & Lean, 2009).

5.3.1.2 Knowledge Process Capability Mediates the Relationship of IC and Organisational Performance

Figure 4.2 and Table 4.10 depict the mediating role of knowledge process capability between IC and organisational performance. As discussed in the previous chapter that mediation effect is calculated through an indirect effect. The indirect effect is a combination of “a” (the relationship between the independent variable to mediator) and “b” (the relationship between mediator to dependent variable). The indirect effect ($a*b$) of IC to organisational performance shows a significant relationship with ($\beta= 0.305$, $p<0.001$). So, this result supports H2. The results indicate that organisation with proper utilization of IC supports knowledge dissemination to employees. The results also show that such knowledge flow enhance organisational performance. Managers can strengthen the relationship between IC and knowledge process capability by involving employees to share their knowledge for organisation benefits. Senior managers should

encourage employees to apply their constructive ideas for organisation's success. In this way, knowledge flow will increase the linkages within departments and more ideas will be generated which may enhance the competitiveness of organisations.

Similarly, these results are consistent with previous findings. Huang and Jim Wu (2010) results suggest that IC enhances knowledge productivity and, the outcome of Pérez-López and Alegre (2012) and Zack et al. (2009) study confirm that knowledge process capability leads to organisational performance. The reasonable mediating results of knowledge process capability explicate its importance between IC and organisational performance. It infers that organisation's proper investment on human capital, organisational structures, and processes boost organisational performance. On the other hand, not all knowledge processes or resources derive performance for organisations (Mills & Smith, 2011). It is incumbent upon managers to identify resources which are significant for organisational performance. In condensed form, the unique combination of resources does provide competitive advantage and sustained performance.

5.3.1.3 Innovation Capability Mediates the Relationship between IC and Organisational Performance

The suggested hypothesis H3 is supported, indicating that innovation capability mediates the relationship between IC and organisational performance. As can be seen in Figure 4.3 and Table 4.12, the indirect effect between IC and organisational performance is ($\beta= 0.174$, $p<0.01$). Compared with the mediating effect of knowledge process capability, innovation capability has lower, but a satisfactory path coefficient and significance level. This result is linked to textile policy in Pakistan, in which the main motive is to sustain and be competitive in national and international level. In such scenario, managers and owners need to understand the importance of IC which can help to generate value added products. This can only be possible by enriching employee's

capabilities through training and development. Top management should allow productive employees to utilize their innovative ideas in order to make new products which fulfil the demand of international market. Thus, it's affirmed that innovation capability performs as a catalyst between IC and organisational performance.

The findings are also aligned with previous literatures, as Wu et al. (2008) discussed, to enable higher level of innovation, organisations need to develop a higher level of IC. Subramaniam and Youndt (2005)'s study also demonstrated that the dimensions of IC selectively influence innovation capability. Further, Wolff and Pett (2006) results revealed that due to new product development, firms gain profitability. This study results are also linked with the findings of Raymond et al. (2013) that innovation capability escalate the growth and productivity of organisation.

5.3.1.4 Relationship between Human Capital and Organisational Performance

Observing the relationship between human capital and organisational performance, the findings supported the proposed hypothesis H4. Results in Figure 4.4 and Table 4.14 depicts that human capital has a significant positive relationship with organisational performance at ($\beta= 0.189, p<0.01$). It means that one unit change in human capital, brings 0.189 unit positive change in organisational performance. This result infers that developing human capital is undoubtedly very important in a competitive business environment. Managers should involve employees in decision making and gain purposeful benefits from them. Employees are one of the key pillars in organisations. Top management should invest in such intangible resources in order to be competitive in international market. Specifically, in textile industry, there is so much competition and each company is trying to provide unique quality and design products. The textile industry in Pakistan should also provide proper training and skills to their employees in order to be the part of competitive business environment.

The current study results are also consistent with previous studies which show a positive approach between human capital and organisational performance. Researchers in empirical studies suggest that human capital is the most important factor of IC which has strong effect on organisational performance (Bontis et al., 2000; Felício et al., 2014; Wang et al., 2014). Further, Hsu and Fang (2009) results found that human capital supports new product development. On the other hand, some of the studies have found inconsistent results with this study (Khalique et al., 2015; Wang & Chang, 2005).

5.3.1.5 Relationship between Relational Capital and Organisational Performance

The proposed hypothesis H6 is accepted, which shows the relationship between relational capital and organisational performance at ($\beta= 0.402$, $p<0.01$). This result depicts that one unit change in relational capital brings 0.402 positive changes in organisational performance. Compared with other IC dimensions, relational capital is the strongest dimension. It shows that customers and suppliers are the crucial part of an organisation. Companies can generate innovative ideas from their customer's choices, because they are the ultimate buyers of products and their knowledge is quite imperative for organisation. Further, managers should know the target customers' needs and choices, and knowledge about competitive market that what new products and design are prevailing which could benefit the organisation.

The findings of this study are consistent with preceding research. As García-Merino et al. (2014) conducted their studies in Spanish companies and found that relational capital has become a new source to achieve competitive advantage for the organisation. Similarly, Khalique et al. (2015)'s study in electrical and electronics firms in Pakistan also found that customers have good value for organisations. However, Andreeva and Garanina (2016) conducted a study for Russians companies which rejected the link

between relational capital and organisational performance. However, they argued that results may differ in different culture settings.

5.3.1.6 Relationship between Technological Capital and Organisational Performance

The findings of this research supported hypothesis H7, which depicts a significant positive relationship between technological capital and organisational performance at ($\beta= 0.224$, $p<0.01$). After the relational capital, technological capital is the second strongest dimension of IC which shows that one unit positive change in technological capital brings 0.224 unit positive significant change in organisational performance. It means that regardless of industrial type technological capital is becoming a pivotal element of organisation, either that is manufacturing or service firm and traditional or advance technology firm. Textile industry is also utilizing such technologies which make them competitive. Thus, textile companies in Pakistan can also employ such technology which connects them with customers and suppliers locally and as well as internationally. Similarly, such technology can increase exports of a company because such technology escalates the operational process and fulfil the orders from the clients.

The findings of this study are also linked with earlier studies. According to Ling (2013), to make the knowledge available for internal & external environment, ICT can be a productive tool for organisations. Such tool provides a learning platform for organisation to improve its process, procedures, and system to enhance growth and successive relation with customers and suppliers. Further, McNamara (2008) highlighted that ICT has become a key element of every company which enhances efficiency and competitiveness of organisations. However, the findings of Pérez-López

and Alegre (2012) are inconsistent with current studies which conclude that there is no direct link between technological capital and organisational performance.

5.3.1.7 Knowledge Process Capability Mediates the Relationship of Human Capital and Organisational Performance

Figure 4.5 and Table 4.16 portrays that knowledge process capability mediates the relationship between human capital and organisational performance. The indirect effect between human capital and organisational performance depicts a significant positive relationship at ($\beta = 0.122$, $p < 0.01$), accepting the hypothesis H8. This result demonstrates that human capital and knowledge work together in order to gain benefits for organisations. Similarly, it is important for top management to invest on human capital because they are the core assets of organisations and much more can be gained from a knowledgeable employee. They should be provided a trustful and open-minded environment which can support employees to create new knowledge for the organisation. Additionally, such environment encourages employees to share their new ideas and skills which can be valuable for organisational competitiveness.

These results are also associated with previous studies. As Jaw et al. (2006) conducted a study on 130 Taiwanese multinational companies which asserted that only knowledge is inadequate for an organisation, managers should tie this knowledge by doing investment on human capital that can absorb such knowledge and apply it for the benefit of organisation. Furthermore, Seleim and Khalil (2011) explained about the strong correlation of human capital and knowledge process, because employees are the ones which acquire the knowledge and transfer it to other related individuals and departments. Similarly, previous studies of Mills and Smith (2011), Song (2008) and

Valmohammadi and Ahmadi (2015) showed that such knowledge management practices are meaningfully linked with organisational performance.

5.3.1.8 Knowledge Process Capability Mediates the Relationship of Structural Capital and Organisational Performance

The suggested hypothesis H9 is accepted, which depicts the mediating role of knowledge process capability between structural capital and organisational performance. The results show that there is an indirect significant effect between structural capital and organisational performance at ($\beta = 0.094$, $p < 0.05$). Compared with other dimensions of IC, structural capital has a lowest indirect effect. It can deduce from the results that knowledge utilization also needs a proper organisational set up. Top management should provide a supportive culture and comfortable atmosphere for the employees. Furthermore, a learning environment has the importance of creating and sharing new knowledge. Such organisational structure heightens knowledge capabilities.

Some of the preceding studies are also aligned with this study. The researchers argue that effective database system which keeps electronic knowledge repositories are pivotal for knowledge enhancement (Hsu & Sabherwal, 2011). Another study conducted by Seleim and Khalil (2011) evaluated two way relationship between IC and knowledge management. They found that structural capital provides support for knowledge documentation and transfer. Similarly, Zack et al. (2009) found that knowledge management practices have direct effect on organisational performance.

5.3.1.9 Knowledge Process Capability Mediates the Relationship of Relational Capital and Organisational Performance

Looking at mediating role of knowledge process capability between relational capital and organisational performance, the outcome of this study supports the proposed hypothesis H10. Among all other dimensions of IC, relational capital is found to be strongest, which indirectly affects organisational performance at ($\beta= 0.260$, $p<0.01$). This result reveals that customer loyalty and good reputation portrays a decisive role for organisational success, because much more knowledge can be extracted from customer buying behaviour. This shows that what product they like and what sort of new and improved designs are needed to match their tastes. Further, it is incumbent upon managers to be sharp enough to collect and store the required knowledge of the customers, because information from customers may not always be useful information for the organisation.

The prior studies are also aligned with this study. The empirical results of Chen et al. (2009) support relationship between relational capital and knowledge transfer. To them, through relational capital, firms will be able to strengthen the willingness and involvement of partners in the knowledge transfer process and implement transfer activities more effectively, thus leading to a better knowledge transfer performance. The outcome of Carmeli & Azeroual (2009) study also supports the link of relational capital to knowledge combination capability (especially knowledge creation). They were of the view, relational capital works as a facilitator for the development of knowledge creation.

5.3.1.10 Knowledge Process Capability Mediates the Relationship of Technological Capital and Organisational Performance

The findings of this study support hypothesis H11, which depicts that knowledge process capability mediates the relationship between technological capital and organisational performance. The result shows a significant positive effect between IC and organisational performance at ($\beta = 0.108$, $p < 0.05$). This result demonstrates that the role of technological capital is pivotal for organisational success. Similarly, knowledge process capability is equally important to boost up technological knowledge for organisational growth. ICT can be an enabler for processing knowledge management strategies in organisations. ICT provides support to the company to communicate the required knowledge within and outside of organisation. Such technologies uplift employees to develop knowledge process capability, which promotes competitiveness. Further, such technology provides a virtual space for the managers and employees to interact with each other virtually. Thus, textile companies can gain much more benefit by utilizing technology, which provides internal communication with employees and also externally link the customers and suppliers.

The theoretical exposition of Alavi and Leidner (2001) found that in competitive environment ICT can be interweaved with knowledge management strategies which will be supportive for organisations. Pérez-López and Alegre (2012) study also found positive role of technological capital for processing the knowledge in organisations. They added that such technology provides logistic support to the company, offer face to face meetings to the customers and suppliers. Finally, Ho (2008) and Lin and Kuo (2007) added that knowledge strategies and capabilities enhance the performance of organisations.

5.3.1.11 Innovation Capability mediates the Relationship of Human Capital and Organisational Performance

In this study, innovation capability found to mediate the relationship between human capital and organisation performance (Figure 4.6 and Table 4.18). The indirect effect of innovation capability between human capital to organisational performance has a significant positive effect at ($\beta= 0.131$, $p<0.01$), supporting hypothesis H12. This result revealed that among other dimensions of IC, human capital has the strongest indirect effect on organisational performance. In a developing country like Pakistan, human resource is available but needs more skills and other capabilities. It is incumbent upon managers to make the employees skilful and capable and allow them to take part in meetings, discussion which inspired them to be more confident. The top management should permit employees to utilize their work related experience for making and designing innovative products and processes, and such activities will contribute to a company's productivity and export performance. As top management is much concerned regarding financial capital, in the same vein they should be concerned about human capital management.

These results are also consistent with previous studies. According to Santos-Rodrigues et al. (2010) human capital is one of the main element of a company, and well utilization of such capital promotes organisation's product and process innovation. Moreover, these results are also aligned with Dakhli and De Clercq (2004) research findings. They used secondary data of 59 countries and found that human capital performs as a catalyst which enhances innovation in organisations. Similarly, Donate et al. (2016) study also reveal that a highly skilled and knowledgeable employee can be a good source for innovation.

5.3.1.12 Innovation Capability mediates the Relationship of Relational Capital and Organisational Performance

The results indicate that innovation capability mediates the relationship between relational capital and organisational performance, supporting hypothesis H14. The indirect path shows significant positive effect at ($\beta= 0.062$, $p<0.05$). Customers and suppliers are the sources of the company's expertise. Managers can collect informative ideas from their customer's feedback, and what should be added or omitted in the existing product. Customer's collaboration is quite valuable for organisations, because ultimately they are the ones who purchase the company's product. Not only customers, but the company should also strengthen their relationships with suppliers; they need timely raw materials from suppliers. In case of textile industry in Pakistan, they should make a connective system through which they can contact with their customers, suppliers and stakeholder, and get informative feedback from them. Finally such collaboration of customers, suppliers, and stakeholders enhance innovation (product and process innovation) which ultimately leads to organisational performance.

The findings of this study are aligned with previous literature which state that customers and suppliers have diversity of perspective, experiences, information and resources to develop new products and processes innovation (Wu et al., 2008; Zerenler et al., 2008). Similarly, Wolff and Pett (2006) and Raymond et al. (2013) support the interrelationship between innovation capability and growth and productivity of organisations.

5.3.2 Non-significant Variables

5.3.2.1 Relationship between Structural Capital and Organisational Performance

The suggested hypothesis between structural capital and organisational performance proved insignificant, hence rejecting hypothesis H5. Although structural capital has a positive, but insignificant relationship with organisational performance. The impact of structural capital on organisational performance is insignificant at ($\beta= 0.024$, $p= 0.402$). One possible explanation could be the case of a developing country like Pakistan, where organisations are not well equipped with databases, operating processes, procedures, and better production planning. Therefore, results are negatively associated with performance. Secondly, as in international textile market competition is quite high, thus companies have to adopt and bring new changes in their processes, procedures and structures in order to match and compete with competitive firms. But, some of the companies are reluctant to change and be static with their old system and procedure that is why they are lacking behind in a competitive environment.

Unfortunately, this study results are inconsistent with most of the preceding literatures which support the above relationship. Bontis et al. (2000) conducted study in Malaysia, Huang and Jim Wu (2010) in Taiwan, Valmohammadi and Ahmadi (2015) and Zangoueinezhad and Moshabaki (2009) Iran, Zerenler et al. (2008) in Turkey supported the relationship between structural capital and organisational performance. On the other hand, some of the prior researches support the present research findings. These findings are associated with Leitner (2015) and Maditinos et al. (2011).

5.3.2.2 Innovation Capability Mediates the Relationship of Structural Capital and Organisational Performance

The findings revealed that innovation capability does not mediate the relationship between structural capital and organisational performance. The hypothesis H13 is not supported. Although the path coefficient of the indirect effect of innovation capability is positive between structural capital and organisational performance, but it is insignificant at ($\beta = 0.021$, $p = 0.286$). The findings do not support the notion that innovation capability influences the relationship of structural capital and organisational performance. It may be true that sometimes in international competitive market, competition is quite high and developing economies cannot sustain in such a business environment. Hence, the top management of such companies believes that instead of taking risks on new innovative products and processes, it's better to focus on existing products. Thus, company's system processes and procedures do not support such product and process innovation in organisations.

However, numerous previous studies findings are not aligned with this study results. They found significant positive effects of structural capital on the innovation capability (Aramburu & Sáenz, 2011; Dost et al., 2016; Subramaniam & Youndt, 2005). Similarly, studies also supported the notion that product and process innovation enhances organisational performance (Freel & Robson, 2004; Raymond et al., 2013; Roper et al., 2008). On the other hand, some of the studies are aligned with current study findings such as Hsu and Fang (2009) and Carmona-Lavado et al. (2010) study show the structural capital negatively affects new product development.

5.3.2.3 Innovation Capability Mediates the Relationship of Technological Capital and Organisational Performance

The results reported that innovation capability does not mediate the relationship between technological capital and organisational performance. The hypothesis H15 is not supported. The indirect effect of innovation capability shows an insignificant effect ($\beta= 0.043$, $p= 0.053$). The weak path coefficient infers that technology usage is not that much advance in textile sector or employees are not that aware of technology usage which supports innovative products for the company. Hence, it's incumbent upon managers to train employees regarding ICT usage and its benefits for organisations. Technological capital can have dual benefits; by utilizing such technology, the communication within departments increases the pace of work. Secondly, using technological capital for new products, design and processes can also reduce cost and enhance efficiency of work. The proper utilization of such technological capital accelerates workflow in the organisations. It should be given due care by companies that in turn produces productive outcomes for organisations. It's the responsibility of top management to increase IT-related activities in order to enhance employees' skills for its proper usage in organisations.

The results of present studies are also related to Santoleri (2015), argued that basic usage of ICT does not increase innovation instead for innovation to occur, intensive and advance level of ICT is required. Besides, the preceding literature supports the relationship. The results of Higón (2012) and Mohsin et al. (2013) support the role of ICT for innovation. Similarly, product and process innovation heightens the growth and productivity of organisation (Freel & Robson, 2004; Roper et al., 2008).

5.4 Summary of Key Findings

To conclude, this study achieved the proposed objectives, in how IC is applied in textile industry in Pakistan and to organisational performance. All four objectives explanations are summarized below:

The first objective is achieved, which described the role of IC on organisational performance (Figure 4.1 and Table 4.8). The outcomes confirm that there is a significant positive relationship between IC and organisational performance. This study affirms the role of IC in developing economies like Pakistan.

The second objective is accomplished by determining the dimensional effect of IC on organisational performance (Figure 4.4 and Table 4.14). The results show that, except structural capital (though positive), all remaining dimensions of IC are significant. Among positive dimensions, the highest correlation is found between relational capital and organisational performance followed by human capital and technological capital.

The third objective is also achieved, which found the mediating role of knowledge process capability between IC as overall (its dimensions) and organisational performance. The statistical outcomes are reported in Figure 4.2, Figure 4.5 and Table 4.10, Table 4.16. The findings revealed that knowledge process capability significantly mediates between IC and (it's all dimensions) and organisational performance. Among the dimensions of IC, relational capital has the highest indirect effect towards organisational performance followed by human capital, technological capital and structural capital.

The fourth objective is also attained which revealed the mediating role of innovation capability between IC (its dimensions) and organisational performance (Figure 4.3, Figure 4.5 and Table 4.12, Table 4.18). The outcome shows that innovation capability

significantly mediates between IC and organisational performance. The dimensional effect of IC shows that innovation capability only mediates between two dimensions; human capital and relational capital and organisational performance.

5.5 Implications of Study

The findings of this study highlighted the theoretical perspective and managerial perspective which supplement the role of IC in large textile companies in Pakistan. The theoretical perspective and managerial perspective are explained below.

5.5.1 Theoretical Perspective

This study develops a conceptual framework which portrays the role of IC on organisational performance (Figure 2.13). From the theoretical perspective, current study add new understanding by proposing imperative dimensions of IC which is estimated to have greater value in textile industry in Pakistan. Previous studies focused on limited aspects of IC (human capital, structural capital and relational capital) and their relationship with organisational performance, but current study add knowledge in literature by adding technological capital as a part of the IC which has been considered important by researchers. Previous literature discusses the role of technological capital as just a small part of a construct, but this study highlights the concept as a separate construct. Furthermore, the current study also highlights the mediating role of knowledge process capability and innovation capability in the proposed model which depict a significant role between IC and organisational performance.

This research has empirically tested the model in order to achieve all four objectives. This study framework is mainly based on RBV theory and KBV theory. Results show that IC has a constructive role for organisational performance of developing economy in Pakistan. Among other dimensions of IC, technological capital also significantly

improves the organisational performance. It shows that technological capital role is very much crucial in developing economies like Pakistan.

The mediating role of the knowledge process capability and innovation capability is also highlighted in a conceptual framework. The results showed that knowledge process capability mediates the relationship with all dimensions of IC, i.e. human capital, structural capital, relational capital, and technological capital to organisational performance. The result indicates that knowledge management has an enormous effect on the IC role towards organisational performance. Furthermore, the second mediating variable innovation capability also influences the relationship between IC dimensions and organisational performance, but innovation capability only affects human capital and relational capital. It can be deduced from the results that employees, customers, suppliers and other stakeholders all perform a conducive role for the innovative activities which lead to organisational performance.

The IC management and measurement is broadly explained in developed nations, but a little focus has been given in developing nations. The preceding literature revealed that few studies had applied the IC concept in developing economies. However, this study employed the IC concept in developing economy like Pakistan. The empirical results contribute to the existing literature which supports the role of IC in textile industry in Pakistan.

5.5.2 Managerial Perspective

The findings of this study portray some implications for top management of manufacturing industry specially the textile industry, which can support them to enhance organisational performance.

Managers should provide their capability for proper implementation of IC in the organisation. Top management ought to realise the importance of IC and their implementation in organisations. Further, a proper time and budget should be allocated for the development of human capital, because human capital is one of the strategic sources for organisational success. For such reasons, employees should be given the required trainings which will polish their skills, ideas and knowledge. In this way, employees will be able to apply knowledge-related strategies for organisation success. Managers should include employees' ideas in decision making and avail feedback from them. Because such knowledgeable human capital can support companies for making innovative product design and processes which make companies competitive in the international textile market.

Managers can get bundles of knowledge regarding companies' products, designs from their customers and suppliers because they have much knowledge of the external environment which most of the time is ignored by the company. Managers can get innovative ideas from their buying behaviour. Ultimately, they are the ones who buy the end product. Managers should develop a constructive coordination with customers and suppliers in order to maximise organisational performance. In a nutshell, an integrated system should be created which can bridge the gap between company and customers.

In addition, textile companies can collaborate and exchange knowledge with educational institutes such as Textile Institute of Pakistan and National Textile University Faisalabad, Pakistan. Such collaborations promote exchange of knowledge between companies and research universities. These institutions have produced quality human resource for these companies. Such exchange of knowledge can support companies to be more competitive in international market.

Government bodies should support textile and other manufacturing companies for applying technological capital in organisations. Because, as developing countries like Pakistan are trying to adjust in a new business era, so for such reasons ICT can play an imperative role for companies to do and compete in international textile markets. Although the government of Pakistan has launched a textile policy 2014-2019 and one of the motives was to enhance ICT usage in companies, but so far no action plans have been made.

5.6 Limitations of Study

This study identified some of the limitations. First, this study focused only on large textile industry of Pakistan. However, including other small and medium textile sectors and doing a comparative study could give a broader picture of textile industry. Second, the nature of this study is cross sectional, and all data are collected at a specific point in time. Third, this study investigated IC as the major factor influencing organisational performance; there can be many other variables. Like for example, company financial strength, the quality of physical assets and so forth. Fourth, the study does not take into account any other concern, such as the electricity issues and high cost of production that large textile industry may face. Fifth, this study is based on subjective measures to investigate the role of IC on organisational performance. However, this method is also demonstrated as best by previous researchers (Kannan & Aulbur, 2004; Sharabati et al., 2010).

5.7 Future Research

Since a few empirical surveys have analysed the role of IC on organisational performance in developing countries, there is room for expansion of this study for future research. First, it is suggested that researchers should include small and medium

textile firms and see IC effects in different firm size. Similarly, data from other industries can be added in order to have a better representation of the manufacturing sector. Second, in addition to IC, other variables can also be added i.e. physical assets and financial strength. It helps to check whether IC sustain its impact on organisational performance in the presence of these factors. Third, this research used subjective measures of IC and its impact on organisational performance. However, utilising the objective measures for calculating IC may produce certain quantitative measures. Finally, this research employed cross sectional data, for future research, longitudinal research are suggested through which performance of organisation may be better measure over time.

5.8 Chapter Summary

The final chapter discusses about discussion and conclusion. The chapter commences with an introduction. After that a brief summary of the overall study is highlighted. The chapter also elaborates the findings of both significant and non-significant variables of the present study. It further discusses the study's implications in which theoretical and empirical perspectives are highlighted. Finally, limitations of the study and recommendations for future research are suggested.

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LIST OF PUBLICATIONS AND PAPERS PRESENTED

1. **Barkat, W., Beh, L.S. (2017).** Influence of Intellectual Capital Dimensions on Knowledge Process Capability and Organizational Performance. *Asian Journal of Scientific Research* [Accepted, Published **Online First**. Scopus].
2. **Barkat, W., Beh, L.S. (2018).** Dimensional Effect of Intellectual Capital on Innovation Capability and Organizational Performance. Submitted to *Asian Business & Management*. [ISI].
3. **Barkat, W., Beh, L.S. (2018).** Dimensional Effect of Intellectual Capital on Knowledge Process Capability and Organizational Performance. Submitted to *Knowledge & Process Management*. [Scopus].