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**EXAMINING THE INTERNAL CAPABILITIES ON  
SMES PERFORMANCE: THE EFFECTS OF  
ENVIRONMENTAL TURBULENCE AND INNOVATION  
STRATEGY**

**MUHAMMAD ZULQARNAIN ARSHAD**



**DOCTOR OF PHILOSOPHY  
UNIVERSITI UTARA MALAYSIA  
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**EXAMINING THE INTERNAL CAPABILITIES ON SMES  
PERFORMANCE: THE EFFECTS OF ENVIRONMENTAL TURBULENCE  
AND INNOVATION STRATEGY**

**By**

**MUHAMMAD ZULQARNAIN ARSHAD**



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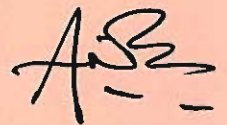
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## ABSTRACT

The Small and Medium-Sized Enterprises (SMEs) play a crucial part in country's economic growth like Pakistan. Sustaining the SMEs performance is significant and is still attracted the attention of many researchers, even today, it is still compelling due to the emerging global competition in the context of developing countries. The previous findings on the understanding of the complex relationships among factors influencing firm performance remain fragmented and unexplained. Therefore, the purpose of this study is to investigate the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance in Pakistan. Furthermore, the study intends to examine the moderating effect of environmental turbulence and innovation strategy. The study employed the resource-based view as the underpinning theory with two supporting theories, namely, dynamic capability theory and contingency theory. Data were collected from 479 textile SMEs operating in Pakistan using a cross-sectional study design through self-administered questionnaires. However, only 348 surveys were valid for further analysis. This study utilized the Partial Least Squares Structural Equation Modelling to establish the validity and reliability of the measurement model and to test each hypothesis. The outcomes of this study show that innovation capability, intellectual capital, and absorptive capacity have a significant influence on SMEs performance. The results also reveal that environmental turbulence moderates the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance. Furthermore, innovation strategy moderates the relationship between innovation capability, absorptive capacity, and SMEs but innovation strategy does not moderate the relationship between intellectual capital and SMEs performance. The outcome of this study provides new knowledge and valuable insights for government agencies, such as SMEs Development Authority to look further at the programmes and guidelines, and enforce new policies toward improving the performance of SMEs in Pakistan. The study also contributes to the theory as it extends the Resource-Based View theory, Dynamic Capabilities Perspective, and the Contingency Theory and integrating distinct literature streams about innovation capability, intellectual capital, absorptive capacity, environmental turbulence, and innovation strategy. Lastly, there are some limitations as this study is a cross-sectional, using single source of data and just focuses on the textile sector. Hence, future studies should be longitudinal, use multiple sources data and focus on other Pakistan manufacturing sectors.

**Keywords:** innovation capability, intellectual capital, absorptive capacity, environmental turbulence, innovation strategy, Small and Medium-Sized Enterprises performance

## ABSTRAK

Perusahaan Kecil dan Sederhana (PKS) memainkan peranan penting dalam pertumbuhan ekonomi negara seperti Pakistan. Pengekalan prestasi PKS adalah signifikan dan masih menjadi tumpuan para penyelidik sehingga kini, disebabkan persaingan global yang semakin meningkat di kalangan negara-negara membangun. Dapatan kajian sebelum ini mengenai pemahaman tentang hubungan kompleks bagi faktor-faktor yang mempengaruhi prestasi firma masih belum terungkai dan tidak jelas. Oleh itu, tujuan kajian ini adalah untuk menyelidik hubungan di antara keupayaan inovasi, modal intelektual, kapasiti penyerapan dan prestasi PKS di Pakistan. Kajian ini juga bertujuan untuk meneliti kesan penyederhanaan pergolakan persekitaran dan strategi inovasi. Kajian ini menggunakan pandangan berasaskan sumber sebagai teori asas dengan dua teori sokongan, iaitu teori keupayaan dinamik dan teori kontingensi. Data dikumpulkan dari 479 PKS tekstil yang beroperasi di Pakistan dengan menggunakan reka bentuk kajian keratan rentas melalui soal selidik tadbir sendiri. Walau bagaimanapun, hanya 348 tinjauan yang boleh diguna pakai untuk analisis selanjutnya. Kajian ini menggunakan Pemodelan Persamaan Berstruktur Kuasa Dua Terkecil Separa untuk menentukan kesahan dan kebolehpercayaan model pengukuran, dan untuk menguji setiap hipotesis. Hasil kajian ini menunjukkan bahawa keupayaan inovasi, modal intelektual, dan kapasiti penyerapan mempunyai pengaruh yang signifikan terhadap prestasi PKS. Dapatan juga menunjukkan bahawa pergolakan persekitaran menyederhanakan hubungan antara keupayaan inovasi, modal intelektual, kapasiti penyerapan dan prestasi PKS. Di samping itu, strategi inovasi didapati menyederhanakan hubungan antara keupayaan inovasi, keupayaan penyerapan, dan PKS, tetapi tidak menyederhanakan hubungan antara modal intelektual dan prestasi PKS. Hasil kajian ini memberikan pengetahuan baharu dan pemahaman yang bernilai bagi agensi-agensi kerajaan seperti Lembaga Pembangunan PKS untuk melihat dengan teliti terhadap program dan garis panduan, dan menguatkuasakan dasar baharu bagi meningkatkan prestasi PKS di Pakistan. Kajian ini juga menyumbang kepada teori kerana ia memperluaskan Teori Pandangan Berasaskan Sumber, Teori Perspektif Keupayaan Dinamik, dan Teori Kontingensi dengan menggabungkan sorotan kajian yang berbeza mengenai keupayaan inovasi, modal intelektual, kapasiti penyerapan, pergolakan persekitaran dan strategi inovasi. Akhir sekali, terdapat beberapa kekangan kajian kerana kajian ini merupakan kajian keratan rentas yang menggunakan punca sumber tunggal dan hanya berpusat kepada sektor tekstil sahaja. Adalah diharapkan, kajian akan datang lebih bersifat longitudinal, menggunakan pelbagai sumber data dan menumpukan kepada sektor perkilangan yang lain di Pakistan.

**Kata kunci:** keupayaan inovasi, modal intelektual, kapasiti penyerapan, pergolakan persekitaran, strategi inovasi, prestasi Perusahaan Kecil dan Sederhana.



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## LIST OF PUBLICATIONS

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- Arshad, M. Z., & Arshad, D. (2018). Intellectual capital and SMEs Performance in Pakistan: The Role of Environmental turbulence. *International Journal of Entrepreneurship*, 22(Ic), 1–14.
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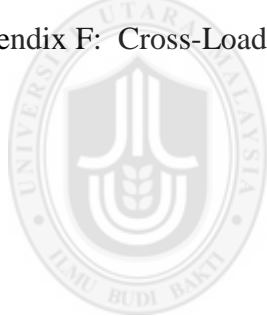
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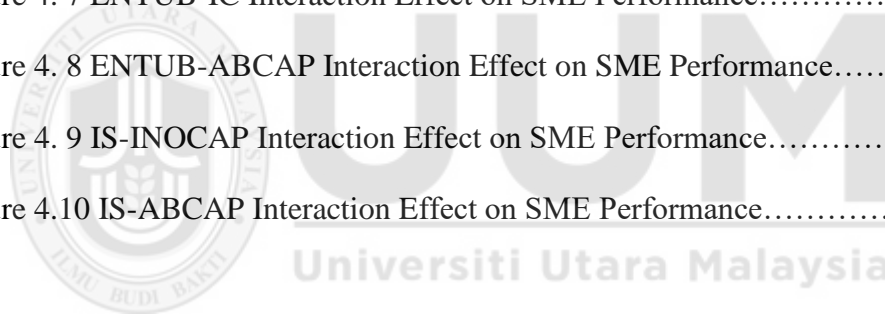
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## LIST OF ABBREVIATIONS

ACAP	Absorptive Capacity
AVE	Average Variance Extracted
CR	Construct Reliability
DCs	Dynamic Capabilities
DV	Dependent Variable
ENTUB	Environmental Turbulence
FP	Firm Performance
GDP	Gross Domestic Product
IC	Intellectual Capital
INOCAP	Innovation Capability
INOSTGY	Innovation Strategy
IV	Independent Variable
OEDC	The Organization of Economic Corporation and Development
PLS-SEM	Partial Least Squares-Structural Equation Modeling Processes
RBV	Resource Based View
SBP	State Bank of Pakistan
SMEDA	Small and Medium Enterprise Development Authority
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for Social Science
VIF	Variable Inflation Factor

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

The small and medium-sized enterprises (SMEs) play a significant part in the economic growth and the main contributor in a country's GDP. In the emerging economies, SMEs are the key contributor to national economic development and also the major source of the employment generation (Irfan, Kee, Qureshi, & Hussain, 2014). Generally, the large firms are often thought as the more substantial contributors towards economic development and foreign exchange earnings but now this point of view has been changed because countries like Korea, Taiwan, and Japan have developed and boosted their economies through the Small and Medium Enterprises businesses (Ali Shah, Mehmood, Aamir Hashmi, Maqsood Shah, & Muhammad Shaikh, 2011).

In the developing nation's cases, the role of SMEs is further magnified and boosted because the development of the countries requires the participation of multinational enterprises (MNEs) and SMEs. Moreover, SMEs contribute multiple varieties of benefits, creating jobs which result in a lower cost of capital and have an advantage over large firms because of their elastic and flexible structure (Hussain, Si, Xie, & Wang, 2010; Moore & Manring, 2009). Pati, Nandakumar, Ghobadian, Ireland, and Regan, (2018) also stressed that the role of SME's contribution has a significant effect on economic stability and growth related to both developing and developed countries. Hence, it is concluded that the development and growth of every nation depend directly on the role of the SME sector (Jasra et al. 2012; Irfan et al. 2014).

Despite substantial contributions and economic supports towards development, in the developing countries, the performance of SMEs remains below the expectation level (Jahn, 2018). Scholars, researchers, and practitioners emphasized the importance of small and medium enterprises well, but still, the studies debated some significant weaknesses that exist within the SMEs and their performance relationship. Some studies highlighted the constraints and barriers for the SMEs performance (Shah, Othman, & Mansor, 2016), thus indicating that more studies related to SMEs must be conducted to gain a comprehensive finding in the matter.

Also, majority of the literature is centered around the regions like Canada, Latin America, South Africa, Caribbean, Europe and the Pacific (Federico, Rabetino, & Kantis, 2012; Gill & Biger, 2012). Eventually, few studies have focused on SMEs at the South East Asia region, which includes countries like China, India, and Pakistan (Bilal et al., 2016). Tunneling down to the economy ranking for doing business activities in the world, Pakistan is ranked 136th from 189 countries in the list (The World Bank, 2018). In the Global Competitiveness Index report, Pakistan is ranked 107th out of 144th countries on the least side (Schwab, Sala-i-Martin, & Brende, 2018).

Obviously, the above facts reflected that Pakistan economic condition is at the worst end. In Pakistan, 99% of an established business is held by SMEs. They are contributing 40% in country's total GDP, 25% of the total exports, 80% employment of non-agriculture labor force and 35% of value added in manufacturing (Haroon Hafeez, Noor Mohd Shariff, & Lazim, 2013; Arshad & Arshad, 2018). As a matter of fact, a large number of SMEs ended up their operation between 1 to 5 years, while some vanished

within 6 to 10 years of existence and the small scale enterprises in Pakistan that continue to grow to maturity are less than 5% to 10% (Khalique, Isa et al., 2011; Arshad & Arshad, 2018). Hence, this indicates that SMEs in Pakistan have low growth and high mortality rate. Consequently, SMEs performance in Pakistan is below the expectation level as compared to the other countries having a middle-income level (Bilal, Khan, & Akoorie, 2016). Furthermore, the situation becomes more critical, confusing and disturbing when the degree of unemployment, poverty and hunger that supposed to be reduced by the SMEs but actually continue to rise at an alarming rate, despite all incentives and measures given yearly (Arshad & Arshad, 2018; Haroon Hafeez et al., 2013; Hassan, Malik, Hasnain, Faiz, & Abbas, 2013).

In the past decade, it was evident that the performance of Pakistani SMEs was quite dismal. Factors that are mainly contributing towards the poor performance were such as low level of productivity, less innovation, unskilled labor force, and competitiveness that were the main obstacles for the firms in creating and sustaining competitive advantage (Khawaja, 2006; Tanveer, Rizvi, & Riaz, 2012). As time passes, the condition of SMEs' health is now at an alarmingly high level. It is so obvious that at present, SMEs are adversely facing the dearth of the intellectual capital building (Khalique, Bontis, Shaari, & Isa, 2015). This is evident when the Governor of State Bank of Pakistan stated that Pakistan SMEs are not working at a progressive level due to its less involvement in innovation activities and proper strategy implementation (Rizwan Bhatti, 2016).

It is a known fact that in Pakistan, the manufacturing sector is the second largest contributor to the country's GDP (Pakistan Economic Survey; 2018). The textile industry in the manufacturing sector is the top of the list and account for 21% in the GDP. There were a total of 27250 SMEs textile units in Pakistan. (Ministry of Textile Industry Pakistan, 2016; SMEDA, 2016). Hence, the textile sector is the most significant contributor in the manufacturing sector of Pakistan, as seen in Table 1.1 below.

Table 1. 1  
*Group-wise Contribution of Manufacturing Sector*

S.No.	Group	Weight in percentage in GDP
1	Textile	21%
2	Food, Brewages & Tobacco	12.2%
3	Coke & Petroleum	5.5%
4	Pharmaceuticals	3.6%
5	Chemical	1.7%
6	Automobiles	4.6%
7	Iron & Steel Products	5.3%
8	Electronics	1.9%
9	Fertilizers	4.4%
10	Leather Products	0.8%
11	Rubber Products	0.2%
12	Paper & Board	2.3%
13	Engineering Products	0.4%
14	Wood Products	0.5%

Source: Pakistan Economic Survey (2018).

Literature also suggested that the collapse ratio of SMEs are very high in developing, emerging as well as developed countries. Past studies argued that a significant number of new SMEs close their operation within the five years of the business operation (Mbonyanne & Ladzani, 2011; Kuratko, 2005). This also happens in the textile sector.



Though this industry has been among the major foreign exchange earners for Pakistan, however, the performance of the textile industry is declining (Ihtasham ul Haque, 2016). The most significant causes of this decline are reliance on older technologies and lack of attention towards innovativeness and intellectual capital building (Hassan, Malik, Hasnain, Faiz, & Abbas, 2013; Khalique et al., 2015).

As displayed above in Table 1.1, the textile sector is the main contributor to the manufacturing sector. However, in Pakistan, the growth rate of the textile industry lags behind the other Asian counterparts such as China, India, and Bangladesh (Pakistan ports and Custom, 2015). From few years, Pakistan is facing competition from its regional players. In the past years, shares of Pakistan as compared with neighboring countries in the global textile market decreased from 2.2% to 1.8%; in contrast to Bangladesh's share which increased from 2% to 3.3%, China from 4.1% to 5.5% and India from 3.4% to 4.7% (Ihtasham ul Haque, 2016; Pakistan ports and Custom, 2015). So it is worthwhile to conduct a study on the SMEs performance in Textile industry of Pakistan.

## **1.2 Problem Statement**

The textile industry of Pakistan is collapsing very fast; around 100 of textile mills have closed their operations, and their Non-Performing Loans (NPLs) are massively rising, which causes the major setbacks to the economy. Till at the end of June 2016, around 100 mills located in Sindh and Punjab had declared Rs3 billion loss in textile sector which accumulated the loss of 5.8% in GDP as compared from the previous year, 2015 (Ihtasham ul Haque, 2016).

Similarly, the Bureau of Statistics of Pakistan reported that country exports of the merchandise have decreased to \$10.322 billion from \$12.058 billion during the first seven months of 2015 (Pakistan Bureau of Statistics, 2015). Percentage-wise, the decline has recorded at 14.40%, mainly due to the dismal performance of the textile sector. Due to the textile is the leading earning sector in Pakistan; thus the drop in the textile exports is the severe issue which could weaken the overall performance of the economy (Pakistan ports and Custom, 2015). The Governor of State Bank of Pakistan stated that Pakistani Textile SMEs are not working at a progressive level due to the non-standardization of components and processes (Rizwan Bhatti, 2016).

Innovation is considered a significant issue in Textile SMEs in Pakistan. Bilal et al. (2016) stressed that Pakistani SMEs are not actively and extensively involved in the innovation activity, hence becoming barriers for SMEs to perform well and create value. Other than that, In the knowledge-based economy, intellectual capital and absorptive capacity seem like the critical success factors for the firms (Khalique, Shaari, et al. 2011). Textile SMEs in Pakistan is facing the challenge of lack of skilled workers and external knowledge sources. In Pakistan, the turbulent environment is the main hurdle that hinders the performance of the SMEs and prevents them from taking advantage of opportunities (Harram & Fozia, 2015). So, the textile SMEs are facing various challenges for not performing well in Pakistan. This is perhaps due to lack of innovation capability, intellectual capital, absorptive capacity, strategic adoption, high competition, unstable market situation, and technological enhancement which lead to the closure of a vast number of SMEs textile (Ihtasham ul Haque, 2016).

Innovation capability has been known as one of the essential ingredients to impact SMEs performance. As such, Ndesaulwa (2016) agreed that SMEs in developing countries must engage in the process of innovation to improve their performance if they want to survive and compete in the market. However, up to this point, extensive literature for this study is focusing on the regions like South Africa, Latin America, Canada, Europe, the Caribbean, and the Pacific (Federico et al., 2012; Gill & Biger, 2012; Mbonyane & Ladzani, 2011), and few studies have focused on the SMEs performance in countries such as India, China, and Pakistan (Bilal et al., 2016). It can safely be concluded that, as the case of SMEs in Pakistan, they are less engaged in the innovation activities as one of the main ingredients to their performance as compared to large firms (Hafeez et al., 2013; Hassan, Shaukat, et al., 2013; Naqvi, 2011)

As a matter of fact, many researchers have debated that intellectual capital is the core resource for the SMEs' success, and ultimately it has a distinguishable relation to their performance (Crema & Verbano, 2014; Emmanuel, 2016; Khalique et al., 2015; Ridhuan, 2015; Shumaila & Afza, 2014; Ullah et al., 2015). Previous studies found that in the context of SMEs performance, lack of many resources is hindering in managing and utilizing intellectual capital to create sustainable competitive advantages and value for the firm that influence their performance (Lerro, Linzalone, & Schiuma, 2014). Furthermore, past researchers also paid less intention in the studies related to intellectual capital and SMEs performance as compared to the large enterprises (Cohen, Naoum, & Vlismas, 2014; Curado, Guedes, & Bontis, 2014).

Moreover, previous studies have shown mixed findings between absorptive capacity and performance, particularly in SMEs performance (Ali & Park, 2016; Lichtenthaler, 2016; Schildt, Keil, & Maula, 2012; Volberda, 2010; Wales, Parida, & Patel, 2013). Absorptive capacity is one of the main variables for the transformation of developing the economy to a knowledge-based economy (Rehman, 2015). However, most research studies focused towards large firm as compared to SMEs on absorptive capacity (Becheikh, 2013; Herath & Mahmood, 2014; Filippini et al., 2010; Kamal & Flanagan, 2012; Guo & Wang, 2014; Tzokas et al., 2015). Furthermore, in SMEs performance study, the role of absorptive capacity requires more attention, especially when it is related to SMEs performance (Herath & Mahmood, 2014). More importantly, limited studies on the context of SMEs performance are carried out in Pakistan (Rafique, Nawaz, & Evans, 2015). Consequently, future studies should consider to include absorptive capacity in the broader context of SMEs (including SMEs performance) in developing countries such as Pakistan (Tzokas et al., 2015).

Another factor that hinders the performance of SMEs is environmental turbulence because the political and economic condition is at a high level of uncertainty and variability (Harram & Fozia, 2015). However, Soomro and Aziz (2014) acknowledged that limited research exists on the effects of environmental relationship and SMEs performance, especially in developing countries like Pakistan. The high degree of turbulence has increased the competition among the firms (Kotler & Caslione, 2009). As a result, companies have increased their ability to absorption, usage, and knowledge exchange, internally and externally and cooperate on innovation (Cohen & Levinthal, 1990; Gassmann, 2006).

Harram and Fozia (2015) implied that in Pakistan, the turbulent environment is the main hurdle that hinders the performance of the firms, and prevents them from taking advantage of opportunities. Schilling, Vivekananda, Khan, and Pandey (2013) stated that environmental factors influence the strategies and the structure of the SMEs. It has been showed that SMEs that are aware with the environmental change could leverage their internal capability (innovation capability, intellectual capability, and absorptive capacity) to formulate their performance (Purwanto & Raihan, 2016; Tsakalerou, 2015; Ali, Seny Kan, & Sarstedt, 2016).

In fact, most of the past research are done on the moderator of environment and performance of SMEs performance (Eroglu & Hofer, 2014; Nandakumar, Ghobadian, & Regan, 2010; Wiklund & Shepherd, 2005; Peltier, Zhao, & Schibrowsky, 2012; Uzokurt et al., 2012; Hameed & Ali, 2011; Park, & Ryu, 2015) while some other crucial environment dimensions (technological turbulence, market turbulence, and competitive intensity) are considered critical to maintaining the SMEs performance in the dynamic environment.

Apart from that, strategy echoes a pattern in a stream of decisions (Lorange & Roos, 1991; Steiner & Miner, 1977) and business strategy helps realize performance objectives (Lamberg, Tikkanen, Nokelainen, & Suur-Inkeroinen, 2009; Miller, 1992; Saffersfone, 2002). The fact that strategy influences performance is evident (Hitt, Ireland, & Hoskisson, 2012), but there is a variability of knowledge in what way this effect takes place (Porter, 1991).

Undeniably, the distinctions between large firms and SMEs are well acknowledged in the literature, but the most of strategy-performance researches have concentrated on large enterprises (Siavwe, Isiavwe, Ogbari, Ogunnaike, & Ade-Turton, 2015; Ghobadian & Regan, 2006; Yuliansyah, Gurd, & Mohamed, 2017). In fact, numerous studies have been conducted in the developing and developed countries such as Malaysia (Ho, Ahmad, & Ramayah, 2016), in Taiwan (Chen, 1999), in Europe and USA (Abimbola, 2001; Parnell, Lester, Long, & Ali, 2014; Simpson, Taylor, & Barker, 2004), and revealed the importance of business strategy (including innovation strategy) in contributing to the SMEs performance (Hashim & Zakaria, 2010; Yuliansyah, Gurd, & Mohamed, 2017). Nevertheless, countries like Pakistan have some scarcity regarding research. Limited studies have been conducted on the SMEs of Pakistan, and they highlighted the effect of business strategy particularly the innovation strategy on the SMEs performance (Batool, 2011; Hafeez, 2012; Anwar et al., 2016; Qureshi, 2012; Syed, Ahmadani, Shaikh, & Shaikh, 2012).

In summary, many studies have investigated the direct connection between innovation capability, intellectual capital, absorptive capacity, and organizational performance; but in separate studies and different contexts. The direct research of innovation capability, intellectual capital, absorptive capacity, and performance show inconsistent results so as mentioned by Baron and Kenny, (1986) if the relationship between two variables is not relatively strong, the third variable called moderating variable could be added in the framework. This study was be thus empirically significant to focus on the moderating effect of environmental turbulence and innovation strategy between innovation

capability, intellectual capital, absorptive capacity, and performance of textile SMEs of Pakistan.

### **1.3 Research Questions**

Based on the above discussions, the research questions for this study are as follows:

RQ1: Is there any significant relationship between innovation capability and SMEs performance?

RQ2: Is there any significant relationship between intellectual capital and SMEs performance?

RQ3: Is there any significant relationship between absorptive capacity and SMEs performance?

RQ4: Does the environmental turbulence moderate the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance?

RQ5: Does the innovation strategy moderate the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance?

### **1.4 Research Objectives**

Hence, this study consists of five main objectives.

RO1: To examine the significant relationship between innovation capability and SMEs performance.

RO2: To examine the significant relationship between intellectual capital and SMEs performance.

RO3: To examine the significant relationship between absorptive capacity and SMEs performance.

RO4: To examine the moderating effect of environmental turbulence on innovation capability, intellectual capital, absorptive capacity, and SMEs performance.

RO5: To examine the moderating effect of innovation strategy on innovation capability, intellectual capital, absorptive capacity, and SMEs performance.

### **1.5 Scope of the Study**

The study mainly emphasizes on the small and medium scale enterprises performance. The firm-level performance is selected as the criterion variable since the low performance is the major issue in the developing and under-developed countries (Khalique et al., 2015). The current research investigates the relationship of innovation capability, intellectual capital, and absorptive capacity on the performance of SMEs textile sector of Pakistan. This study also focuses on the moderating role of environmental turbulence and innovation strategy on the relationship between innovation capability, intellectual capital, absorptive capacity, and SME performance. This research design and scope is inductive and quantitative.

The scope of this study refers to the determination of variable for study, research design determination, population and sample size determination, research instruments and data gathering techniques, and statistical testing method determination. The data were gathered from the self-administered questionnaire, and the population was comprised of 27250 textile SMEs operating in Pakistan. Statistical Analysis Techniques; for example, descriptive, correlation, confirmatory factor analysis, and hierarchical



regression analysis using SPSS and PLS (SEM) were utilized in this research. The unit of analysis for this study was at the firm or organization level, whereby the owner or manager who involves in decision making of the firm is identified as the key respondent to represent their business to answer the questionnaires. All variables have been considered at the organizational level.

## **1.6 Significance of the Study**

This study shows a cohesive multidimensional research framework by integrating five diverse literature streams related to innovation capability, intellectual capital, absorptive capacity, environmental turbulence, and innovation strategy viewpoint and examines their joined associated effect on firm performance in SMEs in the textile industry of Pakistan.

It is predicted that this study is considered among very few pioneer studies that examine the integrated effect of innovation capability, intellectual capital, and absorptive capacity on SMEs performance. This study delivers useful implications for owners/managers of SMEs regarding the significance of innovation capability, intellectual capital, and absorptive capacity in SMEs. Also, the study has examined the moderating effect of environmental turbulence and innovation strategy on the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance. After reviewing literature from previous studies, it is scarce to find the moderating effect of environmental turbulence and innovation strategy that are examined in the association among innovation capability, intellectual capital, absorptive capacity, and SMEs performance.

The study aims to enrich further the theories that guided this study. From the theoretical perspective, this study employs the Resource-Based View (RBV) to emphasize the significance of capabilities and resources as rare, valuable, and inimitable organizational resources (Barney 1991). It also employs the Dynamic Capabilities Perspective (DCP) (Teece, 2007) to explicate the importance of innovation capability, intellectual capital, absorptive capacity, and innovation strategy as strategic capabilities for elaborating the success of firms over their business rivals.

On top of these, previous researchers showed that there were some contradictory results between innovation capability and firm performance (Saunila, Ukko, & Rantanen, 2014; Annavarjula, Nandialath, & Mohan, 2012; Aryanto et al., 2015; Calantone et al., 2002; Hassan, Malik, et al., 2013; Kafetzopoulos, Dimitrios Psomas, 2015; Li & Chen, 2011), intellectual capital and firm performance (Crema & Verbano, 2014; Emmanuel, 2016; Khalique et al., 2015; Ridhuan, 2015; Shumaila & Afza, 2014; B. Ullah et al., 2015), and absorptive capacity and firm performance (Chen, Lin, & Chang, 2009; Hurmelinna-Laukkanen, Olander, Blomqvist, & Panfilii, 2012; Nagati & Rebolledo, 2012; Zahra & George, 2002); indicating a gap which shows a relationship between firm performance remained unclear. In this study, a new conceptual framework is established to fill the gap by a comprehensive empirical study; therefore, contributing to the literature on intellectual capital, innovation capability, absorptive capacity, and firm performance.

The literature also reveals that most of the studies' focal point is a large organization, and less focused on the SMEs especially in the developing countries' context (Filippini

et al., 2010; Guo & Wang, 2014; Khaliq et al., 2015). Thus, there is a dearth need for conducting more studies related to SME performance to improve their competitiveness. Moreover, it had been confirmed that the majority of empirical studies related to innovation capability, intellectual capital, absorptive capacity, environmental turbulence, and innovation strategy were conducted in the developed countries such as USA and UK. Because of that, there is a scarcity of studies in developing countries and specifically in Asian countries. This study provides the potential research with the necessary knowledge on how innovation capability, intellectual capital, absorptive capacity, environmental turbulence, and innovation strategy reinforce the SMEs performance, at least in the context developed countries, opening the door for further investigations in this area.

In Pakistan, only few studies have been conducted in the context of SMEs Performance with the variables like innovation capability (Hassan, Malik, et al., 2013), intellectual capital (Khaliq, Isa, et al., 2011; Khaliq, Shaari, et al., 2011; Ullah et al., 2015), absorptive capacity (Rafique et al., 2015; Umrani et al., 2015) and environmental turbulence (Harram & Fozia, 2015; Schilling et al., 2013; Shah et al., 2016) and strategy (Asgary, Anjum, & Azimi, 2012; Memon, Wei, Robson, & Khattak, 2014; Muhammad, Khan, Amin, & Lambrou, 2010; Rohra & Junejo, 2009). A few authors have explored the successes, failures, and challenges faced by SMEs of Pakistan (Soomro & Aziz, 2014; Bilal et al., 2016; Khaliq, Isa et al., 2011). For that reason, this study contributes the way to enhance the performance of SMEs of Pakistan. As the relationships of these variables have never been tested in the Pakistani textile SME, there exists contextual importance in the current study.

Veritably, this study determines some imperative issues and the gaps in the literature related to the strategic match of innovation capability, intellectual capital, absorptive capacity, environmental turbulence and innovation strategy on SMEs performance, especially in the Textile industry of Pakistan. The findings could enable the managers to formulate better strategic decisions to gain a competitive advantage. For that, this study generates a framework, which could enhance the confidence level and potential of top executives and managers in making very concrete decisions as well as mitigating the textile SMEs owners from the intense competition, market turbulence, and technological turbulence. With proper consideration and detailed investigation, it is hoped that this study could contribute significantly to the practitioners as the findings of this study provide them with a clear understanding of the factors affecting the performance of textile SMEs in Pakistan, which is in line with the country's Vision 2025. With specific evidence on the factors influencing the SMEs performance, the practitioners realize the importance of the drivers for better performance. This study also hopes to help policy-makers, government agencies, and industrial SMEs gain a better understanding of matters about SMEs' problems in their endeavor to compete and survive in a competitive environment.

Finally, the outcome of this study is expected to be used by the Pakistani government and agencies to develop the best strategies to enhance the textile industry SMEs in Pakistan, in conjunction with initiatives aimed at increasing cooperation with foreign companies to increase their experiences and support their competencies to exploit externally generated knowledge.

## **1.7 Definition of Key Terms**

### **1.7.1 Performance**

Performance is the firm's ability to achieve and accomplish its goals and objectives by utilizing all the firm's resources and capabilities efficiently and effectively (Daft, 2006).

### **1.7.2 Innovation Capability**

Innovation capability means the degree to which a firm possesses resources and capabilities presumed necessary for innovation, which ultimately enhances the performance (Withers, Drnevich, & Marino, 2011).

### **1.7.1 Intellectual Capital**

Intellectual capital is defined as the asset of intangibles (resource capabilities and competence) that drive to achieve organizational performance and value creation (Bontis, Chua, & Keow, 2000).

### **1.7.4 Absorptive Capacity**

Absorptive capacity is defined as the firms' capabilities and qualifications, by which they acquire, assimilate, transform and exploit external knowledge from external resources (partners, suppliers, and customers) to promote innovation (Zahra & George, 2002).

### **1.7.5 Environmental Turbulence**

Environmental turbulence can be defined as the frequency and unpredictability of the market, technology, and competitive intensity that influence the performance (Calantone, Garcia, & Droge, 2003).

### **1.7.6 Innovation Strategy**

Innovation strategy determines in what way a firm attempts to use innovation to execute its business strategy and improve its performance (Gilbert, 1994).

### **1.7.7 SME**

SME has been defined as a sector, any economic establishment involved in manufacturing or trading or services having the range of employees maximum up to 250 and annual sales turnover of maximum rupees 100 million (SMEDA, 2016).

## **1.8 Organization of the Thesis**

This study is organized in the following format: chapter one focuses on the background of the study, problem statement, research objectives, and research questions, and scope of the study, significance of the study and definition of terms that are used in this report. In chapter two, the discussion is focused more on the reviews of past literature of innovation capability, intellectual capital. Absorptive capacity, environmental turbulence, innovation strategy, and SMEs performance with relevant theories. Chapter three discusses the development of the conceptual framework and research methodology. Analysis and findings are discussed in chapter four. Finally, chapter five

presents the discussions, contributions and implication, limitations, and future directions, and conclusions of this study.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This section is about historical and critical reviews from the literature on innovation capability, intellectual capital, absorptive capacity, environmental turbulence, innovation strategy, and firm performance of SMEs. Through this chapter, the significant critical reviews and theoretical logics are revealed. This chapter explains the relationships among its variables with the details of each variable. This chapter elaborates SMEs performance as the dependent variable (DV), innovation capability, intellectual capital, and absorptive capacity as independent variables, (IVs) and environmental turbulence and innovation strategy as moderating variables. This chapter discusses SMEs in Pakistan, its underpinning theories along with supportive theories which are under consideration.

#### **2.2 Definition of SME**

SMEs definition varies from countries to countries and in different contexts. Each country gives their particular meanings based on the expected SMEs' role in that particular country. Thus, many countries consider their levels of industrial development and economic factors in defining SMEs. Depending on their contribution to economic development as well as their existing social conditions, differences exist regarding the definition of SMEs between countries and even within the same country between different sectors and government agencies. The number of employees, annual turnover,



and amount of invested capital has been used frequently as the key measurement indicator of SMEs in various countries and regions of Europe, Asia, and North America.

In the European Union, SMEs definition is based on the annual turnover and number of employees. For the small enterprise, the number of employees is less than or equal to 50, and the annual turnover is equivalent to or less than EUR 10 million. For the medium enterprise, the number of employees is equivalent to less than 250, and the annual turnover is equal to or less than EUR 43 million (European Commission, 2003). Similarly, in the UAE, SMEs are classified based on the number of employees and the sales turnover. For the small enterprise, the number of employees is less than 26, and the annual turnover is equal to or less than AED 100 million. For the medium enterprise, the number of employees is equal to, or less than 250, and the annual turnover is equivalent to or less than AED 250 million (Duncan, 2014).

Similarly, the definitions of SMEs in China also consider the number of employees and the sales turnover. The small enterprises comprise the number of employees, which is equal to or less than 300 and the annual turnover is equivalent to or less than YUAN 30 million. For the medium enterprises, the number of employees is equal to, or less than 2000, and the annual turnover is less than or equal to YUAN 400 million (Ji, 2010). However, in the case of India, they have their classification of SMEs based on the number of employees and the total assets value. For the small enterprise, the number of employees is less than 50, and the value of the assets is equal to or less than IND Rs.50 million. For the large enterprise, the number of employees should be equal to or less than 250 (Small and Medium Business Development Chamber of India, 2006). In

Japan, it is very notable that the definition of SMEs varies from other countries. They have no separate classification for the small and medium enterprises, for SMEs, the number of employees is equal to or less than 300, and the value of assets is less than or equal to Japanese YEN 300 million (Small and Medium Enterprise Agency & Ministry of Economy Japan, 2013).

Similarly, the SMEs definition in Malaysia refers to the numbers of employees and the annual sales turnover. For the small enterprise, the number of employees' ranges from 5 to 74 and the turnover is from MYR 3 thousand to less than MYR 15 million. For the medium enterprise, the number of employees ranges from 75 to less than 200 and sales turnover ranges from MYR 15 million to equal to or less than MYR 50 million (SME Corporation Malaysia, 2013).

As different countries have different figures for the identification and definition of SMEs according to their contexts, the International Finance Corporation (IFC) and World Bank introduced their definitions of SMEs for a common purpose and understanding around the globe. For the small enterprise, the number of employees ranges from 10 to 50, and the value of the assets ranges from USD 1 lakh to 3 lakh. For the medium enterprise, the number of employees ranges from 51 to 300, and the value of the assets ranges from USD 3 million to USD 15 million (Heider, Tenev, & Stone, 2014).

In Pakistan, the SMEDA defines the SMEs based on the number of staff/employees, the annual sales turnover, and the total assets value in the balance sheet. For the small

enterprise, the number of employees is less than 50, and the total assets value is equal to PKR 30 million. For the medium enterprise, the number of employees ranges from 51 to 250, and the value of the assets ranges from PKR 30 million to 100 million (SMEDA, 2016).

As from Table 2.1 below, it is concluded that the definitions of SMEs vary along with the globe, from the western to the eastern context and also from country to country. Therefore, this resulted in a variety of definitions for SMEs. Eventually, for this study, the definition of SMEs follow one of the SMEDA Pakistan because this research is centered upon the textile SMEs of Pakistan.

### **2.3 The Importance of SMEs**

SMEs play a relatively important role in emerging countries. They provide employment and one of the crucial sources for income generation. Ultimately, SMEs promote sufficient economic growth and development and are the source of wealth, dynamism, knowledge, improved livelihood, and competitiveness. Compared to multinational corporations, on a social level, SMEs have a direct impact on poverty alleviation. In an economy where SMEs are successful and integrated into the formal economy, there is a better use of human and material resources (Leo, 2011).

Table 2.1  
*SMEs description of different countries*

<b>Country</b>	<b>SMEs</b>	<b>No. of Employees</b>	<b>Annual turnover/Assets Value</b>
<b>UAE</b>	Small firm	Less than 26	Equal and less than AED 100 million
	Medium firm	Less than and equal to 250	Equal and less than AED 250 million
<b>European Union</b>	Small firm	Less than or equal to 50	Equal and less than EUR 10 million
	Medium firm	Less than and equal to 250	Equal and less than EUR 43 million
<b>China</b>	Small firm	Less than or equal to 300	Equal and less than YUAN 30 million
	Medium firm	Less than and equal to 2000	Equal and less than YUAN 400 million
<b>India</b>	Small firm	Less than or equal to 50	Equal and less than IND Rs. 50 million
	Medium firm	Less than and equal to 250	Equal and less than IND Rs. 250 million
<b>Japan</b>	Small firm and Medium Firm	Less than and equal to 300	Equal and less than YEN 300 million
<b>Malaysia</b>	Small firm	5 to 74	MYR 5 lakh to less than MYR 15 million
	Medium firm	75 to less than 200	MYR 15 million to less than or equal to MYR 50 million
<b>World bank</b>	Small firm	10 to 50	USD 1 lakh to USD 3 lakh
	Medium firm	51 to 300	USD 3 million to USD 15 million
<b>Pakistan</b>	Small firm	Less than 50	Equal to PKR. 30 million.
	Medium firm	51 to 250	From PKR. 30 million to 100 million

All over the world, SMEs are regarded as the most substantial proportion of business establishments. According to Organization for Economic Cooperation and Development (OECD), SMEs contribute tremendously in employment opportunities, market creation, and development; delivering a better living standard, along with contributing hugely in the gross domestic products (GDPs) in a vast majority of countries (OECD, 2002).

Strategically, SMEs' roles are crucial in many developing countries, mostly which are located in the Asian region. In Japan, SMEs signify 99.7% of businesses, provide 71 % of employment and accumulate 55.3 % in GDP (OECD, 2017); In Malaysia, SMEs characterize for 97% businesses, hold 65% of employment and contribute 36% in its GDP (The World Bank, 2016). In Indonesia, the conforming figures are 99.8%, 99.7%, and 57% respectively (International Council for Small Business, 2015). In the case of China, 99% of the total business establishments hold by SME's, signify 70% of employment and contribute 60% in GDP (Deborah & Oluwaseun, 2015).

As of the case of this study, there are almost 3.2 million SMEs in Pakistan witnessing that holds about 90% of the total firms, contributing over 40% of GDP, sharing 35% in manufacturing goods and accounting for 30% in exports of manufactured goods (Khalique, Shaari, et al., 2011). Hence, the SMEs in Pakistan is the main contributor to the sustainable economic development of the country and need further research investigation for the problems desolation.

## 2.4 SMEs in Pakistan

SMEs are perceived as the backbone of the Pakistani economy. In the industrial sector, they employ up to 90% of all private enterprises and almost 78% of the labor force from the non-agriculture sector. Besides giving out 36% value addition in the manufacturing products, their contribution is around 40 percent to the GDP, and they contribute 30 percent share in the exports of manufactured products. Table 2.2 shows the distribution of SMEs in Pakistan.

Table 2.2  
*SMEs division province wise in Pakistan*

Province	SME units
Punjab	65.26 %
Sindh	17.82 %
Khyber Pakhtunkhwa	14.21 %
Baloshistan	2.71%

Source: SMEDA (2016)

For this reason, the Ministry of Economy had established the National Entrepreneur Institute (INADEM), aimed at developing a competitive entrepreneurial environment. These plans strove to not only give financial assistance, but also to build entrepreneurs and employees' capacities in terms of marketing, training, organizational structure, and technology to fortify SMEs and promote regional development.

Likewise, two main factors make SME more favorable to innovate than large firms. Firstly, SMEs are flexible enough to make rapid adjustment in their business operations and planning in a short time span and secondly, this requires less financial resources for growth as the SMEs' organizational structure are less complicated as compared to

large firms making them more flexible and possess less bureaucratic regulations and red tapes in the decision-making process.

Another point is the government has given a significant emphasis on the SME sector and prioritized it as an important strategic sector (SMEDA, 2016). To illustrate, the national strategy for the SMEs indicates that, undoubtedly, highly performing SME sector can play an active role in encountering the challenges of the low productivity and the other issues such as the regional development, the income generation, the unemployment, and the poverty eradication. This relevant as the Pakistani SME sector consists of a vast array of business areas including manufacturing, services, agriculture, tourism, construction, fisheries, and mining.

This is further supported by Jasra et al. (2011), who highlighted that SMEs are contributing quite effectively in industrial employment and export of different manufacturing goods. They added that dynamic and flexible SMEs are playing their part in reducing unemployment levels, earning foreign exchange, upgrading the knowledge profile of the workforce, improving the business management skills, and diffusing technological learning all over Pakistan. Also, SMEs are constructively and productively mobilizing the domestic resources, which otherwise could have lain idle and unemployed. As such, the new era challenges the competitive strengths of the SMEs sector (Akhtar, Raees & Salaria, 2011).

In fact, a few studies revealed that it has been on record that SMEs contribute significantly towards the promotion of Pakistan's industrial sector. Many researchers

have studied this fact and documented in the SME literature. According to SMEDA (2016), SME plays the following roles in the Pakistani economy, which includes among others,

**Employment generation:** SMEs assists the government in the provision of employment opportunities as to many people in the country as possible, thereby reducing unemployment in the society. These enterprises operate in urban, semi-urban, and rural areas, and by this, they can provide means of livelihood to the inhabitants of such areas byways of employment.

**Use of local resources:** Small and Medium enterprise sector is geared towards the production of simple consumer goods that use local raw- materials as compared to modern large scale manufacturing establishments. Industries like textiles, food and beverages, and many more depend mainly on local resources.

**Entrepreneurship development:** The growth of SMEs has brought about the development of entrepreneurial activities in the sense that entrepreneurs have access to local raw materials and with little capital and initiative they can engage in small and medium scale activities.

**Conservation of foreign exchange:** One of the significant contributions of SMEs is the conservation of foreign exchange through import substitution because the total production of SME sector has been inadequate to meet the demand of the local consumption, the question of export hardly arises. However, the product from the sector



serve as the substitutes for those: which might have been imported with a considerable amount of foreign exchange. With the rapid development of SMEs, import of certain items is gradually reducing while the local production of such items is encouraged.

**Equitable distribution of income and wealth:** SMEs development does not concentrate on one particular area of the economy or state. Instead they exist in every part of the country, and each part have several types of such enterprises. This makes it possible for them to share almost equally all facilities and incentives made available to them by the government. For instance, the creation of Small Scale Industrial Centers in every state of the federation arid from which the sector benefited. Thus, SME growth potentials are bound to ensure equitable distribution of income and wealth to many people.

**Capital formation:** SMEs contribute to capital formation, and they are significant sources of private savings for productive purposes. SMEs are also known to acquire relatively little infrastructural investment, and to utilize locally available raw materials instead of relying on exports. Furthermore, SMEs can look inwards and identify/develop products for domestic consumption and the export market as a means of earning foreign exchange for their country.

It can be concluded that SMEs of Pakistan plays a vital role in the growth of the economy of the country and enhances GDP. In developing countries like Pakistan, SMEs contributes to the development of the economy and also a significant source of the employment generation. Despite the facts, the performance of Pakistan still lacking

behind; therefore, the performance of SMEs has to be enhanced to get the maximum output.

## **2.5 Challenges Faced by SMEs of Pakistan**

According to Ali et al., (2011) the main issues hindering performance of SMEs in Pakistan include insufficient sources of getting external knowledge, lack of innovation activities, unfavorable government policies, , high threats due to uncertainty, lack of intellectual resources, inadequate institutional support, lack of suitable business strategies adoption , and as well as the unfavorable business environment.

Also, another constraint faced by the SME sector is the low level of technology and the absence of technical and managerial skills. The low level of technology has directly reduced the innovation activities and operational efficiency of the SMEs. The insufficiency in intellectual skills decreases the ability to compete against the rivals. Unfortunately, the supportive government organizations and other organizations such as universities have not taken the responsibility of improving the technical and professional knowledge in this sector.

What is more, many SMEs in Pakistan do not have the intellectual skills and relevant educational background to manage their businesses. These affect their ability to do effective control and planning. Some SME owners use the loans obtained for the business for personal use (Khalique et al., 2015). This is evident when the large numbers of SMEs ended up their operation between 1 to 5 years, while some vanished within 6 to 10 years of existence and the small scale enterprises in Pakistan that continue

to grow to maturity are less than 5% to 10% (Khalique, Isa, et al., 2011). Hence, this indicates that SMEs in Pakistan has low growth and high mortality rate. Consequently, SMEs performance of Pakistan is below the expectation level as compared to the others from the middle-income level countries (Bilal et al., 2016).

In the knowledge-based economy, intellectual, capital seems like the critical success factor for the firms (Khalique, Shaari, et al. 2011). As mentioned, SMEs in Pakistan are facing a lack of skilled and experienced workers. It is perceived as the main reason for their underperformed and business failures. In Pakistan, SMEs also need to build up the concept and practical implication of intellectual capital to their organizations, to attain the market-based competitive edge.

Other than that, innovation is considered a significant issue in SMEs in Pakistan. In the Global Innovation Index report, Pakistan is positioned at 108th out of 128th countries. There are more than 3.2 million business enterprises in Pakistan; 99% of those businesses are SMEs (Bilal et al., 2016). However, the non-competitive SMEs sector has suffered the loss of market share both in local as well as foreign markets, ultimately resulting in overall declining in SMEs performance. Bilal et al. (2016) further expanded that Pakistani SMEs are not actively and extensively involved in the innovation activity or building innovation capability, this is due to lack of financial and expertise capabilities, hence becoming barriers for SMEs to perform well and create value.

Another reason for the underperformance of SMEs in Pakistan is environmental turbulence. The challenges faced by this sector have resulted in continuous variability

in cost/price, customers' demands/preferences, and structure of competitors. In Pakistan, the turbulent environment is the main hurdle that hinders the performance of the firms and prevents them from taking advantage of opportunities (Harram & Fozia, 2015). That is the reasons behind the low growth rate of the textile industry, which lags behind the other Asian counterparts such as China, India, and Bangladesh. In just a few years, Pakistani manufacturer sector is facing competition from regional players and the textile share in global market keeps decreasing from 2.2% to 1.6%.

According to the Bureau of Statistics of Pakistan, the country's exports of the merchandise have decreased to \$10.322 billion from \$12.058 billion during the first seven months of the current year. Percentage-wise, the decline is recorded at 14.40%, mainly due to the dismal performance of the textile sector. This sector is the main earning sector of Pakistan, and the drops in the exports is a serious issue which is undermining the overall performance of the economy. The leading causes of the declining exports such as the outdated technology, lack of intellectual capital, and absorptive capacity cited as some of the reasons contributing to the lower exports of the textile product of Pakistan (Pakistan ports and Custom, 2015).

## **2.6 Performance of SMEs**

### **2.6.1 Definition of performance**

The success of the organization can be defined as firm performance. It is measured in fulfilling the goals and objectives of the organization to achieve the desired outcome. The performance is well-defined as "The comparison of the value created by a firm

with the value owners expected to receive from the firm” (Damsetz, 1972). In another way, Flapper et al. (1996) defined performance as “The way the organization carries its objectives into effect.”

However, performance is measured as the outcome that is generated by the firm input. As such, performance measurement enables the firms to know about the level of output that comes by the input in terms of cost and capital to achieve the greater success (Hansen & Wernerfelt, 1989; Tomlinson, 2010). Some scholars and researchers viewed at firm performance from the viewpoint of values, as firm creates for various stakeholders whereas others viewed from the standpoint of the accomplishment of the specified organizational goals (Carton, 2005). According to Kennerly & Neely (2003), business organizational success depends on the performance measures indicators.

Besides, another scholar pointed out that firm performance is the process of quantifying actions of a business firm that leads it to achieve its goals and objectives. Therefore, from a business perspective, firms achieve their objectives if they perform in satisfying their stakeholders and customers’ needs more than their competitors. For a firm to achieve this superior performance, the goals and objectives must be achieved in an efficient and effective way as compared to its competitors (Mahmood & Hanafi, 2013).

In relating to these, scholars and researchers not only contrasted in describing performance but also controverted in its conceptual description (Heffernan & Flood, 2000). Daft (2006) stated that performance is the “ability and capacity of the firm to attain and achieve its objectives by using resources of the firm in an effective and

efficient way.” A firm with high efficiency and effectiveness in terms of the value delivered to both stakeholders and customers could perform better than its competitors (Neely, 2005). Effectiveness means the degree to which customer and stakeholder needs are met by the firm, whereas efficiency measures how financial resources of the firm are utilized when meeting its customer and stakeholder needs (Neely, Adams, & Crowe, 2001). Therefore, for this study, performance refers to the firm capability to attain the desired result based on the goals and objectives.

### **2.6.2 Measurement of Performance**

SMEs performance is an academic domain that has yielded loads of interest and attention from past researchers. Due to that, SMEs performance can substantially influence not only the individual entrepreneurs but also the whole society (Kirchhoff & Phillips, 1988; Cooper, 1993). The understanding and measurement of SMEs or entrepreneurial performance are issues of vital importance (Chandler & Hanks, 1993). It is argued that measurement of performance is essential to understand organizations; what is being measured is of equal significance as to how it is being measured (Kanter & Brinkerhoff, 1981). Hence, both issues on what should constitute performance and how it should be measured should be emphasized.

As of now, the performance measurement is an issue which has not gained due attention in SMEs. A holistic approach to performance measurement is usually ignored by SMEs. Even so, small companies typically have a greater focus on their financial and operational performance.

In this study, performance is defined in the same manner to describe the performance of SMEs by using measures like profitability and growth concerning various financial as well as non-financial aspects of the business. Firm performance can be accessed by two main approaches, i.e., objective and subjective approach. In the prior approach, the performance can be measured by general terms such as profitability and sales growth are used (Greenley, 1995; Murphy et al., 1996), acquired either by inquiring the respondents to give the facts or by probing secondary sources (Vorhies & Morgan, 2003). Both objective and subjective performance measures have their strengths and weaknesses, but extant literature reveals that they do not lead to significantly different results (Rauch, Wiklund, Lumpkin, & Frese, 2009). For example, the information of financial data in case of SMEs is complicated to be obtained from secondary sources, but may be available in the case of a large, publicly held company (Abu-Jarad, Yusof, & Nikbin, 2010).

In contrary, some studies favor the non- financial (subjective) measures in measuring SME performance (Dess & Robinson, 1984; Gupta & Govindarajan, 1984). For example, Hemert, Nijkamp, and Masurel (2013) stated that subjective (non- financial measures) measure favors owners/managers to evaluate the level of accomplishment or success of SMEs.

However, the use of dimensions proposed by Gupta and Govindarajan (1984) using stated satisfaction level of respondents is quite evident in studies measuring performance in SMEs (Murphy & Callaway, 2004). This is supported by Murphy and Callaway (2004) who highlighted the importance of the stated level of satisfaction of

entrepreneurs regarding various performances measures. There exists a noteworthy scholastic debate in the literature of entrepreneurship concerning the equivalence of subjective and objective performance measures.

The issue becomes even more complex and complicated as the response rate may be reduced if a research instrument asks for any piece of information which is considered confidential and sensitive (Dillman, Sinclair, & Clark, 1993), which makes it near impossible to collect such information through primary data. To cope with the limitations above and barriers, numerous researchers have recommended the employment of subjective measures of performance as an appropriate and acceptable surrogate of objective measures (Dess & Robinson, 1984; Gupta & Govindarajan, 1984).

Based on a thorough literature review, it is deemed as quite appropriate to employ subjective measures as recommended by Chandler and Hanks (1993) for measuring performance. Wiklund and Shepherd (2003) proposed 10 items of performance, i.e., sales growth, product/service innovation, revenue growth, growth in the number of employees, net profit margin, process innovation, customer satisfaction, adoption of new technology, product/service variety, and product/service quality. Hence, the current study adopts the items from Wiklund and Shepherd (2003). The advantages of the measures employed in the present study are that they are widely understood, precise, and can be verified and replicated. The use of uni-dimension to measure performance is also in line with the suggestions by Kaplan (1983), Venkatraman and Ramanujam (1986), Gupta (1987), and Randolph, Sapienza and Watson (1991).



## **2.7 Innovation Capability**

Innovation capability is an important source of organizations for doing innovation to get organizational success. Saunila et al. (2013) stressed that innovation capability varies from organization to organization, and different classification of definition in various studies exist.

As postulated by Perdomo-Ortiz, (2006), based on RBV and DC perspective, “to innovate, a firm requires the capability for innovation.” Saunila, Ukko, and Rantanen (2012) and Yang, Lee, and Lin (2012) depicted that innovation capability supports the organizations to get high performance and enables to maintain the competitive advantage. The firms which have better innovation capability are resulting in maximizing the profits by the firm with less or no innovation capability (Tidd, Bessant, & Pavitt, 2001). For that reason, Hurley and Hult (1998) stated that innovation capability is an essential element for the growth of the organization.

### **2.7.1 Definition of Innovation and Capability**

Innovation capability comes from the word 'innovation' and 'capability.' Innovation has been well-defined in numerous diverse ways by scholars and researchers. Schumpeter was the first in defining the concept of innovation. He defined innovation in different aspects, i.e., introducing new products, procedure, structure, methods, and markets (Crossan & Apaydin, 2010). According to him, innovation is revealed in novel outputs, which are different from others.

As thus, innovation promotes critical thinking, which generates creative ideas and explores the possibilities of implementation of those ideas (Waychal, Mohanty, & Verma, 2011). Drucker (1998) further defines innovation as an outcome of an innovative process or to the innovation process itself where it involves a process of identifying opportunities and turning them into working ideas. Crossan and Apaydin (2010) defined innovation as “production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems.”

In general, innovation is considered as the process of applying new concepts and discoveries; these process outcomes in presenting new products and processes (Gloet & Terziovski, 2004). Most of the studies on innovation have regarded innovation as the process of utilizing new technology for new products development. Though, innovation is wider than this definition, as it may be applying a new idea successfully in an organization, no substance where it arises within the organization (Nisula & Kianto, 2013).

Johannessen, Olsen, and Lumpkin, (2001) stressed that newness refers to any material, idea or practice artifact is supposed to be new by the economic unit that adopts an innovation, either a firm or an industry. On the other hand, the capability has much to do the ability of a firm to produce and progress ideas and create opportunities which guarantee the firm's future accomplishments. Capability is the processes and functions that enable a firm to deliver high-quality products and services with speed, efficiency,

and high customer service (Allee, 1999). Amit and Schoemaker (1993) stated that A firm could organize resources to effect the desired end.

Later on, Nothnagel (2008) further added that capability could be distinguished into five categories, namely; technological capability, competitive capabilities, R&D capabilities, organizational capabilities, learning capabilities, manufacturing capabilities, and marketing capabilities.

### **2.7.2 Conceptualization of Innovation Capability**

Innovation capability can be defined from a broad perspective and various levels by firm strategies and market conditions prevailing (Guan & Ma, 2003). Çakar and Ertürk (2010) and Szeto and Elson (2000) stressed that researchers were using the innovation capability terminology interchangeably with innovativeness. Literature reviews show that researchers are applying the terminology of innovation capability, interchangeably with innovativeness. Innovation capability means the degree to which a firm possesses resources and capabilities presumed necessary for innovation, which ultimately enhances the performance (Withers, Drnevich, & Marino, 2011). Wonglimpiyarat (2010) stated that it could be replaced by innovation capacity. Meanwhile, Akman and Yilmaz (2008) argued that innovative capacity could also be used instead of innovation capability.

Similarly, Wang and Ahmed (2004, p. 304) conceptualize innovativeness as “an organization’s overall innovative capability of introducing new products to the market, or opening up new markets, through combining strategic orientation with innovative

behavior and process.” This readiness is based on the culture of the firm in terms of beliefs and values in the organization.

In the same way, Akman and Yilmaz (2008) argued that innovation capability is linked with internal processes, organizational culture, and capability of a firm to manage environmental changes accurately. Romijn and Albaladejo (2002, p. 1054) considered innovation capability as “the skills and knowledge needed to absorb effectively, master, and improve existing technologies, and to create new ones.” In the case of a firm, innovation capability refers to is “its ability to mobilize the knowledge, possessed by its employees, and combine it to create new knowledge, resulting in product and process innovation” (Cakar & Erturk 2010, p. 327).

### **2.7.3 Dimensions of Innovation Capability**

To date, researcher and scholars are still debating that innovation capability is unidimensional or a multi-dimensional construct. Some researches use innovation capability as a unidimensional construct with five items in their studies (Akman & Yilmaz, 2008; Calantone et al., 2002; Lin, 2007). On the other side, some researchers observed that innovation capability by nature is a multi-dimensional construct (Guan & Ma 2003; Lawson & Samson, 2001; Yam, Lo, Tang, and Lau, 2011). Consequently, several constructs can be used to measure innovation capability, basically depends on the objective of the study as innovation capability is interchangeable with constructs such as innovation and innovation performance. For a better understanding of innovation capability measurement, the researcher has summarized the measurements in the following table 2.3

Table 2.3  
*Dimensions for Innovation Capability*

<b>Author (Year)</b>	<b>Construct</b>	<b>Indicators</b>
Johannessen, Olsen, and Lumpkin (2001)	Firm innovativeness	New product New services New method of production Opening new market New sources of supply New ways of organizing
Wang and Ahmed ( 2004)	Organizational innovativeness	Product innovativeness Process innovativeness Market innovativeness Strategic innovativeness Behavioral innovativeness
Ibrahim, Zolait and Subramanian (2009)	Organizational innovativeness	Process orientation Market-based orientation Technology orientation Product orientation Strategic orientation
Lin, Chen, and Chiu (2010)	Innovation capability	Product Process Administrative Marketing
Gunday, Ulusoy, Kilic, and Alpan (2011)	Type of innovation	Service innovation
Rujirawanich, Addison, and Smallman (2011)	Innovation	Product innovation Process innovation Marketing innovation Organizational innovation
Gallego-Alvarez, Prado-Lorenzo and Garcia-Sanchez (2011)	Innovation	Product innovations Process Innovations

From the above table, it has been concluded that innovation capability is a multi-dimensional construct. Different dimensions of innovation capability have stated by various researchers, but for this study, innovation capability dimensions are adopted from Wang and Ahmed ( 2004), which comprise of product innovativeness, process innovativeness, market innovativeness, strategic innovativeness, and behavioral

innovativeness. Product innovativeness is defined “as the novelty and meaningfulness of new products introduced to the market at a timely fashion.” Market innovativeness is defined “as the newness of approaches that companies adapt to enter and exploit the targeted market.” Process innovativeness is defined “as the introduction of new production methods, new management approaches, and new technology that can be used to improve production and management processes.” Additionally, behavioral innovativeness is defined “as the demonstration through individuals, teams and management enable the formation of an innovative culture, the overall internal receptivity to new ideas and innovation.” Meanwhile, strategic innovativeness is defined “as the ability to manage ambitious organizational objectives, and identify a mismatch of these ambitions and existing resources to stretch or leverage limited resources creatively” (Catherine Wang & Ahmed, 2004).

#### **2.7.4 Innovation Capability and Performance**

Various scholars and researchers stressed that one of the firm’s vital resources and capabilities is innovation capability and it has a significant effect on firm’s performance (Farrukh, Butt, & Mansori, 2015; Hassan, Malik, Hasnain, Faiz, & Abbas, 2013; Purwanto & Raihan, 2016; Saunila, Pekkola, & Ukko, 2014; Saunila, Pekkola, et al., 2014; Saunila, Ukko, & Rantanen, 2014; Ul Hassan, Malik, Hasnain, Faiz, & Abbas, 2013). Robust findings show a significant and positive relationship between innovation capability and firm performance (Annavarjula et al., 2012; Aryanto et al., 2015; Hartono & Sheng, 2015; Kafetzopoulos, Dimitrios Psomas, 2015).

Another study was conducted by Balan and Lindsay (2010) in the hotel industries in Australia. They concluded a significant relationship between innovation capability and hotel performance. The study also revealed that variations in innovative capabilities amongst the sample of hotels described roughly 29% differences in their performance. Another study was conducted by Kraus, Pohjola, and Koponen (2012) on the business firm in Finland. They collected the data from a sample of 533 businesses and further concluded that organizational innovation is positively associated with corporate success in family businesses.

As for the study conducted by Yang (2012) in Taiwan, who examined the innovation capability and logistic service capability on firm performance for ocean freight forwarders, the author postulated that there is a significant relation of innovation capability on firm performance. Correspondingly, the study conducted by Hafeez, Shariff, and Lazim (2013) tested the effect of innovation on the performance of Pakistani SMEs. The results specify that technological innovation as innovation capability has a positive influence on firm performance; whereas the effect of non-technological innovation is insignificant on firm performance. Further, a study was also conducted in the pharmaceutical sector of Iran by Dadfar et al. (2013) to recognize the influence of enablers of innovation capability on firm performance. The results of that study postulated that enablers of innovation capability have a positive impact on firm performance.

In the same way, the research by Hassan, Shaukat, Nawaz, and Naz (2013) to explore the effects of innovation types (product, marketing, organizational, and process

innovation) on different areas of the firm of Pakistan revealed the positive impact of innovation types on firm performance. The results of different research studied are summarized in Table 2.4.





Table 2.4

*Summary of the Research Studies of the Relationship between Innovation Capability and Performance*

<b>Author (Year)</b>	<b>Independent Variable</b>	<b>Dependent variable</b>	<b>Results</b>
Jaruzelski and Dehoff (2005)	R&D investment.	Financial performance.	The percentage of an organization's revenue that it spends on R&D has no discernible relationship with most measures on financial performance.
Chaveerug and Ussahawanitchakit (2008)	Innovation capability: i. Innovativeness. ii. Capability to innovate iii. The willingness to change.	Organizational performance: i. Market ii. Performance. iii. Financial performance iv. Product/service.	Innovation capability has a strong influence on Organizational performance.
L.I Qiang & CHEN Yong (2011)	Innovation capability: i. Technology ii. Organization iii. Strategy iv. organizational climate v. manufacturing vi. marketing	NPD performance	All dimension has a significant effect on NPD performance of SMEs of China

Continue

Table 2. 4 (Continue)

*Summary of the Research Studies of the Relationship between Innovation Capability and Performance*

<b>Author (Year)</b>	<b>Independent Variable</b>	<b>Dependent variable</b>	<b>Results</b>
Madan nnavarjula, Anup Mandialath & Ramesh Mohan (2012)	technological innovation capabilities	International performance	Significant effect of technological innovation capabilities on International Performance
Dimitrios Kafetzopoulos & Evangelos Psomas(2013)	Innovation capability	firm's performance: i. product quality	Innovation capability directly contributes to product quality and operational performance. No direct influence on financial performance
Minna Saunila (2014)	Innovation capability	firm's performance: i. financial performance ii. operational performance	Innovation capability has more influence on financial performance then operational performance.
Mohammad Nura Ibrahim Naala, Norshahrizan Nordin, & Wan Ahmad Wan Omar, 2017	Innovation capability	SMEs Performance	Innovation capability has a significant positive relationship with SMEs performance
Hamidi & Shams Gharneh, (2017)	Innovation capability	Firm performance	Innovation capability has a significant effect on firm performance

Table 2. 4 (Continue)

*Summary of the Research Studies of the Relationship between Innovation Capability and Performance*

<b>Author (Year)</b>	<b>Independent Variable</b>	<b>Dependent variable</b>	<b>Results</b>
Park, Kim, & Paik (2018)	Innovation capability	SMEs Performance	Innovation capability significantly influence the SMEs performance
(Najafi-Tavani, Najafi-Tavani, Naudé, Oghazi, & Zeynaloo, 2018)	Innovation capability i. Product Innovation capability ii. Process Innovation capability.	New product performance	Product and Process innovation capability affects the new product performance



Koc and Ceylan (2007) debated if there is any certain feature of large firms to innovate more and also shows better performance. They are many resources for innovation-related activities such as large R&D laboratories and financial resources for R&D. In the perspective of SMEs, innovation has gained tremendous interest and attention because of the key role that SMEs play for socio-economic and technological growth and development in the context of developed as well as developing countries (Audretsch & ACS, 1988). Even though SMEs characteristically encounter substantial resource limitations, they often emerge as thriving innovators. Smaller, flexible organizations boosted by entrepreneurial aspirations facilitate innovative processes in SMEs (Nooteboom, 1994). SMEs in continuous pursuit of innovation can reap several benefits.

A study by Roper and Love (2002), made a comparison of manufacturing firms of the UK and Germany on the relationship between innovation capability and firm performance in foreign markets. The results of that study revealed that there was a negative relationship in German firms between innovation capability and firm performance because, as compared to the UK firms, German firms inventors failed to exploit the spill-over effects of innovation regarding the internal capability of enterprises' enhancement and resource endowments. Darroch (2005) conducted a study in New Zealand on medium to large sized companies and found the insignificant result between innovation capability and firm performance. Ultimately, much of the studies tested the relationship between innovation capability and performance were directed in the context of big firms.

Surprisingly, various researches have been carried out in the developed countries to define the relation of performance and innovation capability which are the United States of America (Bommer & Jalajas, 2002; Snider et al., 2009; Wolff & Pett, 2006), the Canada (Bommer & Jalajas, 2002; Snider et al., 2009; Ifinedo, 2011), England (von Hippel et al., 2012), the Netherlands (de Jong & Vermeulen, 2006), New Zealand (Clark, 2010), Turkey (Murat Ar & Baki, 2011) and Europe (Parida et al., 2012). In the developed countries, the policymakers and scholars have designed the theoretical model to explain the indicators of innovation capability that can be implemented in SMEs (Haroon Hafeez et al., 2013).

As conclusion, irrespective of the conflicting results (Armour & Teece, 1978; Rogers, 2003; Darroch, 2005), most of the research studies have confirmed the significant positive link between innovation capability and firm performance (Agyapong & Acquah, 1991; Annavarjula et al., 2012; Balslev & Synthesis, 2015; Hassan, Malik, et al., 2013; Kafetzopoulos, Dimitrios Psomas, 2015; Cass & Sok, 2014; Purwanto & Raihan, 2016; Saunila, Pekkola, et al., 2014, 2014; Sepúlveda & Vasquez, 2014).

Consequently, the firm's innovative capabilities are one of the important elements in fostering innovation that leads to better firm performance. As postulated by Perdomo-Ortiz, (2006), in taking the point of the RBV perspective, for a firm to innovate, the firm requires the capability for innovation. Past literature highlighted that if firms want to improve their competitiveness and performance through innovation, then innovation capability becomes one of the important elements that should not be neglected (Dooley,

Kenny, and O’Sullivan, 2017; Dadfar, Dahlgaard, Brege, & Alamirhoor, 2013; Yang, 2012).

Scholars such as Barney (1991) and Panayides (2006) agree that innovative capabilities enable firms to improve the level of competitiveness and achieve higher performance. Furthermore, the study by Dooley, Kenny, and O’Sullivan (2017) for example, proves that the organization which has greater innovation capability achieves more profits by the sales as compared to those firms that focus less on innovation capability. According to the discussion mentioned above, innovation capability is one of the important elements that contribute to attaining the competitiveness of the firms, thus contributing to its performance. Therefore, it is quite significant to further inspect the link between firm performance and innovation of SMEs in a developing country like Pakistan. Hence, this can be hypothesized as follows:

**Hypothesis 1:** There is a significant relationship between innovation capability and SMEs performance.

## **2.8 Intellectual Capital**

### **2.8.1 Definition of Intellectual Capital**

John Kenneth Galbraith, in 1969, first conceptualized the terminology “Intellectual Capital” (Edvinsson & Sullivan, 1996; Bontis, 1998; Hsu & Wang, 2012; Huang & Jim Wu, 2010). He supposed that intellectual capital is beyond real intellect but somewhat combined in intellectual action. After that, intellectual capital has come to be a wider

research subject matter because of the growth of the new economy, which is centered on knowledge and information (Petty & Guthrie, 2000). “A set of intangibles assets encompassing competencies, resources, and capabilities that surge firm performance and generate company’s value is viewed as intellectual capital” (Roos & Roos, 1997). Intellectual capital is defined as the asset of intangibles (resource capabilities and competence) that drive to achieve organizational performance and value creation (Bontis, Chua, & Keow, 2000). Youndt and Snell 2004 stated that the use, development, and performance influence of intellectual capital had augmented significantly over the years. Roos and Roos (1997) stressed that intellectual capital is an essential element for firm sustainable effectiveness and a critical resource.

Similarly, Drucker (1999) and Huang and Jim Wu (2010) stated that nowadays the world is transforming from a production-based economy to a knowledge-based economy, so it is a crucial element for the organizational success. Concerning that, Khalique et al. (2015) opined that the ideas are transforming into the outcome (products, and services) in a knowledge-based economy. Drucker (1999) also stressed that in the modern era; the main managerial challenge is the productivity of knowledgeable workers to attain competitive advantages. The organization's ability is a crucial element for knowledge productivity. Similarly, Khalique, Shaari et al. (2011) opined that in the knowledge-based economy, IC is the acute success factor for the firms. Meanwhile, Huang and Wu (2010) stressed that intellectual capital is identified as to contribute to the succession for SMEs.

Hence, intellectual capital states of being strategic intangible resources and can be considered as all intangible resources that are accessible to an enterprise, that delivers a comparative advantage, and can able to harvest future long-lasting benefits (Khalique et al., 2015). There are adequate general definitions of intellectual capital in the literature, and not only one well-established definition amongst researchers and scholars existed. This is because of the different established definition of intellectual capital and different approaches to determining the intellectual capital (Beattie & Smith, 2013; Nahapiet, 2011; Zhou & Fink, 2003). Table 2.5 summarized the various definitions of intellectual capital taken from numerous literature.

Table 2.5  
*Definition of Intellectual Capital*

<b>Author (Year)</b>	<b>Definition of Intellectual Capital</b>
Broohing (1996)	IC is the term given to combined intangible assets which enable the company to function
Edvinsson and Malone (1997)	The possession of the knowledge, applied experience, organizational technology, customer relationship, and professional skills that provide Skandia with a competitive edge in the market.
Stewart, 1997	Package useful knowledge that includes organizations processes technologies, patents, employees, skills, and information about customers, supplier, and stakeholder.
Bontis (1998)	The pursuit of effective use of knowledge (the finished product) as opposed to information (the raw material)
Sveiby, (1998)	It is the knowledge, experience, brainpower of employee as well as knowledge resources, stored in an organizations databases system processes, culture and philosophy
Bontis, (1999)	The collection of intangible resources and their flows.
Subramaniam & Youndt, (2005)	as a knowledge asset or knowledge resource for firms
El-Bannany (2008)	Knowledge and experience which skilled staff can use to gain a competitive advantage for the company by applying some creative strategies



**Table 2.5 (Continued)**

*Definitions of Intellectual Capital*

<b>Author (Year)</b>	<b>Definition of Intellectual Capital</b>
Sharabati, Jawad and Bontis (2010)	The wealth of ideas and the ability to innovate
Andreeva & Garanina (2016)	People and their knowledge, expertise, ability to innovate, licensing agreements, organizational culture, and other intangible assets have been widely demonstrated to be the most important assets for a company's development.”

So, for this study is concerned, intellectual capital is defined as an asset of intangibles (resource capabilities and competence) which drive organizational performance and value creation. Intellectual capital is an intangible resource which is multi-dimensional construct (such as; human capital, social capital, and organizational capital). These three elements are the main dimensions which ultimately form the Intellectual capital. The following section describe the details of intellectual capital dimensions.

### **2.8.2 Dimensions of Intellectual Capital**

Recently, the global business environment is becoming more dynamic, competitive, and highly complex. These challenges have forced businesses to differentiate between the more challenging approach of creating values and the conventional way of monitoring operations. To meet these demands in a globally competitive environment, organizations must seriously consider the significance of intellectual capital as the primary element for maintaining the competitive superiority in the organizations (Youndt & Snell, 2004). Ting and Lean, (2009) stressed that although physical assets are crucial for the organizations' operations, intellectual capital ultimately determine the value of relationships and services to the clients.

Previous studies illustrated that many scholars have different views about the components of the IC. They categorized IC into three dimensions; structural capital, human capital and relational capital (Aslam, Makki, Nawaz, & Latif, 2014; Bharathi, 2016; Hsu & Wang, 2012; Inkinen, 2015; Khalique et al., 2015; Ridhuan, 2015; Scafarto, Ricci, & Scafarto. Francesco, 2016; Tsakalerou, 2015; Ullah, Aziz, & Yousaf, 2015; Wahid & Mahm, 2013). However, regardless of the variances in intellectual capital definitions, researchers and scholars concluded that by nature, intellectual capital is a multi-dimensional construct, it comprises “knowledge that is held by the individual as well as the knowledge that is stored in organizational systems, networks, processes and databases” (Youndt & Snell, 2004). An additional pool of scholars and researchers view intellectual capital as same as to the concept of ‘knowledge assets’ and ‘knowledge capital’ and express it as the amount of all knowledge utilized by firms to attain competitiveness (Hsu & Sabherwal, 2011; Simsek & Heavey, 2011; Subramaniam & Youndt, 2005; Youndt & Snell, 2004). In addition to human capital, organizational capital, and social capital are the three main acknowledged components of intellectual capital.

### **2.8.2.1 Human Capital**

The first element of Intellectual capital is human capital. During the industrial revolution, the employees were taken as the essential elements of machines and processes. At the start, less value was given to the workers, but the idea was changed after World War 2 because workers play an important role in to make the business successful and to make firm compete in the market (Dietz, 1975; Khalique et al., 2015).

What is more, as human capital is becoming more important for organizations, Human resource tasks plays an important role is forming formulating the firm strategies and investments made on the human capital are necessary for the firm to survive (Vargas-Hernández & Noruzi, 2010). Another important aspect of human capital is its knowledge creation. The employees can generate ideas which bring success to eh business operations, and the procedures can be streamlined more over the business flourishes.(Rodgers & Housel, 2009; Roos & Roos, 1997). To be successful, organizations must instill new ideas that can be utilized by the employees in the creation of new products and bring innovation (Rodgers & Housel, 2009).

Other researchers define human capital as the knowledge and skills (Joshi, Cahill, & Sidhu, 2010; Martínez-Román, Gamero, & Tamayo, 2011; Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011; Rodgers & Housel, 2009; Roos & Roos, 1997). It represents the collective capabilities of a firm's workforce that determine performance (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). Different individual has a different level of understanding and different quality of knowledge where a better quality of human capital implies better in problem-solving and value creation skills, thus resulting in better performance results.

### **2.8.2.2 Organizational Capital**

The second element of intellectual capital is organizational capital. Organizational capital states to the “established knowledge” and “collected experiences” (e.g., explicit knowledge) conserved in and utilized from manuals, databases, processes, patents,

systems, and structures (Bontis, 1996). As proposed by Martnez-Torres (2006) and Bontis, (1996), organizational capital is a structural capital concerning knowledge rooted along with procedures of the firm. Nevertheless, Subramaniam and Youndt (2005) and Youndt, Subramaniam and Snell (2004) discussed that organizational capital turns well in clarifying it from the time when institutionalized knowledge was leftward in the firm when employees left for home. Therefore, organizational capital is possessed by the firm. The components of organizational capital comprise information systems, procedures, infrastructure, and organizational culture (Roos & Roos, 1997).

### **2.8.2.3 Social Capital**

Social capital is the third element of intellectual capital. It is viewed by way of the knowledge implanted inside, accessible through, and apply by dealings along with individuals and their interrelationships networks (Bontis, 1998). Additionally, social capital includes knowledge in groups and networks of people not narrowed to the internal knowledge swapped between employees but likewise stretched towards connotation with external parties associated with firms like suppliers, partners, and customers (Reed, Lubatkin, & Srinivasan, 2006; Youndt, Subramaniam & Snell 2004). Social capital of the firm progresses the value of team-work and productivity of information exchange among team members (Bontis, 1998; Subramaniam & Youndt 2005).

### 2.8.3 Intellectual Capital and Performance

As stressed by Delgado-Verde (2011) for the existence of a firm, the main determinants are knowledge. This factor drives the interest of scholars to study intellectual capital and firm performance (Hsu & Wang, 2012; Scafarto, Ricci, & Scafarto. Francesco, 2016; Sumedrea, 2013; Tsakalerou, 2015; Tsao & Hung, 2014). Previous studies conducted by Jo and Lee (1996), Sambasivan, Abdul, and Yusop (2009) and Littunen and Niittykangas (2010) revealed a significant positive relationship between knowledge of entrepreneur and firm performance. Also, other studies conducted by Celenza and Rossi (2014), Emmanuel (2016) and Ridhuan (2015) stated that HC, SC, and RC have a positive influence on firm performance.

However, before archival evidence, some inconsistencies related to intellectual capital on firm performance relationship also exist. The inconsistency refers to the conflicting results in the relationship between both constructs (Lee & Mohammed, 2014; Ozkan, Cakan, & Kayacan, 2016). Some studies debated that there is insignificance relationship between intellectual capital and firm performance (Gho, 2005; Barathi Kamath, 2007; Lee & Mohammed, 2014; Ozkan, Cakan, & Kayacan, 2016). For example, Hang (2009) found that HC is negatively associated with some indicators of performance. In contrast, Kamukama, Ahiauzu, and Ntayi (2010) and Phusavat, Comepa, Sitko-Lutek, and Ooi (2011) concluded that HC is positively associated with performance. On the other hand, Joshi, Cahill, and Sidhu (2010) found that SC and RC have less or no impact on overall firm performance.

For a better view, the researcher has provided a summary of past researches about intellectual capital and performance relationship in Table 2.4. Nevertheless, despite previous contributions, the association among intellectual capital and performance remains unclear. Concerning that, two questions are raised: Are there any other factor that mediates or moderated the effect between both constructs? Do the components of intellectual capital directly influence performance? These questions indicate that the gap exists between intellectual capital and its components, and firm performance, and this study looks into the gap.



Table 2.6

*Summary of Research Studies on Relationship of Intellectual Capital and Performance*

<b>Author Year</b>	<b>Independent variable</b>	<b>Dependent Variable</b>	<b>Findings</b>
Wang and Chang (2005)	Intellectual capital ( innovation capital, process capital and customer capital)	Business Performance	All dimension of Intellectual capital has a significant effect on Business Performance
Ting And Lean (2009)	Intellectual Capital(HCE, SCE,CEE)	Financial performance	There is a significant relationship between HCE and CEE on financial performance SCE has a negative effect on performance
Sharabati, Jawad and Bontis (2010)	Intellectual Capital ( HC, SC, and RC)	Business Performance	Intellectual capital has a significant impact on Boniness performance
Karnukama, Ahiauzu, and Ntayi(2010)	Intellectual Capital ( HC, SC, and RC)	Financial performance	There is a positive association between HC, SC, RC and Financial performance
Joshi, Cahill, and Sidhu (2011)	Intellectual Capital (HCE, SCE, CEE)	Assets Performance( Value added and shareholder equity)	HCE has a significant impact on the VA.” SCE and CEE has little or no impact on overall performance
Wah Chu, Chan and Wu (2011)	Intellectual Capital ( HC, SC, and RC)	Corporate performance: i. Market Valuation (MB) ii. Profitability (ROA) iii. Productivity (AT0)	HC has no impact on AT0. SC was negatively associated with AT0 with very high significance. HC, SC, and RC has a significant impact on MB and profitability

Continue

Table 2. 6 (Continue)

*Summary of Research Studies on Relationship of Intellectual Capital and Performance*

<b>Author Year</b>	<b>Independent variable</b>	<b>Dependent Variable</b>	<b>Findings</b>
Clarke, Seng, and Whiting (2011)	Intellectual Capital ( HC, SC, and RC)	Financial performance. i. ROA ii. ROE iii. Revenue growth	There are significant relationships between HC, SC, RC and Financial performance
Phusavat, Comepa, Sitko-Lutek and Ooi (2011)	Intellectual Capital ( HC,SC and Innovation capital)	Firm performance:	Intellectual capital contributes positively to Firm performance
Irawanto,Gondomono,Hussein, 2017	Intellectual Capital	company performance	Intellectual capital has a significant effect on firm performance
William, Whitney, LeAnne, Michael ( 2017)	Intellectual Capital(HC,OC)	SMEs Performance	Intellectual Capital(HC, OC) has a significant effect on SMEs Performance
Marina, Jasminka, David, Jadranka (2018)	IC (human, structural, and relational)	SMEs Business Performance	IC (human, structural, and relational) has a significant effect on SMEs Business performance
Khalique et al. (2018)	IC (human capital, customer capital, structural capital, social capital, technological capital and spiritual capital)”	SMEs Performance	IC (human capital, customer capital, structural capital, social capital, technological capital and spiritual capital) has significant effect on SMEs performance



Bontis et al. (2000) conducted a study with 107 respondents in Malaysia and concluded that intellectual capital had shown a significant and practical impact on firm business performance irrespective to industry or sector in his results.

Also, a study was conducted by Peña (2002) in the Basque region of Spain, and data were gathered from 114 out of 364 startup firms. According to the results of his study, organizational capital, human capital, and relational capital is significant and allied positively to venture performance.

Another study was conducted by Engström, Westnes, and Furdal Westnes (2003) in the hotel industry in Norway. He collected data from 13 hotels chain of Radisson SAS Hotels and Resorts and stated that it is likely to assess intellectual capital in a hotel chain. Research outcomes have shown that it is valuable to evaluate a hotel's intellectual capital because of its possible relationship with firm performance.

On top of these, another research was conducted by Chen, James Lin, and Chang (2006) in Taiwan in which data were collected by questionnaire from 159 respondents. The results showed a significant positive relationship between three types of intellectual capital. i.e., structural capital, human capital, and relational capital with new product development performance.

Also, there was another study conducted by Joshi, Cahill, Sidhu, and Kansal (2013) in the Australian baking sector. The data was gathered from 11 banks operating in Australia and proves that "VAIC" has a positive impact on human costs and the value-adding made by the Australian banks. Result also indicated that human capital

efficiency showed higher efficiency than structural capital efficiency and capital employed efficiency in all Australian banks.

Furthermore, another study was conducted by Shaari et al. (2011) in the Pakistani banking sector. The data was acquired from commercial banks' annual reports from the duration of 2005- 2009. The result highlighted that most of the banks revealed reasonable intellectual performance. In addition to that, Shaari et al. (2011) also conducted another study and this time on pharmaceutical manufacturing companies gathering data from 31 firms. The result postulated that the intellectual capital components (HC, CC, and SC) have a significant positive effect on firm performance of pharmaceutical companies in Pakistan.

Meanwhile, an additional study was conducted by Khalique, Abdul Nassir Shaari, Isa, and Ageel (2011) in two cities in Pakistan; namely Gujrat and Gujranwala. The results of that study concluded that HC, SC, and CC have a significant positive effect on firm performance. In the same way, another study was also conducted by Rezaian and Naeiji (2012) on the SMEs sector of Pakistan. The data was collected from 129 SMEs by questionnaires. The results postulated that intellectual capital has a positive effect on organizational performance.

Firms' resources generally can be categorized as tangible resources and intangible resources. An intangible resource in the firms includes competencies and capabilities that enhance the firm's performance thus creating value for the firm (Khalique et al., 2018; Roos & Roos, 1997; Subramaniam & Youndt, 2005). Moreover, intellectual capital is recognized as one of the firm's internal capabilities that focuses on its ability

to innovate, which leads to a significant impact on the growth of the firm as its competitive advantages (Hsu & Wang, 2012; Lapina, 2016; Tsakalerou, 2015). This factor drives the interest of scholars to study intellectual capital and firm performance (Radulovich, Javalgi, & Scherer, 2018; Hsu & Wang, 2012; Scafarto, Ricci, & Scafarto. Francesco, 2016). Furthermore, previous studies revealed a significant relationship between knowledge of entrepreneur and firm performance (Khalique et al., 2018; Sambasivan, Abdul, & Yusop, 2009; Littunen & Niittykangas, 2010). Through the review of literature as mentioned above, it is clear that relationship exists among intellectual capital and firm performance but mostly in the context of large firms. So there is a gap in the studies related to small and medium-sized firms as many researchers ignored this context. Hence, it can be hypothesized that:

**Hypothesis 2:** There is a significant relationship between intellectual capital and SMEs performance.

## **2.9 Absorptive Capacity**

### **2.9.1 Definition of Absorptive Capacity**

The concept was first developed in the 1980s, with the implementation of new business knowledge to achieve a competitive edge. Cohen has contributed first that is largely acknowledged as the formation paper. They define absorptive capacity as “the ability of a firm to recognize the value of new external information, assimilate it, and apply it to commercial ends.”

Cohen and Levinthal (1990) proposed the utmost broadly quoted absorptive capacity definition by indicating as, “Absorptive capacity refers not only to the acquisition or assimilation of information by an organization but also the organization’s ability to exploit it.” Thus, a firm’s absorptive capacity does not depend on the direct interface of the organization by the external environment. It is also influenced by the transferals of knowledge around and within subunits that might be eliminated from the original point of entry. In theory, routines within the firm to organize and value knowledge newly acquired in the course of business activity helps it to embellish and refresh its knowledge stocks (Hughes et al. (2017).

To recognize the firm’s absorptive capacity resources, we emphasise on the communication structure between the external environment and the organization, along with amongst the organizational subunits, and also on the character and dispersal of capability within the organization from this description, research linked to “an ability of a firm to acquire, transfer and assimilate new ideas and then set them into tangible actions within the firm can be viewed as falling within the conceptual foundation established by Cohen and Levinthal” (1990, p. 128).

More recently, Zahra and George (2002) mentioned re-conceptualized absorptive capacity as “a set of organizational routines and processes.” Scholars further distinguish two types of absorptive capacity—potential and realized, wherever the first one consists of acquisition and assimilation and the second one of transformation and exploitation. Zahra and George (2002) provided an overall model that conceptualizes absorptive capacity as a dynamic construct with four fundamental organizational capabilities

which are, (i) Acquisition refers to “firm’s capability to recognize, diagnose and obtain specific knowledge that is externally generated and considered significant to its activities.” (ii) Assimilation denotes “the firm’s capability to process, analyze, explain, and comprehend the information, knowledge, and skills acquired from external sources.” (iii) Transformation, basically refers to “firm’s capability to integrate the newly acquired knowledge with the existing knowledge through a bundle of procedures, technologies, and resources that facilitate utilization of integrated knowledge” and finally (iv) exploitation, essentially indicates “firm’s capability to implement the transformed knowledge into its products and processes to maintain continuous growth”

In addition to that, Zahra and George (2002) defined absorptive capacity as a dynamic capacity rooted in the firm processes and routine. They grouped four dimensions of absorptive capacities into two broad categories, which are potential capacities, (knowledge acquisition and assimilation) and realized capacities (transformation and exploitation of knowledge). The extended absorptive capacity model proposed by Zahra and George (2002) maintained that prior knowledge, which is conforming to the experience of the firm, is crucial for the development of absorptive capacity. Furthermore, they put stress on other factors, for example; corresponding external knowledge and external knowledge sources, are similarly crucial.

Moreover, Lichtenthaler and Lichtenthaler (2009) indicated that there are two main functions of absorptive capacity, such as (1) creating wealth, and (2) protecting the interest of shareholders. Absorptive capacity facilitates the threshold firm to make sense

of external knowledge, understand it, associate it with existing knowledge, and successfully exploit it commercially. This capacity enables exploration activities that increase the firm's innovativeness that results in value creation.

### **2.9.2 Dimensions of Absorptive Capacity**

Several studies available now approved absorptive capacity as a “multi-dimensional” construct (Cohen & Levinthal, 1990; Zahra & George, 2002; Peter, Lane & Lubatkin, 1998; Todorova & Durisin, 2007). According to Cohen and Levinthal (1990, p. 128), “absorptive capacity is an ability to recognize the value of new information, assimilate it, and apply it to commercial ends.” From this definition, the authors identify three main dimensions. The first is “the ability to recognize the value of new external knowledge.” Second, “the firm should be in a position to assimilate the new external knowledge.” After recognizing the useful external factors, it must be aligned into their internal process. If both firms have the same capabilities and systems, then it is easier for one organization to instill the knowledge from the other. Third, the organization must be able to implement the new external knowledge (Zahra & George, 2002). By gaining the experience then firms can easily solve the problems thus is easy to initialize the data to inspect adaptive skills.

Zahra and George (2002, p. 198) presented four dimensions based on absorptive capacity conceptualization. These authors specify that absorptive capacity “is a set of organizational routines and strategic processes by which firms acquire, assimilate, transform, and exploit knowledge for value creation.” Therefore, the acquisition is the first dimension. This dimension was initially recognized by Cohen and Levinthal (1990,

p. 128) “as the recognition of value, though even though other researchers used the term acquisition frequently.” This term was then re-conceptualized by Zahra and George (2002), stressing not only on the evaluation of the use of the knowledge but also the transformation from one to another firm.

To add, assimilation is the second dimension. In this stage, the goal of the firm is to apprehend the external knowledge by its particular routines. Next, transformation is the third dimension. Transformation capacity is the implementation and transformation of the new knowledge that is acquired. It is followed to reconstruct the new goals by combining the existing and new knowledge

In addition, exploitation is the fourth and final dimension. For a firm, this dimension is strategic that establishes the results after the improvisation of the new transformed knowledge. Exploitation is related to the development of the routine to apply the knowledge, to develop new procedures and systems (i.e., new organizational forms) and refining entirely or prevailing competencies. Each dimension is crucial in the way of how absorptive capacity influences the performance. The above four dimensions are also classified into two subsets; i.e., potential, and realized absorptive capacity.

The degree to which an organization involves in “knowledge acquisition activities assimilates acquired information into existing knowledge, transforms the newly adapted knowledge, and commercially exploits the transformed knowledge to its competitive advantage”(Flatten, Engelen, Zahra, & Brettel, 2011). According to Flatten et al. (2011), absorptive capacity is a firm’s capability which consists of

acquisition, assimilation, transformation, and exploitation. For this research, the researcher is using the dimension of absorptive capacity, which was elaborated by Flatten et al., (2011). The differences in the researchers' contributions are sum-up accordingly in Table 2.7.

Table 2.7  
*Main Dimensions of Absorptive capacity*

<b>Author</b>	<b>1<sup>st</sup> dimension</b>	<b>2<sup>nd</sup> dimension</b>	<b>3<sup>rd</sup> dimension</b>	<b>4<sup>th</sup> dimension</b>
Cohen and Levinthal (1990)	Recognize the value	Assimilate	Commercialize	
Heeley (1998)	Acquire	Disseminate		
Lane and Lubatkin (1998),	Recognize the value	Assimilate	Commercialize	
Lane, Salk, and Lyles (2001)	Understand	Assimilate	Apply	
Zahra and George (2002)	Potential		Realized	
Jansen, Van Den Bosch, & Volberda, (2005)	Acquire	Assimilate	Transform	Exploit
Todorova and Durisin (2007)	Potential		Realized	
	Recognize	Acquire	Assimilate or Transform	Exploit
Lichtenthaler (2009)	Exploratory learning, Recognize and Assimilate	Transformative learning, Maintain and reactive	Assimilate or transform, Exploitative learning, transmute, and apply.	Exploit

### 2.9.3 Absorptive Capacity and Performance

Cohen and Levinthal (1989) introduced the absorptive capacity concept, as the key learning process, which includes acquiring, assimilating, and exploiting knowledge.



The concept was defined as “the ability of a firm to recognize new external information, assimilate it, and apply it to commercial ends.” Zahra and George’s (2002) reconceptualization identified two major dimensions of the concept. One dimension is potential absorptive capacity, which is divided into two sub-dimensions, namely acquisition and assimilation. The other dimension is realized absorptive capacity which comprises knowledge transformation and exploitation. Accordingly, absorptive capacity is a concept with four sub-dimensions.

This is further reiterated by Fosfuri, and Tribo (2008) who acknowledged that absorptive capacity in the developed economy is denoted as the important factor or capability Nowak, (2013) stated that absorptive capacity plays an integral part in achieving firm’s competitiveness. In the previous researches, the absorptive capacity was observed in many performance models, and mostly resulted as significant relation with the firm performance (Ali, Seny Kan, & Sarstedt, 2016; Hurmelinna-Laukkanen, Olander, Blomqvist, & Panfilii, 2012; Zahra & George, 2002; Bolívar-ramos, García-Morales, & Martín-Rojas, 2013; Nagati, 2012; Herath & Mahmood, 2014; Kostopoulos, Papalexandris, Papachroni, & Ioannou, 2011; Lee, Liang, & Liu, 2010; Liao, Liu, & Wang, 2012; Tseng, Pai, & Hung, 2011; Umrani et al., 2015; Wang & Han, 2011).

In fact, a study conducted by Lane, Salk, and Lyles (2001) on international joint ventures found that assimilation of knowledge has an insignificant influence on performance. However, knowledge exploitation is also viewed as positively related to performance. Hayton and Zahra (2005) investigated the absorptive capacity and human

capital of small-scale technology firms. The findings concluded that the top management is a vital source of knowledge and thus positively affect both absorptive capacity and skills of acquiring more resources. Yeoh (2009) found that the level of realized absorptive capacity of the supplying firms directly influences strategic performance.

Similarly, Peter, Lane, Koka, and Pathak (2006) conducted a study with a thorough investigation of 289 research papers published regarding absorptive capacity from 1991 to 2002. They concluded that the absorptive capacity levels could invigorate the base of knowledge of the firm. Muscio (2007) investigated the relationship between absorptive capacity and SME alliances with other universities, firms, and technology-transfer institutions. Absorptive capacity in this study was measured based on research and development intensity and human resources. The results confirmed that absorptive capacity enhances the collaboration with external organizations that may finally lead to the growth of the firm. Patel, Kohtamäki, Parida, and Wincent (2015) found that innovative performance of the firm and absorptive capacity show a positive relationship and the performance is moderated by entrepreneurial orientation.

Meanwhile, Lichtenthaler (2009) proved that absorptive capacity in the forms of exploratory learning and exploitative learning enhances organizational success. Bergh and Lim (2008) studied the absorptive capacity and financial performance of the firms with more experience and high sell-offs. A positive relationship between two variables was confirmed.

In another study, McKelvie, Wiklund, and Short (2005) proved that the mechanisms for acquiring and exploiting knowledge have the most influence on firms' absorptive capacity. Spithoven, Clarysse, and Knockaert (2011) emphasized the benefits of absorptive capacity to use external knowledge for the success of the firms in developing countries. Najafi Tavani, Sharifi, Soleimanof, and Najmi (2013) found absorptive capacity affects both financial and non-financial performance of the firms.

Furthermore, Wang and Horng (2010) investigated the relationships among innovative performance, knowledge acquisition, and absorptive capacity. The study was conducted in the SMEs of the bicycle industry in Taiwan. It was concluded that no moderating effect of absorptive capacity exists in the relationship between knowledge acquisition and performance. However, a positive direct correlation exists between absorptive capacity and performance.

In another case, Rafique, Nawaz, and Evans (2015) conducted a study in the pharmaceutical industry and found positive absorptive capacity, and for validity and generalizability of the absorptive capacity construct in Pakistan, he suggested for empirical investigation on other sectors of Pakistan. Other than, Rehman conducted a study on software companies of two cities of Pakistan (Islamabad and Rawalpindi) and in the finding reflected the negative result of absorptive capacity and employee growth (Rehman, 2015). Another study conducted by Umrani et al. (2015) analyzed the absorptive capacity construct on the banking sector of Pakistan, and concluded a significant result. Table 2.8 displays the summary of some findings of the influence of absorptive capacity on performance.

Table 2.8

*Summary of the Research Studies of the Relationship between Absorptive Capacity and Performance*

<b>Author</b>	<b>IV</b>	<b>DV</b>	<b>Sector/Industry</b>	<b>Result</b>
Chun-Yao Tseng, Da Chang Pai and Chi-Hsia Hung (2011)	knowledge input, knowledge spillover and absorptive knowledge capacity	Innovative Performance	Taiwan IC design firms	Knowledge absorptive capacity has a significant impact on Innovation performance
Konstantinos Kostopoulos, Alexandros Papalexandris, Margarita Papachroni, George Ioannou (2011)	Absorptive capacity	Financial performance and Innovation	Greek Enterprises	Absorptive capacity influence both financial performance and innovation
Bolívar-ramos, María Teresa, García-Morales, Víctor J.Martín-Rojas, and Rodrigo (2013)	Absorptive capacity (Realized and potential)	Organizational Performance	European IT firms	Both realized and potential absorptive capacity has a significant impact on Performance
Nizar Becheikh (2013)	Absorptive capacity	Innovative performance	SMEs of Egypt	Significant effect of Absorptive capacity on Innovation performance
Naqeeb Ur Rehman (2015)	Absorptive capacity	Firm growth( labor productivity)	Software firm of Pakistan	The negative association of absorptive capacity and Frim growth(labor productivity)
Nikolaos Tzokasa, Young Ah. Kim, Hammad Akbar. And Haya Al-Dajani (2015)	Absorptive capacity	Performance	South Korea's semiconductor industry	Absorptive capacity has a significant positive effect on Performance

Continue

Table 2. 8 (Continue)

*Summary of the Research Studies of the Relationship between Absorptive Capacity and Performance*

<b>Author</b>	<b>IV</b>	<b>DV</b>	<b>Sector/Industry</b>	<b>Result</b>
Soo, Christine, Tian, Amy Wei, Teo, Stephen T. T, Cordery and John (2016)	Absorptive capacity (Realized and potential), Intellectual capital and HR Practices	Innovation Performance	Australian Manufacturing firms	Realized absorptive capacity has a significant effect on Innovation performance Potential absorptive capacity has no significant effect on performance
Murad Ali, Konan Anderson Seny Kan and Marko Sarstedt (2016)	Absorptive capacity (acquisition, assimilation, transformation, and exploitation)	Performance	South Korean SMEs	Transformation dimension has no significant effect on performance; Other three dimension has a significance impact on performance
Xueyuan Liu, Haiyun Zhao and Xiande Zhao (2017)	Absorptive Capacity (Knowledge Acquisition, Assimilation Exploitation)	Business performance	manufacturing firm Chinese	Absorptive capacity has a significant effect on Business performance
Alexandra França and Orlando Lima Rua (2018)	Absorptive capacity	Export performance	Portuguese small and medium enterprises (SMEs)	Absorptive capacity has a significant effect on Export performance
Emine Kalea, Ahmet Aknarb and Özlem Başarc (2018)	Absorptive capacity (acquisition and use)	Firm Performance	the tourism industry, Turkey.	Use dimension has a significant effect on firm performance. The acquisition has no significant effect on firm performance

Therefore, in a nutshell, the importance of absorptive capacity has been cleared from the above literature, for higher performance plays an important role, but there are fewer studies regarding the context of SMEs. Absorptive capacity facilitates the firm to make sense of external knowledge, understand it, associate it with the existing knowledge, and successfully exploit it commercially for the benefit of the firms (Zahra & George, 2002). Moreover, Fosfuri and Tribo (2008) acknowledged that absorptive capacity in a knowledge-based economy is considered as a crucial dynamic resource or capability because it is one of the important intangible resources to ensure the success of the firms.

Furthermore, Limaj and Bernroider (2017) explain that absorptive capacity is an essential factor for a firm's competitiveness. In previous studies, the absorptive capacity was examined in many of performance models, and most proven to have significant relation with the performance of the firm (Ali, Seny Kan, & Sastedt, 2016; Herath & Mahmood, 2014; Tzokas, Kim, Akbar, & Al-Dajani, 2015;). Therefore, absorptive capacity and firm performance relationship in the context of SMEs of developing countries has to be empirically justified. So, there is a need for further empirical research on SME. Based on the above discussion, it is hypothesized that:

**Hypothesis 3:** There is a significant relationship between absorptive capacity and SMEs performance.

## **2.10 Environmental Turbulence**

### **2.10.1 Environmental Turbulence Conceptualization**

Many researchers conceptualized environmental turbulence and investigated its effect on organizational (Kipley & Lewis, 2009; Meier & Toole, 2011; Ansoff, 2007). The first person is Ansoff in 1987 who conceptualized environmental turbulence in depth, which was later named as Ansoffian Strategic Success Paradigm. Ansoff first identifies the impact of environmental turbulence on business performance, so he is one of the pioneer researchers who investigated environmental turbulence. The general view in this research stream is that businesses must evaluate the turbulence of the environment in which they are operating and counterpart their capabilities, aggressiveness, and responsiveness to the environmental turbulence. According to him, environmental turbulence has five basic levels, i.e., repetitive, discontinuous, expanding, changing, and surprising. To get better business performance, they must be aligned with firm internal resources and capabilities. Environmental turbulence can be defined as the frequency and unpredictability of the market, technology, and competitive intensity that influence the performance (Calantone, Garcia, & Droge, 2003).

Meanwhile, Boyne and Meier (2009) term environmental turbulence “as an unpredictable change in the munificence (such as available economic resources) and complexity (such as characteristics of organization’s clients) of an organization’s environment.” These turbulent variations challenge the organization’s essential stability, and subsequently will negatively affect organizational performance (Meier & Toole, 2011; Toole & Meier, 1999). The elements of the environment are integrally

dynamic, which may turn the environment unstable. Environmental stability prompts organizations to advance fixed routines' sets for managing with environmental elements (Aldrich, 1979).

Environmental turbulence denotes to the level of change and volatility of an operating environment. Because of their relatively underdeveloped government, in legal and financial institutions, a turbulent environment is regarded by highly unpredictable market demand and consumer tastes, hostile competition, as well as sudden changes in legal, political and economic constraints (Li & Atuahene-Gima, 2001). Ultimately, ambiguity arises in this environment, hence, resulting in considerable uncertainty about markets and technologies.

As mentioned by some, the turbulent environment is hostile, complex, dynamic, and volatile (Calantone, Garcia, & Droge, 2003). Turbulent environments were described by Calantone et al. (2003) and Choi, (2010) as environments with a higher degree of interval variability that makes dynamism and uncertainty; the conditions have features of unpredictability, volatility, and sharp discontinuity in demand and growth rates. The short time competitive benefits that are persistent are succinctly produced or eroded, and the competitive structure of the industry is persistently changed by the low barriers to entry/exit. Also, the features of that kind of environment are hostile, unfamiliar, uncertain, dynamic, heterogeneous, complex, and volatile. Combined, these descriptions account to a measure of environmental turbulence.



## **2.10.2 Dimensions of Environmental Turbulence**

The researchers define and explain environmental turbulence about the “degree of changes in the levels of key environmental variables along with the changeability of future levels of those variables.” Due to the high level of turbulence (Kotler and Caslione, 2009), enlarged competition and companies have intensified the usage, newly emerged technology opportunities, absorption, and interchange of knowledge; both internally and externally (Cohen & Levinthal, 1990; Klevorick, Levin, Nelson, & Winter, 1995; Gassmann, 2006). Environmental turbulence is categorized by the fast change of technology, the emerging of new technologies, and the changes in customers’ and markets’ needs and expectations (Somaya & Teece, 2008; Broring, 2010). Jaworski and Kohli (1993) classified environmental turbulence into market turbulence, technological turbulence, and competitive intensity.

The main dimensions of environmental turbulence are as follow.

### **2.10.2.1 Market Turbulence**

Jiyao Chen, Reilly, and Lynn (2005) stressed that market uncertainty is classified as market turbulence. Jaworski & Kohli (1993) regarded market turbulence as the degree and speed of instability and uncertainty within a firm’s markets and customers and continuous change in price, structure, customer demand, and competitor composition (Calantone et al., 2003). Atuahene-Gima and Li (2004) also denote to the opinion on customer demand, preferences, and development of new market segments with the frequency of change and unpredictability. As of the market/demand turbulence, an

environment regarded as by market turbulence indicates variation in the arrangement of customers' preferences, and growing market turbulence is characterized by frequently shifting styles, models, and low product lifecycle (Latif, Arshad, Fatima, & Farooq, 2011). To sustain in that type of environment, firms must turn into responsive to the changing preferences of current customers along with the preferences of new customers.

#### **2.10.2.2 Technological Turbulence**

On the contrary, technological turbulence is one type of technological uncertainty (Jiyao Chen et al., 2005), Calantone et al. (2003) stated that it could be produced by innovation in technology which has increased the change in scientific communities and marketplace. Technological turbulence denotes to “the degree and rate of technological change pertinent to the products and processes of the organization” (Jaworski and Kohli, 1993). To tackle the technological changes in the market, firms operating in high-tech markets allocate more resources on technological development (Slater & Narver, 1994). So, that is why in the environment of technological turbulence, enterprises focused more on technology and must innovate to gain a competitive advantage. On the same note, Banbury and Mitchell (1995) stressed that this is a critical factor that not only affects the firm's competitiveness but also strengthens the country's economic growth, globalization, and life cycle.

### **2.10.2.3 Competitive Intensity**

In contrast to the above turbulences, competitive intensity can cause firms to hardly survive in the industries as they are unable to entertain customer needs, particularly under high-level competitive environment (González & Palacios, 2002). This happens due to the reason that strong competition has limited the opportunities available to firms (Ang, 2008). Therefore, by strategically reacting to competition, firms can attain long-term profitability. Since competitiveness depends on organizational context (Ketchen, Snow, & Hoover, 2004), Porter (1980) stressed that there are at least five competitiveness that can affect the firms' 'profits' at the industry level; i.e. power of buyers, threat of entry, power of suppliers, the rivalry among the existing competitors, and threat of substitutes. These five forces, which are important characteristics of competitive environment, offer the reference point to firms' strengths and weaknesses (Porter, 2008).

### **2.11 Rationalize Environmental Turbulence as a Moderator**

The research on the influence of environmental turbulence on firm performance is prevalent in general management literature. Environmental turbulence denotes a process that varies the effect of the independent variables (IVs) on firm performance in the light of RBV. This variable is one of the exogenous variables with a moderating effect (Sangphet Hanvanich, Sivakumar, & Hult, 2006; Jaakkola, Frösén, Tikkanen, Aspara, & Parvinen, 2016; Park, Ryu, Park, & Ryu, 2015; Pratono & Mahmood, 2014; Shah et al., 2016), while other authors considered it as an independent variable (Cadeaux & Ng, 2012; Didonet, Simmons, Díaz-Villavicencio, & Palmer, 2012;

Sarooghi, Libaers, & Burkemper, 2015; Souder, Sherman, & Davies-Cooper, 1998). Wang and Fang (2012) argued that unanticipated environmental turbulence creates the negative impact of environment turbulence on the firm required performance.

On one side of the coin, innovation capability has an important role in promoting and developing organizations. Some firms strive to develop their INOCAP with the aim of achieving innovative output, increasing profits, and realizing better performance (Aryanto et al., 2015; Muhammad Saqib, Masoodul, & Sadia, 2014; Purwanto & Raihan, 2016; Saunila, Pekkola, et al., 2014; Calantone, Cavusgil, & Zhao, 2002; Hall & Bagchi-Sen, 2002). However, there are some studies in which findings do not reveal a strong positive relationship between INOCAP and firm performance (Roper & Love, 2002; Darroch, 2005; Saunila, Ukko, & Rantanen, 2014). What is more, there are also a few studies that reveal that there exists a negative relationship between INOCAP and firm performance. (Roper & Love, 2002; Darroch, 2005).

As aforesaid, due to the inconsistencies and mixed findings, previous studies assert that the association between INOCAP and performance should be moderated (Muhammad Saqib, Masoodul, & Sadia, 2014; Purwanto & Raihan, 2016). This is so as past studies indicate that several factors can moderate and facilitate the INOCAP - performance linkage (Hung & Chou, 2013; Jaakkola, 2015; Uz Kurt, Kumar, Kimzan, & Sert, 2012). Some researchers emphasized the importance of environmental turbulence to facilitate INOCAP -performance relationship in SMEs (Hery Pratono & Mahmood, 2014; Jaakkola, 2015; Podmetina & Volchek, 2016), thus indicating environmental turbulence as a potential moderator.

As many researchers have debated intellectual capital as one of the main elements for the SMEs' success and that it is indistinguishably connected to their performance (Crema & Verbano, 2014; Khalique et al., 2015; Ridhuan, 2015; Shumaila & Afza, 2014; Ullah et al., 2015). This is agreed by a meta-analysis study conducted by Tsakalerou (2015) in which he examines the association between intellectual capital and performance. Tsakalerou included different economies, industry, and firm size of the sample of 8222 firms, which resulted that IC has a less insignificant effect on the SMEs performance of developing countries.

On the other side of the coin, the scholastic debate with regards to IC-performance relationship has yielded contradictory results and mixed findings (Asiaei & Jusoh, 2015; Crema & Verbano, 2014; Lee & Mohammed, 2014; Ozkan et al., 2016). Some empirical studies disclose that there is no effect of IC on firm performance (Gho, 2005; Barathi Kamath, 2007; Lee & Mohammed, 2014; Ozkan et al., 2016). However, there are substantial empirical researches that support the positive relationship between IC and firm performance (Asiaei & Jusoh, 2015; Crema & Verbano, 2014; Lapina, 2016; Ridhuan, 2015; Scafarto, Ricci, & Scafarto. Francesco, 2016; Sumedrea, 2013). Therefore, the literature review of the IC-performance research portrays the evidence as mixed, contradictory, and inconclusive.

Accordingly, these inconsistent findings hold for both large as well as small firms. But it is quite important to conclude the influence of IC on the success of entrepreneurial ventures or small businesses (Juma & McGee, 2006). The emerging and promising domain of entrepreneurship needs to critically inspect the elementary pillars it is built

on. If the IC does not add value to the entrepreneurial businesses, queries are raised about its status, scope, and significance in the literature about small businesses (Tarus & Sitienei, 2015).

As aforementioned, due to the inconsistencies and mixed findings, previous studies assert that the association between IC and performance should be moderated (Bemby, Mukhtaruddin, Hakiki, & Ferdianti, 2015; Juma & McGee, 2006; Castro, Verde, López, & González, 2013; Scafarto, Ricci, & Scafarto, 2016; Tarus & Sitienei, 2015). Past studies indicate that several factors can moderate and facilitate the IC - performance linkage (Hakiki, & Ferdianti, 2015). Even so, some researchers emphasized the importance of environmental turbulence to facilitate IC -performance relationship in SMEs (Hery Pratono & Mahmood, 2014; Juma & McGee, 2006). Thus, environmental turbulence is undoubtedly a potential moderator.

In reality, research attention is growing in every sector and country to study the association between ACAP and firm performance (Ali et al., 2016; Mariano & Walter, 2015; Rafique et al., 2015; Soo, Tian, Teo, & Cordery, 2016; Wales, Parida, & Patel, 2013). However, the researcher pays less attention to ACAP and firm performance relationship on SMEs as compared to the large companies (Ariyaratne, 2014; Filippini, Güttel, & Nosella, 2010; Herath & Mahmood, 2014; Rehman, 2015; Umrani et al., 2015). To leverage ACAP in a problem-solving situation, absorption of knowledge must be aligned with creativity and learning the behavior of the enterprise (Soo, Devinney, & Midgley, 2007).

The scholastic debate with regards to ACAP-performance relationship has yielded contradictory results and mixed findings (Schildt, Keil, & Maula, 2012; Lichtenthaler, 2016). Some empirical studies reveal that there is no influence or weak relationship of ACAP on firm performance (Ali & Park, 2016; Lichtenthaler, 2016; Schildt, Keil, & Maula, 2012; Volberda, Foss, & Lyles, 2010; Wales, Parida, & Patel, 2013).

As above-mentioned, due to the inconsistencies and mixed findings, earlier studies assert that the association among ACAP and performance should be moderated (Bin Guo & Wang, 2014; Kohlbacher et al., 2013; Stulova & Rungi, 2014). Past studies indicate that several factors can moderate and facilitate the ACAP-performance linkage. Some researchers emphasized the importance of environmental turbulence to facilitate ACAP -performance relationship (Stulova & Rungi, 2014; Bin Guo & Wang, 2014). Thus, Hery Pratono & Mahmood (2014) highlight environmental turbulence as a potential moderator.

It has been found in previous studies that environmental turbulence can strongly affect intellectual capital (Bemby, Mukhtaruddin, Hakiki, & Ferdianti, 2015; Juma & McGee, 2006), innovation capability (Hung & Chou, 2013; Jaakkola, 2015), and absorptive capacity of a firm (Stulova & Rungi, 2014; Bin Guo & Wang, 2014). However, the past studies have less overlooked to inspect the moderating effect of environmental turbulence on innovation capability, intellectual capital, absorptive capacity, and performance relationship. Henceforth, this study aims to address this gap by investigating the moderating effects of environmental turbulence on innovation capability, intellectual capital, absorptive capacity, and performance in SMEs.

Bourgeois (1985) argued that the principle conception in strategic management related to environmental conditions refers to firms capabilities and resources must be synchronized in realizing firm performance. This statement indicates that a strategist has to find or create this match or fit between internal and external conditions. Thus, environmental turbulence denotes a process that varies the impact of the independent variables on firm performance in the light of RBV. Clearly, this variable is one of the exogenous variables with moderating effects (Hery Pratono & Mahmood, 2014; Jaakkola, Frösén, Tikkanen, Aspara, & Parvinen, 2016; Park, Ryu, Park, & Ryu, 2015; Pratono & Mahmood, 2014; Shah, Othman, & Mansor, 2016).

Also, scholars such as Soomro and Aziz (2014) acknowledged that limited research exists on the effect of environmental relationship and SMEs performance, especially in developing countries. In fact, in most of the past research, were about the moderator of environment and the performance of SMEs (Eroglu & Hofer, 2014; Nandakumar, Ghobadian, & Regan, 2010; Wiklund & Shepherd, 2005; Peltier, Zhao, & Schibrowsky, 2012; Uzkurt et al., 2012; Hameed & Ali, 2011; Park, & Ryu, 2015). However, some other crucial environment dimensions (technological turbulence, market turbulence, and competitive intensity) are considered critical to moderate the relationship of internal capabilities (innovation capability, intellectual capital, absorptive capacity) with the SMEs performance in the dynamic environment. Hence environmental turbulence satisfies the criteria for selection as a moderator (Baron & Kenny, 1986). Therefore, it is hypothesized as below;



**Hypothesis 4:** Environmental turbulence moderates the relationship between innovation capability and SMEs performance.

**Hypothesis 5:** Environmental turbulence moderates the relationship between intellectual capital and SMEs performance.

**Hypothesis 6:** Environmental turbulence moderates the relationship between absorptive capacity and SMEs performance.

## 2.12 Innovation Strategy

### 2.12.1 Strategy

Strategy matters because it provides precise directions to a firm. In strategic management literature and textbooks, many scholars defined the term of strategy and strategic management in a different manner (Olson & Bokor, 1995). There is no specific or generally accepted definition about strategic management; it depends on the scholar's interpretation and approaches about the strategy.

Abdalkrim (2013) described strategy “as the method of an accomplishment, deliberate action in the execution of a project.” Salas and Huxley (2014) stressed that the strategy describes the firm scope and directions. On top of that, Sandada, Pooe, and Dhurup (2014) stated that strategy is a broader term and it is difficult to be described from a single perspective; while Box and Miller (2011) defined strategy “as a series of decisions resulting in plans a business should implement to achieve desired goals”. Additionally, Trifu (2013) defined strategy “as the general plan of action, and tactics are the qualitative component finalizing the chosen strategy.” This is supported by

Gupta and Muita (2012) who viewed strategy “as actions giving support for the achievement of organizational goals.” Table 2.9 shows some definitions of strategy in strategic management.

Table 2.9  
*Definitions of Strategy in Strategic Management*

<b>Prominent Scholars</b>	<b>Definitions</b>
Chandler (1962)	Long term goal and objective, adopt the right actions and necessary resources to achieve the goal.
Igor Ansoff (1965)	Formulating, designing the capabilities and managing the implementation of strategies.
Porter (1980)	Choosing to execute activities which differ from the competitions
Greenly (1989)	Concern on future direction and operational management of the overall organization.
Rumelt, Schendel, and Teece (1990)	Concerning on direction of the organization and business the senior management.
Pearce and Robinson (1991)	Decision and action of formulation, implementation, and control of strategies to obtain objectives and goals.
D’Aveni (1994)	Not only creating advantages for own but also creating destructions for the competitor’s advantages.
Mintzberg and Quinn (1996)	A pattern or plan which integrates major organizational goals, policies, and actions based on internal competencies and changes in the environment.
David (2001)	Process of formulating, implementing, and evaluating cross-functional decisions to obtain the organizational objectives.

Principally, strategies can help business owners fortify business. Markides (2012) stated that all business requires an implicit or explicit strategy. This is further discussed by Candy and Gordon (2011), who opined that organizational structures are based on strategies and better strategies lead towards superior performance. Performance is an activity practiced in the altering business environment, so for a business to increase performance, the right strategies must be established and implemented (Abdalkrim,

2013). Verreynne and Meyer (2010) stated that the measurements of a good strategy should be strategic and thoughtful.

Hence, the researcher understood that strategy and strategic management are systematic approaches to achieve anticipating objectives with capabilities by overcoming the difficulties in a specific structured time frame.

### **2.12.2 Innovation strategy**

Previous literature indicated that many scholars had shown their interest in investigating innovation strategy towards performance (Narentheren, 2014). Innovation strategy comprises five key elements that can be understood as a comprehensive strategy based on the initiative and innovative management, relying on its innovative potential, using as the primary tool the lateral thinking and acting in a pro-innovation climate, supported by appropriate organizational structure (Lendel & Varmus, 2012). Lendel and Varmus (2012) defined innovation strategy as “innovative direction of company approach to the choice of objectives, methods, and ways to fully utilize and develop the innovative potential of the enterprise. This is the direction given of its boundary, which determines the potential of innovative strategies.” Innovation strategy defines in what way and to what degree is a firm effort to use innovation to execute its business strategy and improve its performance (Gilbert, 1994).

Fundamentally, an innovation strategy leads to incur innovation. The establishment of this strategy enhances the management of the firm’s innovation capabilities (Fruhling & Siau, 2007). A constructed approach to innovation leads to having an efficient system

for innovation (Van de Ven, Angle, & Poole, 2000) and maintains a competitive edge (Nybakk & Jenssen, 2012). To confirm this statement, many scholars have observed innovation strategy in recent years (Fruhling & Siau, 2007; Jenssen & Randøy, 2002; Jenssen & Randøy, 2006). It is vital for an innovation strategy to reflect the long-term achievement of the scope of the goals of the firm (Cooper et al., 2004).

### **2.13 Rationalize of Strategy as a Moderator**

Innovation strategy and organizational performance link have been well established by several researchers (Lopes and Dodinho, 2005; Cainelli, Mazzanti, & Zoboli, 2011; Hilman, & Kaliappen, 2015; Narentheren, 2014; Li, & Atuahene-Gima, 2001; Guan, Richard, Tang, & Lau, 2009). The innovation strategy establishes creating a competitive edge (Jenssen & Randøy, 2006; Zahra & Das, 1993). For example, Jenssen and Randøy (2006) examined those firms who implemented innovation strategies in a lower and higher level, and the results show that both firms innovation occurs. According to Cooper (2004), it is evident that there is a relationship between product strategy and constructive financial performance. Fruhling and Siau (2007) performed research that results that those organizations who focused highly on innovation have a higher rate of success.

Additionally, several types of research are found positive and show the significant connection of the innovation strategy on organizational performance (Rosli and Sidek, 2013; Morgan, & Berthon, 2008; Zahra, & Das, 1993; Richard, McMillan, Chadwick, & Dwyer, 2003).

Overall, the generic management literature of the idea about the effect of strategy on firm performance prevalent significantly. Strategy signifies a process that modifies the influence or impact of the independent variables on the firm's performance based on the context of resource base theory (Amoako-Gympah & Acquah, 2008). This variable can be regarded as a potential variable along with moderating effect (Kim & Huh, 2015; Martinette, Obenchain-Leeson, Gomez, & Webb, 2014; Su, Guo, & Sun, 2017; Vidija, Obonyo, & Ogutu, 2016).

In the study conducted by Kim and Huh (2015), the researchers tested the moderating effect of business strategy about innovation and performance of Korean SMEs. The research was conducted on 255 SMEs and concluded that business strategy influenced the association between innovation and performance of SMEs.

Another study was conducted by McGee, Dowling, and Megginson (1995), in which the moderating effect of business strategy was tested among corporate strategy and new venture performance of 210 manufacturing companies. The result shows that business strategy moderates the relationship between corporate strategy and business performance.

Also, a study was conducted by Oltra and Luisa Flor (2010) to inspect empirically in the line of contingency perspective the effect of business strategy on the association between operations strategy and business outcomes. Research investigation was conducted on a sample of 76 Spanish ceramic tile firms. The presence of the moderating

influence of business strategy on the association between operations strategy and firms' results were derived.

Another study also conducted, this time by Pourmozafari et al. (2014) who studied the association among the variables of IC and financial performance as well as a business strategy as moderating role in the 45 firms listed on Tehran Stock Exchange. The result shows that IC directly influence the financial performance without the moderating effect of business strategy.

Su et al. (2017) attempted to investigate the moderating role of business strategy to the association of exploration and firm performance. The data was collected from 273 Chinese firms, and the results show that the differentiation strategy moderates the association between exploration and firm performance, on the other hand, cost leadership did not moderate the relationship.

From the above discussions, it is postulated that strategy is a potential moderator in the resource- capability and performance link. And according to the researcher's knowledge, innovation strategy is limited to be used as a moderator in a performance link. Therefore, examining the moderation role of innovation strategy fulfilled the research gap.

In emerging and developing firms, innovation capability plays a key role. Many firms are focusing on developing and improving their INOCAP so to achieve innovative outputs, increase the profits and achieve more exceptional performance (Aryanto et al.,

2015; Muhammad Saqib et al., 2014; Purwanto & Raihan, 2016; Saunila, Pekkola, et al., 2014; Calantone et al., 2002; Hall & Bagchi-Sen, 2002). However, there are some studies where the results do not reveal a strong positive association between INOCAP and firm performance (Roper & Love, 2002; Darroch, 2005; Saunila, Ukko, & Rantanen, 2014). Few studies show that there exists a negative association between INOCAP and firm performance (Roper & Love, 2002; Darroch, 2005).

On the other side of the coin, by innovation, products, and technologies produced by the firm can support it to distinguish from their competitors or to produce at a lower cost (Danny Miller & Friesen, 1986). A firm engaging its resources for innovation activities may be influenced by the strategies (Devaraj, Hollingworth, & Schroeder, 2001; Kimberly, Miles, & Snow, 1978; Porter 1980). The strategic fit among various activities along a firm is critical not just for achieving a competitive advantage but also for sustainability. (Porter 1996).

As aforementioned, due to the inconsistencies and mixed findings, previous studies assert that the link between INOCAP and performance should be moderated (Masoodul, & Sadia, 2014; Purwanto & Raihan, 2016), Past studies indicate that a number of factors can moderate and facilitate the INOCAP - performance linkage (Hung & Chou, 2013; Jaakkola, 2015; Uz Kurt et al., 2012). Some researchers emphasized the importance of strategy to facilitate the INOCAP -performance relationship (Oltra & Luisa Flor, 2010; Siavwe et al., 2015; Kim & Huh, 2015; Sanders Jones & Linderman, 2014).

Previous studies on the association between performance and IC, innovation capability, and absorptive capacity showed vague findings. For example, for IC, many researchers have debated that IC is the core resource related to the success of SMEs and have indistinguishable link to their performance (Crema & Verbano, 2014; Khalique et al., 2015; Ridhuan, 2015; Shumaila & Afza, 2014; Ullah et al., 2015). A meta-analysis study conducted by Tsakalerou (2015) examining the relationship between IC and performance. The result highlights that the IC has a less insignificant effect on SMEs performance in developing countries.

The scholastic debate with regards to IC-performance relationship has yielded contradictory results and mixed findings (Tsakalerou, 2015; Tsao & Hung, 2014; Ullah et al., 2015; Lee & Mohammed, 2014; Ozkan, Cakan, & Kayacan, 2016). Some empirical studies reveal that there is no influence of IC on firm performance (Barathi Kamath, 2007; Lee & Mohammed, 2014; Ozkan et al., 2016).

On the other hand, there are substantial empirical facts that support positive relationship between IC and firm performance (Amanuddin, Zubaidah, Huang, & Marina, 2013; Asiaei & Jusoh, 2015; Crema & Verbano, 2014; Lapina, 2016; Ridhuan, 2015; Scafarto, Ricci, & Scafarto. Francesco, 2016; Sumedrea, 2013). Therefore, the literature review of the IC-performance research portrays the evidence as mixed, contradictory, and inconclusive.

These inconsistent findings hold for both large as well as small firms. However, it is quite significant to conclude the impact of IC on the success of entrepreneurial ventures



or small businesses (Crema & Verbano, 2014; Lapina, 2016). The emerging and promising domain of entrepreneurship needs to inspect the elementary pillars it is built on critically. If IC does not add value to the entrepreneurial businesses, queries are raised about its status, scope, and significance in the literature about small businesses.

As aforementioned, due to the inconsistencies and mixed findings, previous studies assert that the association between IC and performance should be moderated (Bemby et al., 2015; Martín-de Castro et al., 2013; Scafarto, Ricci, & Scafarto, 2016; Tarus & Sitienei, 2015). Past studies indicate that several factors can moderate and facilitate the IC - performance linkage (Hakiki, & Ferdianti, 2015). Some researchers emphasized the importance of strategy to facilitate IC-performance relationship in SMEs (Chan et al., 2012; Amanuddin et al., 2013; Vidiya et al., 2016) thus indicating strategy as a potential moderator.

In another literature, research attention is growing in every sector and country to study the association between ACAP and firm performance (Ali et al., 2016; Mariano & Walter, 2015; Rafique et al., 2015; Soo et al., 2016; Wales et al., 2013). However, the researcher pays less attention to ACAP and firm performance relationship on SMEs as compared to the large companies (Ariyaratne, 2014; Herath & Mahmood, 2014; Filippini et al., 2010; Rehman, 2015; Umrani et al., 2015). To leverage ACAP in a problem-solving situation, absorption of knowledge must be aligned with creativity and learning the behavior of the enterprise (Soo et al., 2007).

As can be seen, the scholastic debate with regards to ACAP-performance relationship has yielded contradictory results and mixed findings (Ali & Park, 2016; Chen, Lin, & Chang, 2009; Hurmelinna, Olander, Blomqvist, & Panfilii, 2012; Wales, Parida, & Patel, 2013). Some empirical studies reveal that there is no influence or weak relationship between ACAP and firm performance ;).

As mentioned earlier, due to the inconsistencies and mixed findings, previous studies assert that the association among ACAP and performance should be moderated (Bin Guo & Wang, 2014; Kohlbacher, Weitlaner, Hollosi, Grünwald, & Grahl, 2013; Stulova & Rungi, 2014). Past studies indicate that several factors can moderate and facilitate the ACAP - performance linkage. Some researchers emphasized the importance of strategy as a potential moderator (Stulova & Rungi, 2014; Uo & Wang, 2014). Thus Hery, Pratono, and Mahmood, (2014) proposed strategy as a potential moderator ( Chan et al., 2012; Kim & Huh, 2015; Martinette et al., 2014; Pourmozafari et al., 2014; Vidiya et al., 2016).

From the above discussion, it is concluded that past studies have overlooked to investigate the moderating effect of innovation strategy on intellectual capital, innovation capability, absorptive capacity, and performance relationship. This study intended to handle this gap by examining the moderating effect of innovation strategy on intellectual capital, innovation capability, absorptive capacity, and performance in SMEs.

Innovation strategy is also chosen as a moderator to this study because until now; there are limited studies that focus on this variable in the context of SMEs performance. Moreover, Salas and Huxley (2014) stressed that the strategy describes the firm's scopes and directions. In the context of SMEs, the adoption of business strategies provide advantages through formal and informal organizational sources, which lead to firm survival (Jarzabkowski & Kaplan, 2015). Thus, the firm should be able to align the strategy into higher reliability, durability and featuring product to create a superior performance (Kotha & Vadlamani, 1995; Sadegh, Alireza, & Behzad, 2013).

In management literature, the idea of the effect of strategy on firm performance is significantly prevalent. Previous studies acknowledged the moderating role of strategy (Kim & Huh, 2015; Su et al. 2017; Vidija et al. 2016 ). Strategy signifies a process that modifies the influence or effect of the independent variables on SMEs performance regarding the context of resource-based theory. Furthermore, Wu and Zumbo (2008) outlined the characteristics of selecting the moderator like, (1) this variable is a trait, it has a stable characteristic, and also the background of the variable, (2) the third variable that modifies the effect, (3) serves as a single role to provide the support between exogenous and endogenous, (4) uncorrelated with the exogenous variable, and (5) this variable is typically observed and not manipulated.

These characteristics are aligned with the condition of an innovation strategy. That is why this variable can be regarded as a potential variable for moderating effect (Martinete, Obenchain-Leeson, Gomez, & Webb, 2014; Kim & Huh, 2015; Su, Guo, & Sun, 2017; Vidija, Obonyo, & Ogutu, 2016). Therefore, this study has examined the

moderating effects of innovation strategy on the association between intellectual capital, innovation capability, absorptive capacity, and SMEs performance. It is hypothesized that:

**Hypothesis 7:** Innovation strategy moderates the relationship between innovation capability and SMEs performance.

**Hypothesis 8:** Innovation strategy moderates the relationship between intellectual capital and SMEs performance.

**Hypothesis 9:** Innovation strategy moderates the relationship between absorptive capacity and SMEs performance.

## 2.14 Underpinning Theories

This research is rooted in the main theory of resource-based view and supported by dynamic capability theory and contingency theory. The discussion on each underpinning theory on how the variables interrelated to all the theories is explained in the next section

### 2.14.1 Resource-Based View Theory

The resource-based view (RBV) of the firm is increasingly becoming popular in the field of organizational theory, strategic management, marketing, and other fields over the past few decades (Foss & Ishikawa, 2007; Galbreath, 2005). A pioneer scholar who acknowledged the importance of firm resources in a competitive position is Edith Penrose in 1959. According to her, the firm's growth (internal and external) brought about through merger, acquisition, and diversification, is mostly dependent on the way

it employs its resources (Newbert, 2007). In reality, the RBV theory was first formalized in literature by Wernerfelt in 1984, developed from the view that its owned and controlled resources determine the success of the firm to achieve firm's competitive advantage (Andersén, 2012; Galbreath, 2005).

The RBV theory consists of the intangible and tangible point of view. However, this study used the intangible resources as the fundamental focus of intangible resources and other relevant strategies as the competitive advantages to the firms (Mills, Platts, & Bourne, 2003). Organizations using such resources are an advantage of using internal competence with a view of acquiring the necessary strengths and capabilities in implementing the formulated strategy for them to achieve their fundamental goals. The impacts of such strategies are seen through organizational ability in gaining competitive advantage and meanwhile remaining relevant in the dynamic environment.

Under the RBV theory, competitive advantage is defined as the implementation of a strategy that is currently not enforced by competing firms, which reduces costs, exploits market opportunities, and offsets the threat of competition (Barney, 1991). Porter (1980) suggested that firms should analyze and examine their competitive environment and attain the resources needed to implement strategies. Similarly, Gottschalk (2007), and Conner and Prahalad (1996) acknowledged that firms' resources could influence firms' performance. Furthermore, Barney (1991) stated that there are four important aspects of resources that must be sustained in order to ensure the sustainability of the competitive advantages, where the resources must be: rare (unique), valuable

(something worthwhile), imperfectly mobile (cannot be sold or traded easily), and cannot be replaced (not easily copied).

The resource-based view (RBV) posited that the unique resources of a firm generate competitive advantages (Wernerfelt, 1984; Peteraf, 1993; Barney, 1991). As the RBV emphasized on firms' distinct bundle of resources, focusing on unique resources of the firms, it is crucial for the growth and survival of small firms to identify those critical resources. The resource-based views of the firm represent the foundation for small firms to strategically based on critical sources that enable firms to gain competitive advantage (Peteraf, 1993). However, little efforts have been made to unveil those resources which are possessed and employed by small firms to achieve and sustain competitive advantages leading towards superior performance (Covin & Slevin, 1989). It is argued that small firms may be capable of surviving and performing with lesser resources when the environment is favorable and less competitive. But in the hostile and hyper-competitive environment, firms must possess superior resources (Covin & Slevin, 1989).

Miller and Shamsie (1996) pointed out that the availability of general resources are not sufficient for achieving the competitive advantage, and the organizations must equip themselves with capabilities too. Previous scholars have identified the difference between resources and capabilities. The resources are considered as inputs to the production process of the firms (Beard & Sumner, 2004), whereas, the capabilities represent the ability of the organization to perform tasks or activities that lead to the desired output of the organization (Hitt et al., 2012). The RBV assumes that the firms

with specific resources and capabilities with distinct characteristics will achieve the competitive advantage, and in turn, achieve the optimum performance. The RBV describes capability as the dissemination and the rearrangement of resources to enhance productivity and meet a firm's goals (Camisón & Villar-López, 2014). Intellectual capability, innovation capability, and absorptive capacity; as well as the innovation strategy are among the crucial intangible capabilities that promote the performance and competitive advantage of the firm (Cohen & Levinthal, 1990; Noradiva, Parastou, & Azlina, 2016; Fores & Camison, 2011; Dhaafri, Yusoff, & Al Swidi, 2014; Mills, Platts, & Bourne, 2003) Therefore, these variables are mainly proved that underpin from the RBV theory.

Although the RBV has been carried out in extensive research and studies, it has also been criticized in many areas (Eisenhardt & Martin, 2000; Wang & Ahmed, 2007). Priem and Butler (2001) stressed that the main criticisms about RBV are related to the static nature and its unaccountability for the competitive edge of firms associated with the dynamic environment. The RBV has also been criticized for its incapability to explain those procedures by which the firm can gain a competitive advantage (Priem & Butler, 2001). Hence, the dynamic capability is also used to support the leading RBV theory.

#### **2.14.2 Dynamic Capability**

The concept of dynamic capabilities view has been presented by Teece, Pisano, and Shuen (1997), as the addition to the RBV (Ambrosini & Bowman 2009; Barreto, 2010). DC is defined as “the firm's ability to integrate, build, and reconfigure internal and

external competencies to address the rapidly changing environments” (Teece, Pisano & Shuen, 1997, p. 516). Based on that definition, the firm can gain competitive advantage by a set of strategic and organizational processes, restructure and integrate operating capabilities that produce value for firms that fit the dynamic market (Teece, Pisano and Shuen, 1997). Since DCs treats firm’s resources as heterogeneous to achieve sustainable competitive advantage (Helfat & Peteraf, 2003; Barney, 1991), it exists as an extension of RBV theory ( Teece, Pisano, & Shuen, 1997; Ambrosini & Bowman, 2009; Teece, 2010). For this reason, the assumptions used in RBV also apply to DCs (Ambrosini & Bowman, 2009) as they share many similar features (Schlemmer & Webb, 2008) as the competitive advantage is generated with resources or capabilities that are not only rare, valuable, and unacceptable, but also, irreplaceable (Rugman & Verbeke, 2002; Barney, 1991).

Although DCs is extended from RBV and share many similar features, they are different in three aspects. Firstly, the advantage of RBV is achieved in equilibrium, while DCs is achieved in disequilibrium (Schlemmer & Webb, 2008). Second, RBV focuses on new ways of consuming enterprise resources, while DC intensively utilizes the best way to integrate, restructure, reinvent and renew the company's resources (Kusunoki, Nonaka, & Nagata, 1998). Third, the RBV is static and unresponsive to environmental changes, while DC is a dynamic nature that responds to the turbulence of the environment (Schlemmer & Webb, 2008; Teece, Pisano, & Shuen, 1997). Huang and Kung (2011) stress that, from a DCV perspective, in a dynamic marketplace, the competitive advantage of the firm is diminished if it is not repeatedly renewed.



Teece, Pisano, and Shuen (1997) further stated that DCs focused on the firm's resource base, it is found that market assets, institutional assets, structural assets, technological assets, complementary assets, financial assets, and reputational assets, which are by nature tangible and intangible (Hitt, Ireland, & Hoskisson, 2005) can be the source of DCs if they are assessed and controlled by firms (Helfat & Peteraf, 2003). As an intangible asset is a source of sustainable value creation (Kaplan & Norton, 2004), DC sees objects to achieve better performance using intangible assets instead of tangible assets (Teece, 2007).

Innovative capabilities are referred to as the firm's ability to develop new offerings by coordinating strategies with pioneering and behavioral methods. Eisenhardt and Martin (2000) stated that many researchers had expressed deeply that the development of new products is a prototypical dynamic capability and argued that innovation capabilities are the key to dynamic dynamics. This view is in line with Teece, Pisano, and Shuen (1997) which declares innovative capabilities is an essential organizational dynamic capability that makes the firm to integrate, renew, re-invent, and restructure its capabilities and resources to address environmental variability.

That being so, intellectual capital is one of the dynamic capabilities, which helps the firms to gain competitive advantage and superior performance in a dynamic environment. Many authors link one or more intellectual capital components to a sustainable competitive advantage (Bogner, Thomas, & McGee, 1999; Chaharbaghi & Lynch, 1999; Jardon & Susana Martos, 2012; Huang and Kung, 2011). Cheng et al. (2010) and Kamukama (2013) argued that in today's global and ever-changing

environment, intellectual capital is increasingly substituting for tangible resources as a significant source of firm's competitive edge.

Wang and Ahmad (2007) suggested two components of DC; namely adaptive capability and absorptive capacity. Adaptive capability explains the ability to identify and capitalize on opportunities in the emerging markets (Wang and Ahmed, 2007). In the same vein, Chakravarthy (1982) stated that this absorptive capacity helps firms respond to external market opportunities, investing in marketing activities, and speed response to market changes. Absorption capacity is referred to as the firm's ability to diagnose new knowledge values which assist in enhancing organizational performance through knowledge acquisition, assimilation, transformation, and exploitation (Lane, Salk, & Lyles, 2001; Zahra and George, 2002). In the view of DC, a firm reconfigures its absorptive capacity to gain a competitive advantage and higher performance.

Generally, the concept of DCs that is emerged as an important strategic management topic in the 90's Rugman and Verbeke (2002) has shifted the focus on firm's strategy from industry- to firm-level of analysis in clarifying the basis of competitive advantage. With DCs concept, the focus is underlined on the firm's capabilities and strategies that are continuously varying accordingly to environmental changes (Pollack, 2015). From DC, competitive advantage is generated when firms implement strategies that cannot be duplicated by new competitors or entrants and thus become extraordinary. This study used DC as a basis for selecting a specific strategy. The strategies required application and development of capabilities to link each other. This is because DC achieves

competitive advantage by combining and renewing functional capabilities with a strategy which in turn affect the performance (Eisenhardt & Martin, 2000).

Accordingly, in many studies on DCs, environmental turbulence has been characterized with speedily changing technology (Teece, Pisano, & Shuen, 1997), technological change and global competition (Teece, 2007), converging technologies (Bhutto, 2005), and uncertainty (Marsh & Stock, 2006). This indicates that dynamic capabilities and environmental turbulence are linked together (Wang & Ahmed, 2007). Therefore, this study on environmental turbulence with DCs concept is also relevant.

As a conclusion, the relationship among innovation capability, intellectual capital, absorptive capacity, and performance with the moderating effects of environmental turbulence and innovation strategy should also be viewed with DCs that is useful to firms operating under the rapidly changing environment. For this study, DCs is treated as a contemporary theory instead of an underpinning theory for the reason that DCs is an extension of RBV (Teece, Pisano, & Shuen, 1997) that is still new and emerging in literature (Bitar, 2003). The discussion above concludes that according to the dynamic capabilities perspective, innovation capability, intellectual capital, and absorptive capacity are recognized as dynamic capabilities that integrate with firm resources and strategy by the turbulence environment to enhance firms' competitiveness and performance.

### 2.14.3 Contingency Theory

Contingency theory is also one of the most common theories used by researchers and scholars in fields such as management, entrepreneurship, sociology, accounting, and psychology. Luthans and Stewart (1977) stressed that the contingency theory is of the view that there is no single best way of doing things like leading, organizing, and making decisions. Rauch, Wiklund, Lumpkin, and Frese (2009) and Wang (2008) stated strongly, this theory thinks that the firm's performance or effectiveness relates to internal and external environmental contingencies. This suggests that the firm's favorableness and un-favorableness and environmental factors decide whether the firm perform well or not.

Several contingency approaches have been developed, such as business strategy (Hoffer, 1975); leadership (Fiedler, 1964); individual behavior (McDonald, 1969), organization design (Carr, 1968; (Button & Woodward, 1966) and decision-making (Hollander, Vroom, & Yetton, 1973). Fiedler, (1964) and Ginsberg and Venkatraman, (1985) opinioned that the contingency theory rejects the general concept of management notion of management universality. It defines that the company should establish its policies, goals, and objective according to the business environment, so the managerial decisions have a significant effect on the changing environment. It is conceptualized that the firm should not only focused on the current resources but also to observe the changes in the environment to develop new skills and policies to cope up with the latest business trend (Klaas & Donaldson, 2009).

Further, Donaldson (2001) stated that the external contingency is usually an environmental contingency established on the economic, political, market, technology, and social forces that influence the firm, as well as the competitive position and other industrial demands. Under the circumstances of contingency theories, organizations need to address issues that are strategically appropriate or otherwise, how they can better address internal and external settings through the continued actions and strategies they take. Donaldson, (2001) stressed that the firms, then, pursue to get fit by taking strategic arrangements that fit the contingencies the firm faces as the fit of firm characteristics to contingencies lead to higher performance.

The concept of “fit” is explained in many ways, such as consistent with, contingent upon, and aligning has crucial importance in contingency theory (Venkatraman, 1989). In a similar view, Drazin and Ven (1985) identified that the concept of “fit” or “match” as the basic premise of the contingency theory. Therefore, research scholars of the contingency research and strategic management, Drazin and Ven (1985), emphasized the necessity of the fit between the organizational strategy and some of the organizational variables as the fundamental prerequisite for the firm’s performance.

Furthermore, Naman and Slevin (1993) underlined that it had been widely argued that organizational performance could be improved if there is an effective alignment of the key organizational variables. Venkatraman (1989) in his study, identified some perspectives of fit: fit as mediation, fit as moderation, fit as covariation, and fit as matching. This study, consequently, is consistent with the view of ‘fit as moderation.’

Performance of firms can be enriched when key strategic variables are accurately associated (Naman & Slevin, 1993)

Rauch et al. (2009) specify that the third variable influences the relationship between one variable and the other variable. In the perspective of the current study, this assumption applies. In the current research, the influence of intellectual capital, innovation capability, absorptive capacity on SMEs performance is investigated. From the prevailing literature, there are some results inconsistencies among the relationship of innovation capability, intellectual capital, absorptive capacity, and SMEs performance. Therefore, the current study argues that the relationship can be moderated by environmental turbulence. This research pursues to identify how external contingencies (such as environmental turbulence: technology, market, and competitive) impact the association among innovation capability, intellectual capital, absorptive capacity, and SMEs performance.

### **2.15 Summary**

This section provides the review of past literature about the context of the study, underpinning theories and variables to be used in this study. Next chapter discussed the research framework, research design, and research methodology used to answer the research objectives.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter discusses the comprehensive details of the research methodology on how this study is conducted and what steps are being followed. The sketch of the methodology that has been followed to carry out this study is; at first, the research framework, research approach, research design, operational definitions, measurement of variables/instruments, questionnaire design, pilot study, population and sampling, data collection and data analysis techniques, were discussed.

#### **3.2 Research Framework**

The framework of the research has been formulated after the careful literature review as detailed in the previous chapter. The linkages shown in figure 3.1 is based on literature. The research framework is not somewhat, which is already existed in the literature. It is developed through the previous studies and accurate research findings from theories and analytic models that are relevant to the current research problem of innovation capability, intellectual capital, absorptive capacity, environmental turbulence, innovation strategy, and performance of SMEs in Pakistan. The selection of the theory is always contingent with its relevance, ease of solicitation, and explanatory influence from the literature.

Based on the literature and theories discussed earlier, a research framework has been proposed for the study, as given in Figure 3.1.

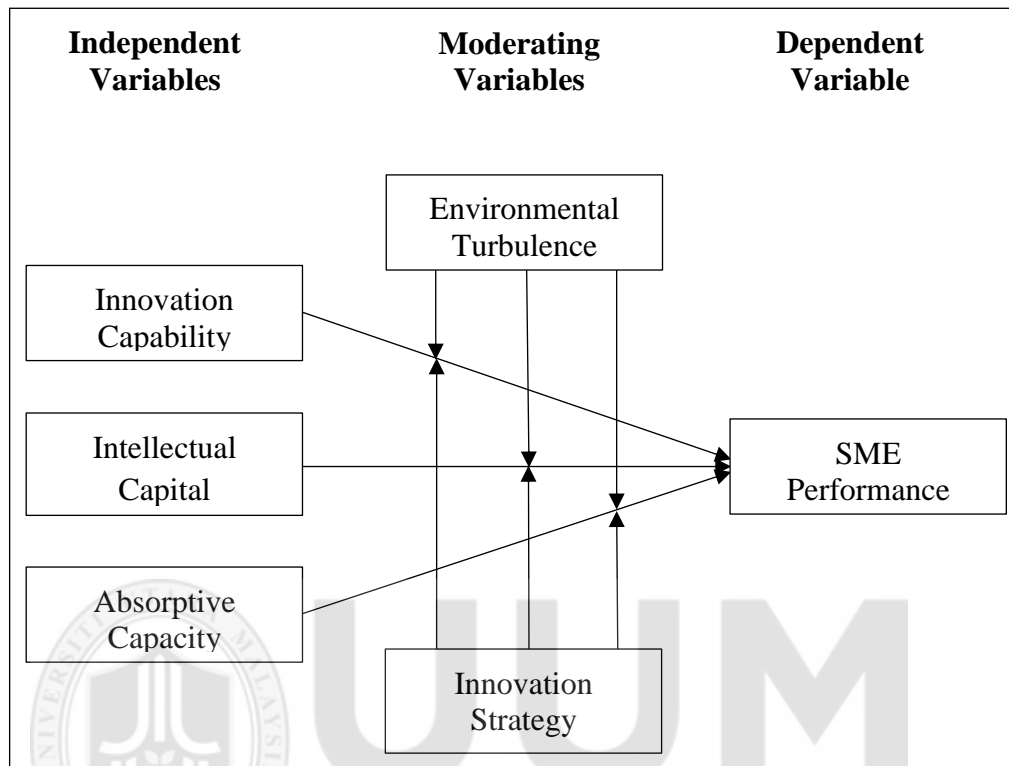


Figure 3. 7  
Theoretical Framework

Figure 3.1 represents the relationship between innovative capability, intellectual capital, absorptive capacity, environmental turbulence, innovation strategy, and the performance of SMEs. This model depicts that innovative capability, intellectual capital, and absorptive capacity as independent variables (IVs), environmental turbulence and innovation strategy as moderators (Mod Vs), and SMEs Performance as the dependent variable (DV).



### 3.3 Research Approach

Social scientists have classified research approaches into two broad categories: quantitative and qualitative researches. The former one is based on the measurement of quantities. Thus, it is suitable for phenomena that can be explicated in terms of numbers. On the other hand, qualitative research deals with qualitative phenomena, involving quality, in sort or kind, and is usually used in historical or philosophical researches (Kothari, 2004; Marczyk, Matteo, & Festinger, 2005). However, the research requirements and the nature of the data handled by the researcher determine the selection of either an inductive or a deductive approach to provide answers to practical problems (Babbie, 2012; Navarro & Maldonado, 2007).

Researchers usually adopt the inductive approach when they are concerned with the context in which qualitative phenomena occur, and they try to evolve a new theory from data analysis. In contrast, the deductive approach is used when researchers intend to prove the validity of an existing theory with empirical evidence by analyzing quantitative data (Saunders, Lewis, & Thornhill, 2009). Scholars, like Babbie (2012) and Neuman (2014) mentioned that researchers who use the deductive approach, have comprehension about the world mechanisms, and they want to test that empirically. They usually begin with extracted ideas, and then deal with the logical relationship among concepts to reach specific empirical evidence. On the contrary, researchers who follow an inductive approach start from extensive observations of the phenomenon to reach more abstract ideas to build their theories from the ground-up.

In consonance with research requirements and questions, the researcher perceives that quantitative research is the adequate approach to the present research, due to its potential to measure the facts in the form of numbers. Further, this approach can enable the researcher to generalize the empirical findings obtained by examining a specific sample on the population as a whole ( Hair, Black, Babin, Anderson, & Tatham, 2010).

### **3.4 Research Design**

Research design is a plan or framework which describes the procedures and methods to gather and analyze the necessary information/data in conducting the research project (Zikmund, Babin, Carr, & Griffin, 2013). The main objective of this research study is to examine the moderating role of environmental turbulence and innovation strategy on the link between innovation capability, intellectual capital, absorptive capacity, and SMEs performance in Pakistan. Therefore, the current study focuses on descriptive, hypothesis testing, and explanatory research approach to examine the relationships among various variables.

In addition to that, the questionnaire survey approach was employed for data collection through self-administered questionnaires to measure the variables under investigation. Furthermore, for this study, the cross-sectional research setting is used as it comprises collecting the data at once from a firm in a specific time (Cavana, Delahaye, & Sekaran, 2001). The main benefit of conducting a cross-sectional study is that it consumes less time and also economical.

### 3.4.1 Questionnaire Design

This section describes the items used to measure the researched variables. The questionnaire is divided into seven sections. Firstly, a covering letter demonstrating the title and the aim of the study in addition to general information about the organization. Then, a separate section has been assigned to each investigated variable; the endogenous (dependent) variable is SMEs performance while the exogenous (independent) variables are innovation capability, intellectual capital, and absorptive capacity. The moderator variables are environmental turbulence and innovation strategy.

In the questionnaire, the respondents were be asked to mark their option as a check in the box provided in front of every question and fill it with great care. Each box in front of every question is devising a Seven Likert scale. Every box of Likert scale has a degree of agreement option from one till seven. The seven-point scale is used as it contains more points that can give more precision about the extent of the agreement with the statement (Hair, Money, Samouel, & Page, 2007). Scales are used to measure various types of latent variables, especially in social science research. Respondents were be asked to specify their agreement or disagreement with statements concerning the processes that are currently practiced in the organization. Even so, all the variables such as SMEs performance, innovation capability, intellectual capital, absorptive capacity, environmental turbulence, and innovation strategy response is measured by a seven-point Likert. As recommended by Finstad (2010), it is better to use Likert 7 item rather than 5 items because it is more suitable for the capturing of the responses of the individuals.

### 3.4.1.1 Bilingual Questionnaire

The questionnaire was prepared in dual languages, i.e., Urdu and English. Questionnaires based on two languages are called as bilingual questionnaires (Levinson & Peng, 2007). Bilingual questionnaire for this study was prepared with the authentically verified expert translator. The translation process was then be followed by the standards recommended for academic research (Potaka & Cochrane, 2004). As aforementioned, a questionnaire was prepared in dual languages, i.e., Urdu and English (See Appendix). Bilingual questionnaire for this study was prepared and authentically been verified by the expert translator from NUML (National University of Modern Languages Pakistan). What is more, the translation process was followed by the standards recommended for academic research (Potaka & Cochrane, 2004). For that, the following steps were covered in this regard:

1. Step one was the translation of the questionnaire from English to Urdu by an expert translator.
2. After that, the review of translation was done by a separate expert.
3. Then, the re-translation of Urdu questionnaire to English was done by a person who was having English as a primary language and Urdu as a secondary language.
4. Next, the re-translated version was reviewed by an expert or a panel of experts.

Firstly, the translation into Urdu was done by Mr. Asim Butt (NUML). The revisions of questionnaires were done by Prof. Dr. Ata-ur-Rehman (NUML). Then, the re-translation from Urdu to English was done by Mr. Usama (NUML). Following the

detailed processes, the results from the back to back translation, Urdu to English, were then compared with the original English version to validate the accuracy of the content.

### **3.4.2 Operationalization and Measurement of Variables**

An operational definition is a specification of how a researcher intends to define and measure all the variables in the study, and these variables are only peculiar to that study (Creswell, 2012). Variables measurement as adapted or adopted from previous studies are discussed as follows:

#### **3.4.2.1 SMEs Performance**

Scholars have used several types of measures such as subjective measures, financial, non-financial, or operational, and innovative performance while examining the performance of a firm (Carton & Hofer, 2010). It is more desirable to get objective measures to determine performance, but it is hard to get the objective data from the Pakistani firms, particularly in a situation where most firms are un-registered with an official body, and secondly, management is reluctant in sharing their financial data. Several studies were done by Akande (2011), Majocchi, Valle, and Angelo (2015), Minai and Lucky (2011), Murphy, Trailer, and Hill (1996) and Murphy and Callaway (2004) had used the subjective measures for performance that provides the insight needed by the firm. However, in this study SMEs performance measurement based on profitability and growth concerning financial as well as non-financial aspects.

The resource-based view (RBV) posited that the unique resources of a firm generate competitive advantages (Wernerfelt, 1984; Peteraf, 1993; Barney, 1991). So the competitive advantage always gain against the competitors. In this study, firm performance measure comprises of 10 items which were adopted from Wiklund and Shepherd (2003). Respondents were asked to compare their firm with their competitors from the ten different aspects of performance over the past three years. Seven-point Likert Scale ranging from” 1 “Much lower than competitors” to 7 “Much higher than competitors” was used for recording their responses. Table 3.1 displayed the items of firm performance.

Table 3. 1  
*Items for SME Performance adapted from Wiklund and Shepherd (2003)*

No	Items
1	Sales growth
2	Revenue growth
3	Net profit margin
4	Product/service innovation
5	Process innovation
6	Adoption of new technology
7	Product/service quality
8	Product/service variety
9	Customer satisfaction
10	Growth in the number of employees.

### 3.4.2.2 Innovation Capability

For this study, innovativeness or innovation capability is defined as “an organization’s overall innovative capability in introducing new products to the market, or opening up new markets, through combining strategic orientation with innovative behavior and process”(Catherine Wang & Ahmed, 2004). It comprises of five dimensions: process

innovativeness, product innovativeness, behavioral innovativeness, strategic innovativeness, and market innovativeness (Catherine Wang & Ahmed, 2004).

Product innovativeness is defined “as the novelty and meaningfulness of new products introduced to the market at a timely fashion.” Market innovativeness is defined “as the newness of approaches that companies adapt to enter and exploit the targeted market.”

Process innovativeness is defined “as the introduction of new production methods, new management approaches, and new technology that can be used to improve production and management processes.” Additionally, behavioral innovativeness is defined “as the demonstration through individuals, teams and management enable the formation of an innovative culture, the overall internal receptivity to new ideas and innovation.”

Meanwhile, strategic innovativeness is defined “as the ability to manage ambitious organizational objectives, and identify a mismatch of these ambitions and existing resources to stretch or leverage limited resources creatively” (Catherine Wang & Ahmed, 2004).

As for the innovation capability scale was measured by 20 items: process innovativeness (4 items), product innovativeness (4 items), behavioral innovativeness (4 items) and strategic innovativeness (4 items) , and market innovativeness (4 items) which was adopted from Catherine Wang & Ahmed, (2004),. Table 3.2 reflects the items for innovation capability.

Table 3. 2

*Items for Innovation capability adapted from Catherine Wang & Ahmed (2004).*

No	Items
<b><i>Product Innovativeness</i></b>	
1	In the new product and service introductions, our company is often first-to-market.
2	Our new products and services are often perceived as very novel by customers
3	In comparison with our competitors, our company has introduced more innovative products and services during the past five years
4	In comparison with our competitors, our company has a lower success rate in new products and services launch
<b><i>Process Innovativeness</i></b>	
5	We are constantly improving our business processes
6	During the past five years, our company has developed many new management approaches
7	When we cannot solve a problem using conventional methods, we improvise on new methods
8	Our company changes production methods at a great speed in comparison with our competitors.
<b><i>Market Innovativeness</i></b>	
9	In comparison with our competitors, our products' most recent marketing program is revolutionary in the market
10	Our recent new products and services are only minor changes from our previous products and services
11	In new product and service introductions, our company is often at the cutting edge of technology
12	New products and services in our company often take us up against new competitors
<b><i>Strategic Innovativeness</i></b>	
13	Our firm's research and development or product development resources are adequate to handle the development need of new products and services
14	Key executives of the firm are willing to take risks to seize and explore growth opportunities
15	Senior executives constantly seek unusual, novel solutions to problems
16	When we see new ways of doing things, we are last at adopting them. (R)
<b><i>Behavioral Innovativeness</i></b>	
17	We get a lot of support from managers if we want to try new ways of doing things
18	In our company, we tolerate individuals who do things differently.
19	We are willing to try new ways of doing things and seek unusual, novel solutions
20	We encourage people to think and behave in original and novel ways.



### 3.4.2.3 Intellectual Capital

Intellectual capital is defined as the sum of all knowledge firms apply for competitive advantage. Intellectual capital comprises three dimensions: human capital, organizational capital, and social capital (Subramaniam & Youndt, 2005). Human capital is defined “as the knowledge, skills, and abilities residing with and utilized by an individual,” whereas organizational capital is “the institutionalized knowledge and codified experience residing within and utilized through databases, patents, manuals, structures, systems, and processes.” The third aspect, social capital, is defined “as the knowledge embedded within, available through, and utilized by interactions among individuals and their networks of interrelationships” (Subramaniam & Youndt, 2005).

The intellectual capital scale was measured by 14 items: human capital (5 items), social capital (5 items) and organizational capital (4 items) which was adapted from Subramaniam and Youndt, (2005). Table 3.3 reflects the items for intellectual capital construct.

Table 3. 2

*Items for Intellectual capital adapted from Subramaniam and Youndt, (2005).*

No	Items
<b><i>Human Capital</i></b>	
1	Our employees are highly skilled.
2	Our employees are widely considered the best in our industry.
3	Our employees are creative and bright.
4	Our employees are experts in their particular jobs and functions.
5	Our employees develop new ideas and knowledge.
<b><i>Social Capital</i></b>	
6	Our employees are skilled at collaborating to diagnose and solve problems.
7	Our employees share information and learn from one another.
8	Our employees interact and exchange ideas with people from different areas of the company.

Table 3.3 (continued)

*Items for Intellectual capital adapted from Subramaniam and Youndt, (2005)*

No	Items
9	Our employees partner with customers, suppliers, alliance partners, etc. to develop solutions.
10	Our employees apply knowledge from one area of the company to problems and opportunities that arise in another.
	<b><i>Organizational Capital</i></b>
11	Our organization uses patents and licenses as a way to store knowledge.
12	Much of our organization's knowledge is contained in manuals, databases, etc.
13	Our organization's culture (stories, rituals) contains valuable ideas, ways of doing business.
14	Our organization embeds much of its knowledge and information in structures, systems, and processes.

#### 3.4.2.4 Absorptive Capacity

Being referred to as “the degree to which a company involves in knowledge acquisition activities, assimilates acquired information into existing knowledge, transforms the newly adapted knowledge, and commercially exploits the transformed knowledge to its competitive advantage” (Flatten et al., 2011), absorptive capacity is a firm’s capability which consists of acquisition, assimilation, transformation, and exploitation. (i) Acquisition refers to “firm’s capability to recognize, diagnose, and obtain specific knowledge that is externally generated and considered significant to its activities.” (ii) Assimilation denotes “the firm’s capability to process, analyze, explain, and comprehend the information, knowledge, and skills acquired from external sources.” (iii) Transformation, basically refers to “firm’s capability to integrate the newly acquired knowledge with the existing knowledge through a bundle of procedures, technologies, and resources that facilitate utilization of integrated knowledge” and finally (iv) exploitation, essentially indicates “firm’s capability to implement the

transformed knowledge into its products and processes to maintain continuous growth”.

The questions are adapted from previous literature (Flatten et al., 2011).

The absorptive capacity scale was measured by 16 items: acquisition (4 items), assimilation (4 items), transformation (4 items), and exploitation (4 items), which was adapted from Flatten et al., (2011). Table 3.4 reflects the items for the absorptive capacity.

Table 3. 3

*Items for Absorptive capacity adapted from Flatten et al., (2011).*

No	Items
<b><i>Acquisition</i></b>	
1	The search for relevant information concerning our industry is an every-day business in our company.
2	Our management motivates the employees to use information sources within our industry.
3	Our management expects that the employees deal with information beyond our industry.
4	Our interaction with our suppliers is characterized by mutual trust.
<b><i>Assimilation</i></b>	
5	In our company ideas and concepts are communicated cross-departmental
6	In our company there is quick information flow, e.g., if a business unit obtains important information, it communicates this information promptly to all other business units or departments.
7	Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements.
8	Our management emphasizes cross-departmental support to solve problems.
<b><i>Transformation</i></b>	
9	Our employees can structure and to use collected knowledge.
10	Our employees are used to absorb new knowledge as well as to prepare it for further purposes and to make it available.
11	Our employees successfully link existing knowledge with new insights.
12	Our employees can apply new knowledge in their practical work.

Table 3.4

Items for Absorptive capacity adapted from Flatten et al., (2011)

No	Items
	<b>Exploitation.</b>
13	Our management supports the development of prototypes.
14	Our company regularly reconsiders technologies and adapts them accordant to new knowledge.
15	Our company can work more effective by adopting new technologies.
16	Our enterprise has the capabilities needed to exploit the knowledge obtained from the outside.

### 3.4.2.5 Environmental Turbulence

Environmental turbulence refers to “the frequency and unpredictability of the market, technology, and competition that influence firm performance.” As for the operational definitions, (1) market turbulence refers to “the rate of change in the composition of customers and their preferences”, (2) technological turbulence refers to “the rate of technological change”, and (3) competitive intensity refers to “the degree of competition among firms and areas in the product market” (Jaworski & Kohli, 1993).

The environmental turbulence scale was measured by 15 items: market turbulence (5 items), competitive intensity (6 items) and technological turbulence (4 items), which was adapted from Jaworski and Kohli (1993). Table 3.5 reflects the items for environmental turbulence.

Table 3. 4

*Items for Environmental turbulence adapted from Jaworski and Kohli (1993).*

No	Items
	<b><i>Market Turbulence</i></b>
1	In our kind of business, customers' product preferences change quite a bit over time.
2	Our customers tend to look for a new product all the time.
3	We are witnessing demand for our products and services from customers who never bought them before.
4	New customers tend to have product-related needs that are different from those of our existing customers.
5	We cater too many of the same customers that we used to in the past.
	<b><i>Competitive Intensity.</i></b>
6	Competition in our industry is cutthroat.
7	There are many "promotion wars" in our industry
8	Anything that one competitor can offer, others can match readily
9	Price competition is a hallmark of our industry.
10	One hears of a new competitive move almost every day.
11	Our competitors are relatively weak.
	<b><i>Technological Turbulence</i></b>
12	The technology in our industry is changing rapidly.
13	Technological changes provide big opportunities in our industry
14	A large number of new product ideas have been made possible through technological breakthroughs in our industry.
15	Technological developments in our industry are minor. (R)

#### 3.4.2.6 Innovation Strategy

The strategy establishes the direction and scope of an organization. Choosing to execute activities which differ from the competitions (Porter, 1980), the literature indicates several possible alternatives strategies that are available for a firm to pursue. For this research, the strategy is examined at the business level. Innovation strategy is applied “as the innovative direction of company approach to the choice of objectives, methods, and ways to fully utilize and develop the innovative potential.” Thus, innovation strategy is a plan to give direction and encourage innovation within the firm (Terziovski, 2010)

The innovation strategy was adapted from Terziovski (2010). The innovation strategy includes 9 items. Table 3.6 reflects the items for the innovation strategy.

Table 3. 5  
*Items for Innovation strategy adapted from Terziovski (2010).*

No	Items
	<b><i>Innovation strategy</i></b>
1	The organization's vision or mission includes a reference to innovation.
2	Innovation strategy has helped the organization to achieve its strategic goals.
3	Increasing our production volume is an important measure of our process innovation.
4	Improving administrative routines is seen as part of our innovation strategy.
5	Internal cooperation is an important part of innovation strategy implementation.
6	Customer satisfaction is part of our innovation strategy.
7	Improving product or service quality is one of our key objectives of innovation strategy.
8	Formulating innovation strategy increases employee skills.
9	Improving employee commitment, morale, or both as part of our innovation strategy monitoring.

#### 3.4.2.7 Finalizing Measurement for the Study

Overall, there are six variables studied under the SMEs contexts. These are innovation capability, intellectual capital, and absorptive capacity as independent variables, innovation strategy, and environmental turbulence as moderators and SMEs performance is the dependent variable. There are a total of 84 items in the questionnaires. The details are included in Table 3.7.

Table 3. 6  
*Constructs Measurements and Measurement Sources.*

<b>Construct</b>	<b>Dimensions</b>	<b>Source</b>	<b>No of Items</b>
Innovation Capability	Behavioral Innovativeness	Catherine Wang & Ahmed (2004)	4
	Market Innovativeness		4
	Product Innovativeness		4
	Process Innovativeness		4
	Strategic Innovativeness		4
Intellectual Capital	Human Capital	Subramaniam and Youndt (2005)	5
	Organizational Capital		4
	Social Capital		5
Absorptive Capacity	Acquisition	Flatten et al. (2011)	4
	Assimilation		4
	Exploitation		4
	Transformation		4
Environmental Turbulence	Competitive Intensity	Jaworski and Kohli (1993)	6
	Market Turbulence		5
	Technological Turbulence		4
Innovation Strategy		Terziovski (2010)	9
SME performance		Wiklund and Shepherd (2003)	10
<b>Total</b>			<b>84</b>

### 3.4.3 Pilot Study

To ensure the questionnaire's intelligibility and avoid any lapses, the questionnaire should undergo a pilot test, by using data gathered from the same targeted population of the study to verify the reliability and validation of the instrument (Bryman & Bell, 2011). For pilot study purposes, the size of the group commonly ranges from 25- 100 subjects (Cooper & Schindler, 2003). A pilot study was conducted to test the reliability and validity of the instrument. Based on the feedback of the pilot test, final changes

were be made. Expert's opinion and comments were be requested to ascertain the language and structure of the instrument.

### **3.4.3.1 Validity**

Sekaran (2003) defined validity as measuring its extent. A panel of experts was used to judge the appropriateness of the items chosen for this study. Experts who were consulted included senior lecturers, associate professors, and professors in the School of Business, Universiti Utara Malaysia and Quaid-e-Azam University, Islamabad, Pakistan. Furthermore, some SMEs owners and managers were also consulted for their input. Therefore, some items have been re-worded to measure the construct so that easily understood by the respondents. Within two weeks in December 2017, this process was completed.

After taking into account the experts' opinion, the researcher adapted a better version of the instrument, which was administered for the pilot study. Usually, a small sample is taken for the pilot study (Cooper & Schindler, 2003). Hence, a total of 50 copies of the questionnaires were randomly personally administered. Out of the distributed questionnaires, 40 were collected, and 10 were not properly completed. Only 40 responses were considered for analysis. The high response rate of about 80% was achieved due to the distribution and collection of questionnaires personally.



### 3.4.3.2 Reliability

Reliability is to check the internal consistency and stability of the instrument used. For the study, the inter-item consistency of all factors under study were examined. The reliability coefficient of Cronbach's alpha was used in this study, specifically to assess the consistency of the scale. According to Hair et al. (1998), the Cronbach's alpha value should be at least .60 for exploratory study, but .70 is considered better. However, Fleming (1985) suggested that the alpha value of .50 is still considered acceptable but value less than .50 is very poor and unacceptable. By the application of Cronbach's alpha formula, the instrument yielded satisfactory internal consistency for all the independent variables and the dependent variable, as well as the moderator variable. Table 3.8 below shows a summary of the reliability results of the pilot study.

Table 3.7  
*Constructs' Cronbach's Alpha Values of Pilot Study*

Construct	Items in Constructs	Items in Dimensions	Cronbach's Alpha
<b>Absorptive Capacity</b>	<b>16</b>		<b>0.903</b>
Acquisition		4	0.847
Assimilation		4	0.856
Exploitation		4	0.835
Transformation		4	0.778
<b>Innovation Capability</b>	<b>20</b>		<b>0.881</b>
Behavioral Innovativeness		4	0.858
Market Innovativeness		4	0.853
Product Innovativeness		4	0.804
Process Innovativeness		4	0.707
Strategic Innovativeness		4	0.886

Table 3.8  
*Constructs' Cronbach's Alpha Values*

<b>Construct</b>	<b>Items in Constructs</b>	<b>Items in Dimensions</b>	<b>Cronbach's Alpha</b>
<b>Intellectual Capital</b>	<b>14</b>		<b>0.894</b>
Human Capital		5	0.855
Organizational Capital		4	0.843
Social Capital		5	0.867
<b>Environmental Turbulence</b>	<b>15</b>		<b>0.907</b>
Competitive Intensity		6	0.881
Market Turbulence		5	0.863
Technological Turbulence		4	0.852
<b>Innovation Strategy</b>	<b>9</b>		<b>0.898</b>
<b>SME performance</b>	<b>10</b>		<b>0.923</b>

### 3.5 Population and Sampling

According to Sekaran (2003), the population always brings up such a group of people, events, or points of interest that can be a focal point for the researcher to investigate. A sample is a subset of the chosen population. Sample always includes members, which are selected from the selected population.

#### 3.5.1 Unit of Analysis

Unit of analysis is what is being studied for variable measurements (Neuman, (2005). For this study, SMEs are taken as the unit of analysis. SMEs owners/managers represent their respective firms. Therefore, owners/managers of the respondent firms were contacted to gather data regarding their firms' innovation capability, intellectual capital, absorptive capacity, innovation strategy, environmental turbulence, and firm performance.

### 3.5.2 Population of Study

This study was conducted in the textile SMEs. Therefore, the population was all small and medium-scale, owner-managed textile firms located in the country. According to the Small Medium Development Authority, there are 27,250 registered textile SMEs in Pakistan (Pakistan Bureau of Statistics, 2015). The population spreads in four main provinces in the country including Punjab, Sindh, KPK, and Baluchistan.

Table 3. 8  
*Provincial Percentages of SMEs in Pakistan*

<b>Provinces Name</b>	<b>Province-wise Percentages of SMEs</b>
Punjab	65.40
KPK	14.21
Sindh	17.69
Baluchistan	2.71

Source: SMEADA (2017)

Tables 3.9 shows the details of the total population as per the percentage ratio of each of the province and the federal territories in Pakistan. The SMEs of Pakistan are handled by SMEDA (Small and Medium Enterprises Development Authority). As per registered, in total, the numbers of SMEs listed in the SMEDA of Pakistan is 3.2 million.

### 3.5.3 Sample Size

According to Hair, Black, Babin, and Anderson (2014), a correct and acceptable sample size of the study is very important to have a direct impact on the appropriateness and statistical reliability for further analysis. The adequate sample size relies on the number of the study's variables and the method of statistical analysis. When the size of the

population is large, it is not practical for data collection from the whole population because of the limitation of many factors, e.g., cost, resources, and personnel. Therefore, from the target population, a sample is drawn. Because it is challenging to study the entire population, sampling techniques are used to obtain representative samples (Leary, 2004). There are different views from researchers regarding the sample size determination; there are diverse views of researchers. The sample size, which is less than 500 and larger than 30 are usually considered appropriate to conduct the research study (Mermin, 1978).

Krejcie and Morgan (1970) have provided a table to simplify the decision for determining sample size from a given population. The sample size for population of 20,000 = 377 and sample size for 30,000 population = 379. Therefore, it is assumed that the sample size from a given population of 27,250 was = 379 to complete the survey using the questionnaire protocol. Furthermore, in a multivariate analysis, the sample size should be 10 or more times larger than the number of predictor variables. In this study, there were 11 predictors, and the required sample size should be 110 or more. Using the '10 times' rule of thumb, the present study also employed the G\*Power program version to ensure the sample size was sufficient. The power analysis of G\*Power used to estimate the appropriate sample sizes were based on some statistical parameters (Faul, Erdfelder, Lang, & Buchner, 2007). Using 11 predictors, the study decided the medium effect size convention of 0.15 and a significance level of 5%. Based on these parameters, a sample size of 123 at the statistical power of 0.80 was determined shown in Figure 3.2.

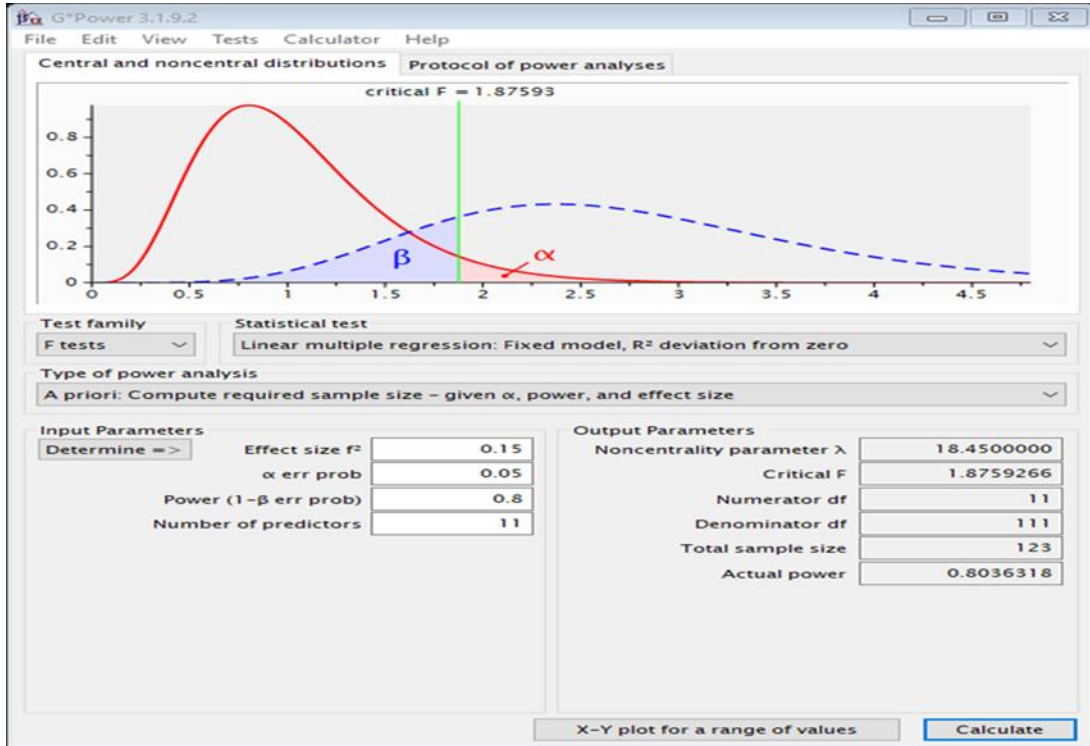


Figure 3. 16  
*The Power Analysis of G\*Power*

A survey conducted by Abdi, Awan, and Bhatti (2008) yielded a response rate of 89% as they received back 89 questionnaires out of 100 they handed over to the respondent firms. Similarly, Shah, Ahmadani, Shaikh, and Shaikh, (2012) distributed 170 self-administered questionnaires and received 144, yielding a response rate of 85%.

To achieve a higher response rate in the current study, the survey was conducted by the researcher personally distributed the questionnaires to the respondent firms. As aforementioned, for this study, sample size selection was based on Krejcie and Morgan (1970) table, which was 379 firms. According to Bryman and Bell (2007), it is recommended to have a larger sample size than the required sample size calculated to overcome the problem of sample attrition. Based on the response rate in previous

studies, Abdi, Awan, and Bhatti (2008) and Shah, Ahmadani, Shaikh, and Muhammad (2012) expected a response rate of approximately 80%.

In getting better response rate, the following the suggestion was proposed by Bryman and Bell (2003) to tackle with the problem of sample attrition, the working sample size of 479 ( $379/.80$ ) is calculated for this study. SMEs owners/managers represent their respective firms. Therefore, owners/managers of the respondent firms were contacted to gather data

### **3.6 Data Collection and Questionnaire Administration**

This study uses a survey as the prime method for collecting data as the survey method is deliberated as highly reliable (Babbie, 1990). For this, a self-administered questionnaire used in this study because of the practicality of this approach to save time and financial cost. It is the best method to integrate a large sample for the establishment of sample representation to generalize the results (May & Williams, 2002). Also, the survey method suits this research due to the low financial cost, time constraints, and lower skill requirements (Sekaran, 2000). The proper execution of this method can produce a higher level of quality in survey data, and 80-85% response rate can be achieved through this method (Burns, 2000)

In administering the questionnaires, numerous measures are taken to enhance the rate of response. Furthermore, it is quite important to obtain a higher rate of response; because the lower response can lead to findings that may be biased and difficult to generalize (Babbie, 1990). The rate of response refers to the percentage of respondents

who return the questionnaires, whereas the quality of responses determines the completeness and usefulness of data.

Thus, numerous procedures are adopted before delivering the questionnaires to raise the level of interest among the respondents (Jobber & Reilly, 1998; David Jobber, 1986). The questionnaire looked quite attractive, precise, and professional. Complex wording and lengthy sentences were avoided. Also, it is highly relevant, and by the scope and objectives of the study.

In view of the data collection methods discussed above, this research uses a questionnaire to collect data. The questionnaire is administered personally. The first benefit is that the researcher can gather all the filled questionnaires quickly. Moreover, the ultimate benefit is that the researcher can make on spot clarification of key terms and researcher can encourage the respondents to participate in the survey and put their views independently (Saunders, Lewis, & Thornhill, 2009; Sekaran & Bougie, 2013).

### **3.6.1 Sampling Technique**

The sampling method for this research is probability sampling with simple random sampling. As observed by Burns and Burns (2013) and Eriksson and Kovalainen (2008), the simple random technique allows the researcher to believe that sample characteristics refers to the total population. In addition to that, random sampling offers more generalizability and offers less biasness (Sekaran, 2003). It provides each respondent with an equal chance to be selected as the sample object of the study

(Sekaran, 2003). Additionally, there is less possibility of researcher tendency than one sample choice than others (Creswell, 2008).

The simple random sampling is used, as it is the most straightforward technique of all the sampling methods to reduce biasedness (Sekaran, 2003). The simple random sampling technique is a suitable method for a population that is not highly differentiated (MacDonald & Headlam, 1999). Sampling units in this study are the SMEs owners/managers.

### **3.7 Data Analysis Techniques**

Data was collected via questionnaires distributed to the respondents personally. Data analysis is conducted by using a statistical analytical software SPSS 23 and PLS-SEM 3.2.7. Firstly, the pilot study was done, and then after analyzing the results of the pilot study, the questionnaires are distributed into the selected samples. Different analyses are applied for the data analysis. The analysis techniques which used for this study were descriptive statistics, frequency, percentage, mean, standard deviations, descriptive analysis, factors analysis, simple regression model, and structural equation modeling (SEM). The data that is received from the respondents were coded into Statistical Package for the Social Science (SPSS). After that, the data was examined through preliminary analysis to ensure the data used represents the situation investigated for this study. Later, data was loaded into Structural Equation Modeling using Partial Least Squares (SEM-PLS) and were examined using two steps approach, namely (1) measurement model to test the reliability and validity, followed by (2) structural model to test the direct and indirect effect to answer the objectives of the study.



SEM (Structure Equation Modeling) is a second-generation multivariate data analysis technique that has overcome the limitations of the prior or so-called first-generation method. According to Hair et al. (2016), SEM is considered more robust to test multiple relationships among several variables simultaneously. It has the power to judge the relationship between structures presented by a series of statistical equations compared with a series of multiple regression equations. SEM is most often used in research as it has the capability of evaluating both linear and additive causal relationships in a model (Chin, 1998; Haenlein & Kaplan, 2004; Hair et al., 2016) because it has an inbuilt ability to perform a factor analysis and multiple regression.

Hair, Sarstedt, Ringle, Smith, and Reams (2014) classified two types of SEM, i.e., covariance-based (CB-SEM) and variance-based (VB-SEM). CB-SEM is aimed at reproducing the theoretical covariance matrix without focusing on the explained variance, and hence, confirming or disconfirming the theoretical modeled relationships. In contrast, VB-SEM (also called as PLS-SEM) is aimed at maximizing the explained variance or intended prediction regarding an endogenous latent variable. Thus, the main use of PLS-SEM is more appropriate when research is mainly focused on predicting theories in explanatory research by elaborating the variance observed in the dependent construct/variables.

Though both approaches originate from the same roots, yet CB-SEM caught more considerable attention in previous studies (Hair, Ringle, & Sarstedt, 2012). PLS-SEM has also grown exponentially recently and is predicted to be widely adopted as a more powerful tool of statistical analysis due to its distinctive features and progressive work

on its methodological side (Hair et al., 2012; Henseler et al., 2014; Sarstedt, Henseler, & Ringle, 2011). Hair, Ringle, and Sarstedt (2011) further stated that PLS-SEM, both theoretically and practically, performs the same operations of multiple regression. However, it performs a quality evaluation of the data along with explaining the variance in the endogenous constructs by using both measurement and structural models.

Since the present study was predictive rather than confirmatory of an existing theory, this study adopted PLS-SEM as the appropriate tool to be used for data analysis. This selection conformed to the rules of thumb defined in the literature (Hair et al., 2011). One of the main reasons to adopt PLS-SEM was the non-normality of the data. According to several authors for instance, (Henseler et al., 2014; Henseler, Ringle, & Sinkovics, 2009; Reinartz, Haenlein, & Henseler, 2009) PLS-SEM has the statistical properties of robust estimation of a model with non-normal data and/or distribution of the data, i.e., skewness and kurtosis. Moreover, it has an inbuilt quality of handling the measurement error in the variable scores and reflecting it in the path coefficients used in the estimation. Reinartz et al. (2009) argued that the error results in the biased estimates of a model, termed as PLS-SEM bias, are often minimal and not substantially significant. Besides, several researchers (Hair, M. Sarstedt, et al., 2014; Reinartz et al., 2009) think that PLS-SEM has more statistical power in testing or confirmation of theory in contrast to CB-SEM. PLS-SEM has been considered a '*silver bullet*' if appropriately used for the estimation of causal models (Hair et al., 2011).

### 3.8 Summary

This chapter describes the methodology part of the research. It contains the framework of the study, research approach, research design, the research technique, and the study type, the unit of analysis, the population, the sampling, the sample size determination, the sampling technique, and the details about the questionnaire. This chapter also explained the details about the data collection method, the data collection techniques, and the data analyses techniques. However, the data analysis is reported in Chapter 4.



## **CHAPTER FOUR**

### **DATA ANALYSIS AND RESULTS**

#### **4.1 Introduction**

This chapter present the results of the data analyzed by the statistical software's namely (SPSS version 23 and smart PLS 3.2.7) respectively. The first section present the initial data screening along with the preliminary descriptive data analysis which involves the missing value analysis, outlier's evaluation, normality of the data, non-response biased test, multicollinearity, and common method variance test.

In the second section, the inferential analysis were presented which involves validation and measurement of both the higher and lower order constructs to assess the internal consistency, convergent and discriminant validity of the constructs used in this study. Moreover, it consists of the assessment of the structural model that involves assessment of the significance of the proposed relationships, the effect size of latent variables, *R*-Squared values, and the predictive relevance of the structural model. As the study involves moderation, the assessment of the structural model also presents the results obtained from the moderation in the PLS-SEM analysis. Finally, the summary section summarizes the whole chapter.

#### **4.2 Response Rate**

Total 479 questioners were distributed among textile SMEs of Pakistan, out of which 381 were received. From 381 questioners, 21 were incomplete and were removed. So

the valid questionnaires were 360, and the response rate was 75 percent. Given Sekaran's (2003) viewpoint, which indicated that a response rate of 30 percent is sufficient for the survey, it can be confidently asserted that a response of 75 percent is adequate for the survey. Table 4.1 encapsulates the details.

Table 4. 1  
*Response Rate of the Questionnaires*

<b>Response</b>	<b>Frequency</b>
No. of Distributed Questionnaires	479
Returned Questionnaires	381
Returned and Usable Questionnaires	360
Returned and Excluded Questionnaires	21
Questionnaires not Returned	98
Response Rate	79.5%
Valid Response Rate	75%

#### **4.3 Data Screening and Preliminary Analysis**

Before proceeding to PLS-SEM analyses, a preliminary examination of the collected data is essential (Hair, 2007), to avoid any possible violation of the key underlying assumptions of the application of multivariate techniques. The first step of preliminary data screening of this study was inputting and coding of the usable returned questionnaires in the SPSS. As mentioned in the previous section, the returned and usable questionnaires are 360. Then, the negatively worded items in the survey were reverse-coded. They are INPD 4 (Product innovativeness), INMK 2 (Market innovativeness), INSTG 4 (Innovation strategy), ETMK 1 (Market turbulence), ETCI 6 (Competitive intensity) and ETTB 4 (Technological turbulence).

### 4.3.1 Missing Value Analysis

Firstly, missing value analysis was done to ensure the correctness of data set. Replacement of missing values in the PLS-SEM, cannot be overemphasized, because the existing statistical techniques and tools not supported to run the file containing missing values in the data set (Schumacker & Lomax, 2004). Also, the results of the analysis significantly based on the accuracy of data organization (Kristensen & Eskildsen, 2010; Newman, 2009).

This study observed few cases which have missing values; such as demographic variables, had eight missing values, innovation capability had 17 missing values, intellectual capital had eight missing values, and absorptive capacity had 9 missing values. Missing values in the whole dataset were 0.122 percent, which was lower than 5 % (see Table 4.2). Following the criteria of Tabachnick and Fidell (2007), who suggested that the rate of missing values should not be more that 5 %, hence, no single item was subject to deletion. The mean substitution was used to replace missing values, as suggested by (Hair et al., 2010).

Table 4. 2  
*Total and Percentage of Missing Values*

<b>Constructs</b>	<b>Number of Missing Values</b>
No of Firm Employees	2
Sales Turnover (2016, 2017, 2018)	6
Innovation Capability	17
Intellectual Capital	8
Absorptive Capacity	9
<b>Total</b>	42
<b>Percentage</b> (out of 34, 560 data points)	0.122%

#### 4.3.2 Evaluation of Outliers

The second preliminary data analysis technique is the evaluation of outliers. The outlier is known as observations that look irregular in a dataset due to incorrect data entry, was described by Hair et al. (2010) as the values with rare traits that distinguish it from other values. Outliers can have an adverse effect on the estimation of the regression coefficients and thus, tends to bias the results (Verardi & Croux, 2008). Therefore, it is important to check for any likely outliers in the dataset before conducting the main data analysis.

In this study, the researcher applies Mahalanobis  $D^2$  measurement to determine the multivariate outliers. These were followed by testing outliers by using the Mahalanobis distance with a cut of the point where chi-square is 15.09 ( $p < 0.01$ ) was used to identify outliers. Mahalanobis distance ( $D^2$ ), as described by Tabachnick and Fidell (2007), is the gap between an individual case and the centroid of other cases. The centroid represents the point of the intersection of the mean of the whole variable. Since the number of predictors in the current study is five, which is equal to the degree of freedom according to the Chi-square table the chi-square value would be 15.09 ( $p < 0.01$ ) (Tabachnick & Fidell, 2007). In this case, any case that has a Mahalanobis distance above 15.09 ( $p < 0.01$ ) would be classified as an outlier and deleted. Based on the threshold, 12 cases were found to be multivariate outliers and then deleted. The cases are 15, 22, 30, 35, 43, 57, 65, 66, 71, 75, 137 and 229. With the deletion of the cases, the total numbers of cases remained for the analysis are 348. Table 4.3 presents the multivariate outliers detected and deleted.

Table 4. 3  
*Multivariate Outliers*

<b>ID</b>	<b>Mahalanobis</b>
15	32.237
22	27.475
30	24.404
35	23.776
43	23.493
57	22.717
65	22.506
66	21.914
71	21.818
75	21.581
137	21.477
229	20.887

### 4.3.3 Normality Test

The next technique used to meet the preliminary assumptions of data was the normality test. Although PLS-SEM was supposed to offer accurate estimations of the model in situations with tremendously non-normal data. However, some authors criticized this assumption and recently Hair, Sarstedt, Ringle, and Mena (2012) stated that it is better to conduct the normality test before the test the model. Additionally, highly skewed or kurtotic data might increase the standard errors in the bootstrapping estimates, which in turn misjudge the significance of the path coefficients.

Following the above-stated argument, normality test was performed through both numerical and graphical methods, representing skewness and kurtosis (Razali & Wah, 2011). For a sample greater than 200, the graphical distribution shape method is necessary along with the numerical tests of normality (Field, 2009). Also, negative,



positive, and even undefined skewness and kurtosis method are believed to be descriptive statistics (Razali & Wah, 2011; Tabachnick & Fidell, 2007). Hence, a normal probability, and histogram plots, and the skewness and kurtosis values were examined to ensure the assumptions of normality. Figure 4.1 and Table 4.4 show that the data is normal.

Table 4. 4  
Numerical Method: Skewness and Kurtosis

Constructs	Mean	Std. Deviation	Skewness	Kurtosis
INOCAP	5.074	.663	-3.305	1.463
IC	5.116	.695	-3.580	-1.452
ABCAP	5.081	.686	-3.053	-1.528
ENTUB	5.259	.682	-1.687	-.268
INOSTGY	5.212	.740	-3.465	-.785
PF	4.922	.673	-1.236	.340

Note: INOCAP = Innovation Capability; IC = Intellectual Capital; ABCAP = Absorptive Capacity;

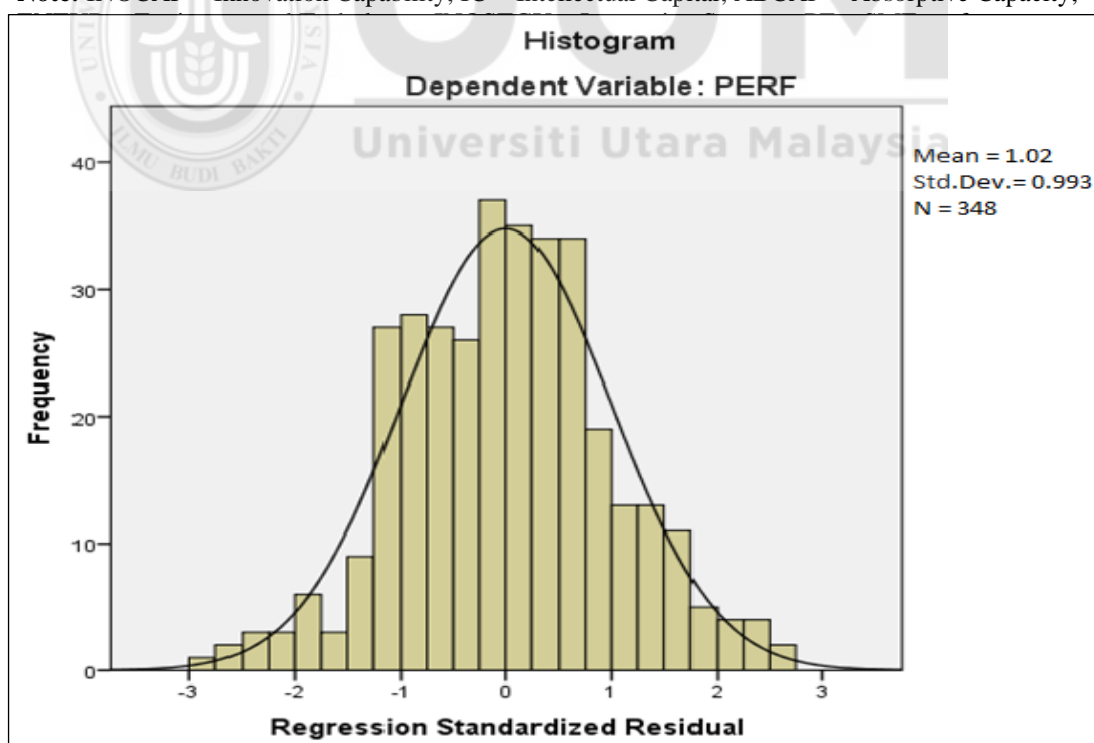


Figure 4. 1  
Histogram and Normal Probability Plots.

#### 4.3.4 Multicollinearity Test

The multicollinearity between two or more exogenous constructs explains the correlation between them. The high correlations between two or more constructs exhibit a high level of multicollinearity. The presence of multicollinearity can significantly impact the regression coefficient estimates for their statistical significance along with the other statistical tests (Chatterjee & Yilmaz, 1992; Hair *et al.*, 2006). Particularly it improves the path coefficients standard errors that, in turn, results in making the coefficients non-significant (Tabachnick & Fidell, 2007).

To detect multicollinearity, two different approaches were used in this study (Chatterjee & Yilmaz, 1992; Peng & Lai, 2012). The first technique used in this study to identify the multicollinearity involved to examine the correlation matrix of the exogenous measurement constructs. Following the rule of thumb defined by Hair *et al.* (2010), the value of inter-correlations is 0.9 and above that is considered as high correlation. Hence, the results show that all correlation matrix of exogenous variables is in the acceptable range, as shown in Table 4.5.

Table 4. 5  
*Correlation Matrix of the Exogenous Latent Constructs*

<b>Constructs</b>	<b>INOCAP</b>	<b>IC</b>	<b>ABCAP</b>	<b>ENTUB</b>	<b>INOSTGY</b>
INOCAP	1				
IC	.549**	1			
ABCAP	.519**	.711**	1		
ENTUB	.357**	.540**	.456**	1	
INOSTGY	.299**	.612**	.578**	.609**	1

Note: INOCAP = Innovation Capability; IC = Intellectual Capital; ABCAP = Absorptive Capacity; ENTUB = Environmental Turbulence; INOSTGY = Innovation Strategy.

The second approach, which has been used to detect the multicollinearity is to check the Variance Inflated Factor (VIF) and respective tolerance. VIF values less than 10, and the tolerance value more than .20 are acceptable, which shows that no multicollinearity exists (Hair et al., 2010). In this study, results show that no multicollinearity exists in the data set as VIF values not more than 4, and tolerance values are surpassed to 0.65 as shown in Table 4.6.

Table 4. 6  
*Multicollinearity Test*

<b>Constructs</b>	<b>Tolerance</b>	<b>Variance Inflation Factor</b>
INOCAP	.659	1.518
IC	.324	3.087
ABCAP	.372	2.687
ENTUB	.575	1.740
INOSTGY	.486	2.058

#### **4.3.5 Non-Response Bias**

Non-response bias has been construed as the differences in the answers between respondents and no respondents (Lambert & Harrington, 1990). To assess the non-response bias, “time-trend extrapolation system” has been recommended by Armstrong and Overton (1977). This method compares the early and late respondents (i.e., non-respondents). This compares early respondents to late respondents and assumed that subjects who are late respondents are more like non-respondents. Furthermore, to minimize the tendency of no-response bias, a researcher is required to achieve a minimum response rate of 50% (Lindner & Wingenbach, 2002), which was achieved in the data collection process.

Given the aforementioned approach, based on the survey responses, respondents are categorized in two different groups' namely early and late respondents, which connotes all variables.

The data collection was started in December 2017, by distributing the questionnaires to the target respondents. Some questionnaires were returned early till January 2018 (Early responses) while some were received back late in March 2018 (late responses). Therefore, late responses were considered as the sample of non-respondents over the early responses which were assumed to represent non-respondents' group (Miller & Smith, 1983). The independent-samples t-test results showed that the values of every latent construct of this study were not lower than the threshold of 0.05 of Levene's equality test of variances, as shown in Table 4.7. Thus the results indicated that non-response bias was not an issue in this study.

Table 4. 7  
*Results of Independent-Samples T-test for Non-Response Bias*

<b>Constr.</b>	<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Levene's Test</b>	
					<b>F</b>	<b>Sig.</b>
INOCAP	1 Early Response	203	.189	.037	74.87	0.235
	2 Late Response	157	.200	.016		
IC	1 Early Response	203	.261	.051	59.349	0.255
	2 Late Response	157	.286	.028		
ABCAP	1 Early Response	203	.226	.055	16.086	0.543
	2 Late Response	157	.243	.044		
ENTUB	1 Early Response	203	.250	.055	44.342	0.219
	2 Late Response	157	.267	.029		
INOSTGY	1 Early Response	203	.459	.071	45.928	0.129
	2 Late Response	157	.480	.039		
PF	1 Early Response	203	.414	.056	30.961	0.276
	2 Late Response	157	.419	.036		

Note: INOCAP = Innovation Capability; IC = Intellectual Capital; ABCAP = Absorptive Capacity; ENTUB = Environmental Turbulence; INOSTGY = Innovation Strategy; PF = SME performance

#### 4.3.6 Common Method Variance Test

The Common Method Variance (CMV) refers to the variance contributed by measurement method (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), rather the measurement constructs. In the self-reported survey, the presence of CMV is a main concern (Lindell & Whitney, 2001). Its presence can inflate the results of structural paths between the variables of interest (Conway & Lance, 2010). Thus, several procedural remedies were adopted to minimize the effects of CMV, which were in line with the recommended procedures defined by (Viswanathan & Kayande, 2012).

To reduce the effect of CMV's this study take some steps such as reduce the evaluation apprehension of respondents' by communicating them in the survey questionnaire there is no right or wrong answer and assure them the utmost confidentiality of the data. Moreover, all the questions of the questionnaire were written in simple, concise, and self-explanatory sentences.

Moreover, using only one rater, item characteristics, item context, and measurement context are the main resources that might cause CMV bias (Podsakoff et al., 2003). Therefore, Harman's single factor test was performed to examine whether there was common method variance bias in the data of this study. Based on the exploratory factor analysis with the un-rotated factor solution using SPSS 21, this study found that the first factors totally can explain 32.475% variance of the whole constructs (see **Appendix C**). Following the rule of the thrum of less than 40% as suggested by Guide and Ketokivi, 2015, the author can conclude that the common method variance bias was not an issue in the current study.

#### 4.4 Descriptive Statistics: Profile of Respondents

This section presented demographic information about the respondents and their respective organizations, and these include the respondents' position, gender, marital status, age group, level of education, sales turnover in the respondents' respective organizations, and years of operations. The total number of responses included in the analysis of the study were counted to be 348 (96.6%), out of 360 total responses (refer to Table 4.8). A total of 316 (91%) of the respondents were CEOs/managing directors, and only 9% (32) of the respondents were the senior managers in their respective organizations. Gender wise a wider gap can be seen in the responses where 310 (89.3%) of the respondents are male, and only 38 (10.4%) are females. With respect to marital status, 82.1% (285) of the respondents represent the married category while the rest of the respondents, i.e., 17.9% (63) were found to be single. Majority of the respondents who counted for 52.9% of the respondents are aged between 31 and 40 years. Followed by the second group, a total of 99 (28.6%) respondents are in their forties to a maximum age of 50 years. Only a small portion of the respondents, 43 (12.4%) of the total respondents are in the age bracket of 20-30 years. Last not the least, the most senior concerning the age bracket of above 50 years old, are counted as 21 (6.1%) of the total respondents.

Furthermore, 36, representing 10.4% of the respondents, and 33 (9.2%) hold a diploma and matric certificates, respectively. 93 (26.6%) hold intermediate certificates and 80 (23.1%) hold bachelor degrees, but the majority of the respondents (30.6%) have finished their Master degrees. About the number of employees in the respective organizations in the year 2016, 194 (55.8%) organizations have between 51-150

employees, 117 (33.8%) organizations have between 10-50 employees, and 12 organizations, representing (3.2%), have between 151-250 employees. However, only 25 (7.2%) organizations have less than 10 employees. Likewise, in 2017, 154 (44.2%) organizations have between 51-150 employees, 84 (24.3%) organizations have between 10-50 employees, and 96 organizations, representing (27.7%), have between 151-250 employees. However, only 14 (3.8%) organizations have less than 10 employees. As for 2018, the organizations that possess between 151-250 employees are 217 in numbers. This value represents 62.7% of the respondents' organizations. While 116 (33.5%) organizations have between 51-150 employees, only 15 (3.8%) organizations have between 10-50 employees.

With regards to the sales turnover in the respondents' organizations, in 2016, 135 (39%) organizations obtained between 50-75 Million Rupees while 175 (50.6%), representing the majority, obtained less than 50 Million Rupees. However, few organizations, 36 (10.4%), obtained between 75-100 Million Rupees. Unlike 2016, the majority of the organizations (164 [representing 47.4% of the respondents' organizations]) in 2017 obtained between 50-75 Million Rupees, 121 (34.4%) obtained less than 50 Million Rupees, but only 63 (18.2%) organizations obtained between 75-100 Million Rupees. In 2018, 197 (56.6%) organizations obtained between 50-75 Million Rupees while 117 (33.6%) obtained between 75-100 Million Rupees and 34 (9.7%) organizations obtained less than 50 Million Rupees.

As far as years of operations of the respondents' organizations are concerned, the majority of the organizations constituting 81 (23.4%), have been operating for more

than a decade. The organizations who have been in operations in the last 20 years are counted to be only 67 (19.4%) followed by 79 (22.8%) of organizations are operating for more than two decades. Besides, 79 (22.8%) organizations have years of operation, ranging between 16-20 years. As 67 (19.4%) organizations were found to have 21-30 years of operations, so also 64 (18.5%) organizations' years of operation ranged between 4-7 years. The remaining organizations, constituting 35 (9.5%) and 22 (6.4%), have the years of operation ranging between 8-11 years and 1-3 years respectively.

To sum up, it can be inferred based on substantial variations in the respondents' profile that the information obtained and used in this study are diverse and hence, can be considered for generalizability of the results.





Table 4. 8  
*Descriptive Analysis of Demographic Data*

<b>Demography</b>	<b>Indicators</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Position</b>	CEO/Managing Director	316	91.0
	Senior Manager	32	9.0
	Others	0	0
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>Gender</b>	Male	310	89.6
	Female	38	10.4
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>Marital Status</b>	Married	285	82.1
	Single	63	17.9
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>Age Group</b>	20-30	44	12.4
	31-40	184	52.9
	41-50	99	28.6
	>50	21	6.1
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>Level of Education</b>	Diploma	36	10.4
	Matric	33	9.2
	Intermediate	93	26.6
	Bachelor	80	23.1
	Master's	106	30.6
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>No. of Employees 2016</b>	<10	25	7.2
	10-50	117	33.8
	51-150	194	55.8
	151-250	12	3.2
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>No. of Employees 2017</b>	<10	14	3.8
	10-50	84	24.3
	51-150	154	44.2
	151-250	96	27.7
<b>Total</b>		<b>348</b>	<b>100.0</b>

Continue

Table 4. 8 (Continue)  
*Descriptive Analysis of Demographic Data*

<b>Demography</b>	<b>Indicators</b>	<b>Frequency</b>	<b>Percentage</b>
<b>No. of Employees</b> <b>2018</b>	10-50	15	3.8
	51-150	116	33.5
	151-250	217	62.7
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>Sales Turnover</b> <b>2016</b> (Million Rupees)	<50	175	50.6
	50-75	137	39.0
	76-100	36	10.4
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>Sales Turnover</b> <b>2017</b> (Million Rupees)	<50	121	34.4
	50-75	164	47.4
	76-100	63	18.2
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>Sales Turnover</b> <b>2018</b> (Million Rupees)	<50	34	9.2
	50-75	197	56.6
	76-100	117	33.8
<b>Total</b>		<b>348</b>	<b>100.0</b>
<b>Years of Operation</b>	1-3	22	6.4
	4-7	64	18.5
	8-11	35	9.5
	12-15	81	23.4
	16-20	79	22.8
	>20	67	19.4
	<b>Total</b>		<b>348</b>

#### 4.5 Descriptive Analysis of the Latent Constructs

After the execution of preliminary analysis, the statistical variables with their description were determined in the study using descriptive analysis that comprises of maximum and minimum scores, standard deviation value, and the mean of all variables.

Table 4.9 shown below comprises of the minimum, maximum, mean, and standard deviation of the latent constructs.

As exhibited in Table 4.9, the maximum mean value was observed to be 5.259, and the minimum value was 4.922, along with the standard deviation of 0.663 as minimum and 0.7405 as maximum. Which shows that mean values of all latent constructs standard deviation were quite acceptable.

Table 4. 9  
*Descriptive Statistics for Latent Variables*

<b>Latent Constructs</b>	<b>No. of Items</b>	<b>Mean</b>	<b>St. Deviation</b>
INOCAP	20	5.074	.663
IC	14	5.116	.695
ABCAP	16	5.081	.686
ENTUB	15	5.259	.682
INOSTGY	9	5.212	.740
PF	10	4.922	.673

**Note:** INOCAP = Innovation Capability; IC = Intellectual Capital; ABCAP = Absorptive Capacity; ENTUB = Environmental Turbulence; INOSTGY = Innovation Strategy; PF = SME performance.

#### **4.6 Partial Least Square (PLS) Structural Equation Modeling Approach**

Hair, Ringle, and Sarstedt (2013) and Hair et al. (2017) recommended a two-step process in the assessment of PLS-SEM. The approach involves the determination of the measurement model and the structural model. According to Henseler, Ringle, and Sinkovics (2009), testing the structural model may be meaningless unless the measurement model has been evaluated. Therefore, the current study assessed the measurement model before the structure model to determine the extent of the data collected according to the model. Figure 4.2 summarises the process.

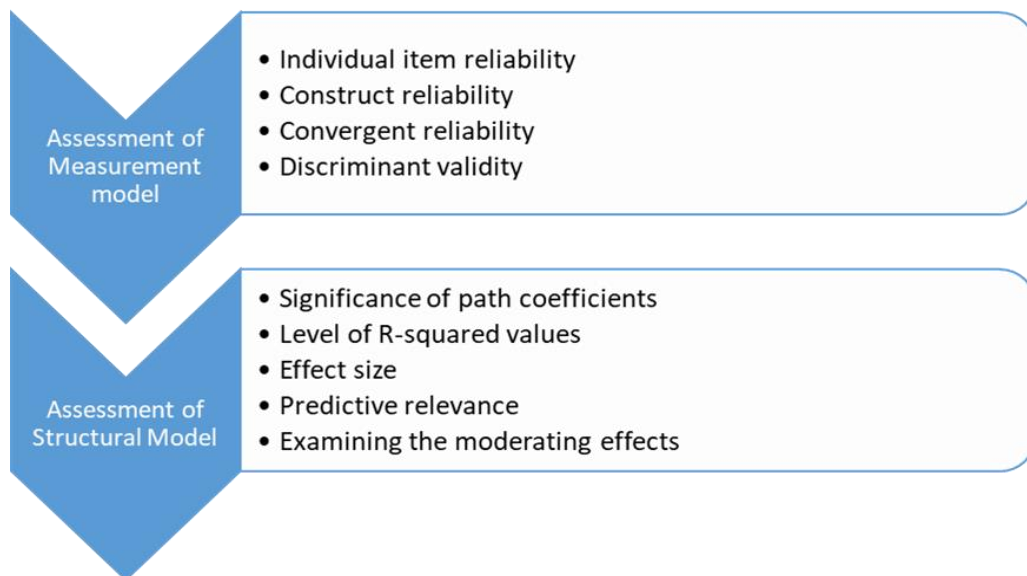


Figure 4. 2  
*Two-Step Process for the Assessment of PLS-SEM*  
 Source: Henseler et al. (2009).

#### 4.7 Measurement Model (Outer Model) Evaluation

Becker, Klein, and Wetzels (2012) recommended the steps for the assessment of the measurement. Foremost, all the inner and outer paths were drawn in the Smart-PLS software. Four variable constructs (absorptive capacity, intellectual capital, innovation capability, and environmental turbulence) were specified as Type II (Reflective-Formative) measures in Hierarchical Component Model (HCM). All the first-order construct measures in the HCM are reflective, and the lower or second-order constructs are formative. The constructs of Performance variable and Innovation strategy variable are reflective in nature. Therefore, a two-stage approach of the first-order reflective measurement model and second-order reflective-formative hierarchical model was applied in this study. Hence, this study firstly validates the first-order reflective constructs by reporting the internal consistency, indicator reliability, convergent

validity, discriminant validity. In the second step, this study picked out the latent variable scores (LVS) from the algorithm of the first model and created a second-order model referred to the two-stage model. By running the bootstrapping with a 500 sampling in the formative measurement model, the results the weights and VIF values were found to be in line with the recommended values prescribed by Hair et al., (2016), for the measurement of the formative constructs.

#### **4.7.1 Reflective Measurement Model Assessment**

In this step, indicator reliability, internal consistency, convergent validity, and discriminant validity of the variables used in this study were investigated. In specific, a first-order reflective measurement model was examined by running the Algorithm in Smart-PLS.



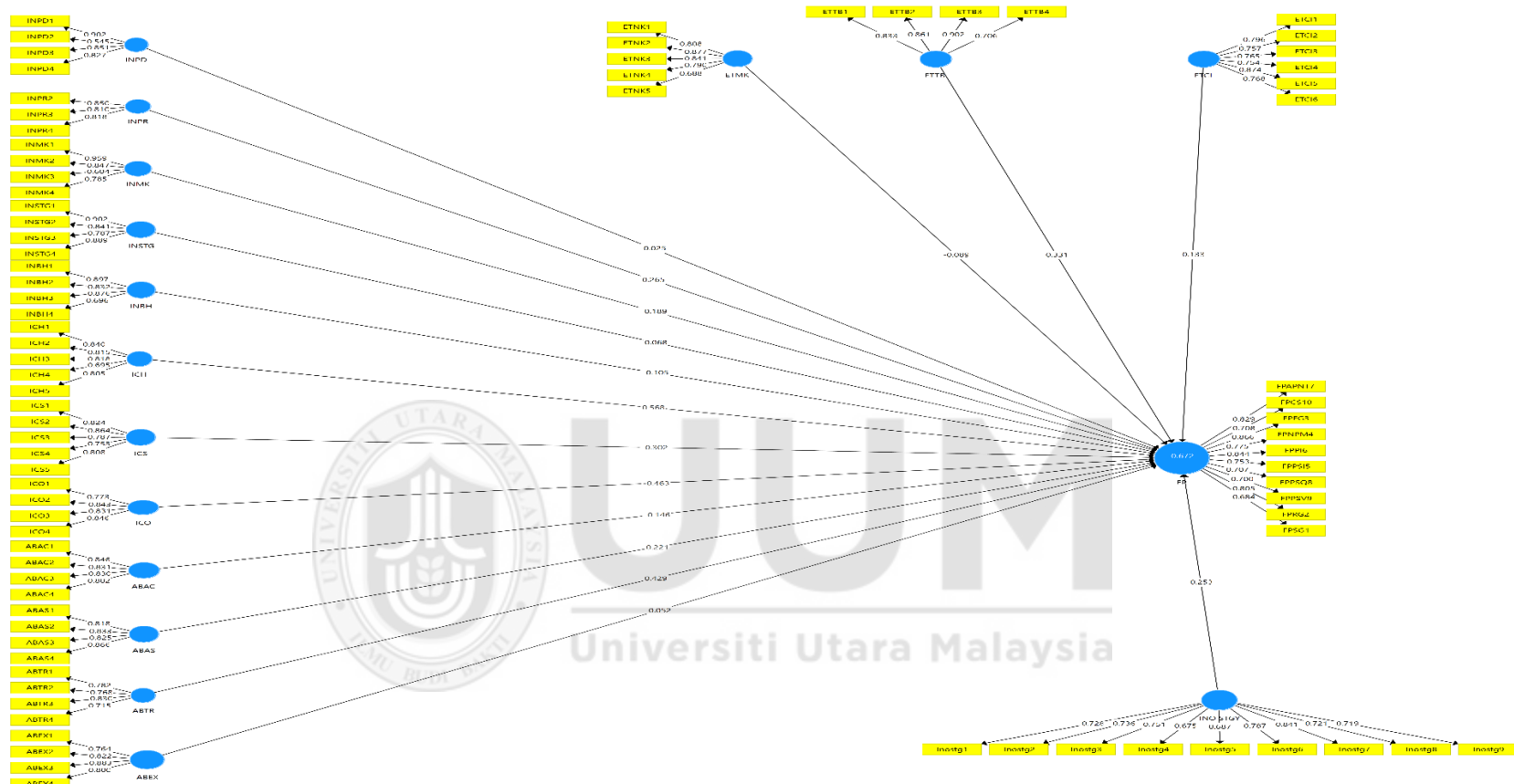


Figure 4.3  
*First-order Reflective Measurement Model*

**Note:** IMPD = Innovation Capability (Product Innovativeness); INPR = Innovation Capability (Process innovativeness); INMK = Innovation Capability (Market Innovativeness); INSTG = Innovation Capability (Strategic Innovativeness); INBH = Innovation Capability (Behavioral Innovativeness); ICH = Intellectual Capital (Human Capital); ICS = Intellectual Capital (Social Capital); ICO = Intellectual Capital (Organizational Capital); ABAC = Absorptive Capacity (Acquisition); ABAS = Absorptive Capacity (Assimilation); ABTR = Absorptive Capacity (Transformation); ABEX = Absorptive Capacity (Exploitation). ETMK = Environmental Turbulence (Market Turbulence); ETCI = Environmental Turbulence (Competitive Intensity); ETTB = Environmental Turbulence (Technological Turbulence); INO STGY = Innovation Strategy; and FP = SME performance.

#### **4.7.1.1 Individual Indicator Reliability**

The individual indicator reliability focus on the outer loading of the measure of each construct (Hair, Ringle, & Sarstedt, 2012). According to Hair et al., (2014), the rule of thumb is to retain measurement items with loadings between .40 and .70. However, the best practice is to retain item loadings that do not fall below .70 (Hair et al., 2007; Hair et al., 2014; Henseler et al., 2009).

As shown in Table 4.10 below, all of the construct indicators displayed the highest values on their respective constructs. Likewise, the indicators involve significantly and acceptably high loadings, such as innovation capability, intellectual capital, absorptive capacity, environmental turbulence, innovation strategy, and SME performance. However, one indicator from innovation capability (process innovativeness [INPR 1]) fell below the threshold of 0.4 (Steven, 1992). Some indicators (INBH4, INMK3, INPD2, ICH4, EMT5, Inostg5, and FPSG1) failed to meet the threshold value of 0.70. However, these indicators with lower loading are retained because, on average, convergent validity has been achieved for each of the constructs.

#### **4.7.1.2 Internal Consistency Reliability and Convergent Validity**

Internal consistency reliability measures the extent different items of a construct produce similar scores. In other words, it determines whether the different items measuring a

construct provide identical scores (Hair et al., 2017). To assess the internal consistency reliability of a construct, the value for Cronbach's alpha and Composite Reliability (CR) values are used. Both the criteria use the same value of 0.7 as a cutoff point. The value of Cronbach's alpha must be higher than 0.7 (Hair et al., 2017). However, the value of CR less than 0.6 represent weaker consistent reliability of a construct as recommended by Hair et al., (2017).

Table 4.10 exhibits that the values of both Cronbach's alpha and CR are above the threshold of 0.7. Furthermore, convergent validity is the degree that a measure is correlated positively to an alternative measure of the same construct (Hair et al., 2017). The assessment of the Convergent validity is based on the values of the Average Variance Extracted (AVE). The value of AVE equal to or greater than 0.5 is considered a threshold (Hair et al., 2011). In other words, the AVE corresponds to the commonality of the constructed measure. The results obtained in terms of the AVE values of the measurement constructs were all above the threshold, i.e., ranged from 0.547 to a higher value of 0.733 as displayed in Table 4.10



Table 4. 10  
*Internal Consistency and Convergent Validity*

<b>Constructs</b>	<b>Items</b>	<b>Loadings</b>	<b>CA</b>	<b>CR</b>	<b>AVE</b>
<b>Absorptive Capacity</b>					
Acquisition	ABAC1	0.846	0.847	0.897	0.685
	ABAC2	0.831			
	ABAC3	0.830			
	ABAC4	0.802			
Assimilation	ABAS1	0.818	0.856	0.903	0.698
	ABAS2	0.833			
	ABAS3	0.825			
	ABAS4	0.866			
Exploitation	ABEX1	0.764	0.835	0.89	0.67
	ABEX2	0.822			
	ABEX3	0.883			
	ABEX4	0.800			
Transformation	ABTR1	0.782	0.778	0.857	0.6
	ABTR2	0.768			
	ABTR3	0.830			
	ABTR4	0.715			
<b>Innovation Capability</b>					
Behavioral Innovativeness	INBH1	0.897	0.858	0.897	0.687
	INBH2	0.832			
	INBH3	0.876			
	INBH4	0.696			
Market Innovativeness	INMK1	0.959	0.853	0.881	0.655
	INMK2	0.847			
	INMK3	0.604			
	INMK4	0.785			
Product Innovativeness	INPD1	0.902	0.804	0.868	0.629
	INPD2	0.545			
	INPD3	0.851			
	INPD4	0.827			
Process Innovativeness	INPR2	0.850	0.77	0.866	0.683
	INPR3	0.810			
	INPR4	0.818			
Strategic Innovativeness	INSTG1	0.902	0.886	0.916	0.733
	INSTG2	0.841			

<b>Constructs</b>	<b>Items</b>	<b>Loadings</b>	<b>CA</b>	<b>CR</b>	<b>AVE</b>
	INSTG3	0.787			
	INSTG4	0.889			
<b>Intellectual Capital</b>					
Human Capital	ICH1	0.840	0.855	0.896	0.634
	ICH2	0.815			
	ICH3	0.818			
	ICH4	0.695			
	ICH5	0.805			
Organizational Capital	ICO1	0.773	0.843	0.894	0.679
	ICO2	0.843			
	ICO3	0.831			
	ICO4	0.846			
Social Capital	ICS1	0.824	0.867	0.904	0.653
	ICS2	0.864			
	ICS3	0.787			
	ICS4	0.753			
	ICS5	0.808			
<b>Environmental Turbulence</b>					
Competitive Intensity	ECI1	0.796	0.881	0.907	0.619
	ECI2	0.757			
	ECI3	0.765			
	ECI4	0.754			
	ECI5	0.874			
	ECI6	0.768			
Market Turbulence	EMT1	0.808	0.863	0.900	0.645
	EMT2	0.877			
	EMT3	0.841			
	EMT4	0.790			
	EMT5	0.688			
Technological Turbulence	ETT1	0.833	0.852	0.897	0.687
	ETT2	0.861			
	ETT3	0.902			
	ETT4	0.706			
<b>Innovation Strategy</b>	Inostg1	0.728	0.898	0.916	0.547
	Inostg2	0.736			

Constructs	Items	Loadings	CA	CR	AVE
	Inostg3	0.751			
	Inostg4	0.675			
	Inostg5	0.687			
	Inostg6	0.787			
	Inostg7	0.841			
	Inostg8	0.721			
	Inostg9	0.719			
<b>Firm Performance</b>	FPAPNT7	0.829	0.923	0.935	0.593
	FPCS10	0.708			
	FPEG3	0.866			
	FPNPM4	0.775			
	FPPI6	0.844			
	FPPSI5	0.753			
	FPPSQ8	0.707			
	FPPSV9	0.700			
	FPRG2	0.805			
	FPSG1	0.684			

Note: CA = Cronbach's Alpha; CR = Composite Reliability; AVE = Average Variance Extracted

#### 4.7.1.3 Discriminant Validity

Discriminant validity refers to the differentiation between the latent constructs from each other (Duarte and Raposo (2010). To assess the discriminant validity, the square root of the Average Variance Extracted (AVE) was utilized as proposed by Fornell and Larcker (1981). In addition to this criterion, the cross-loadings criterion introduced by (Chin, 1998), was used.

Furthermore, to be aligned with the recent reporting of the PLS-SEM results (Hair et al., 2017), the new criterion of Heterotrait-Monotrait ratio (HTMT) introduced by Henseler et al., 2015, was also utilized. HTMT is the ratio of the “between-trait correlations” to the

“within-trait correlations” (Hair et al., 2017). The value used as a threshold for the HTMT criterion is 0.9, that implies that two of the construct measures should not correlate above 0.9 to confirm its discriminant validity. The results obtained for all the three criteria are exhibited in (see **Appendix D, Appendix E, and Appendix F**) respectively. All the respective values conform to the threshold levels defined earlier.

#### **4.7.2 Formative Measurement Assessment**

Since the nature of the higher-order components is formative, the reliability and construct validity (both discriminant and convergent) evaluations are not obligatory to be performed. As the indicators or items for a formative construct does not need to be highly correlated (Henseler, Ringle & Sinkovics 2009), thus requires no such requirement. To assess formative measurement models, issues related to collinearity, and the significance and relevance of the formative indicators are needed to be evaluated. Figure 4.4 shows the two-stage approach, second-order formative measurement model extracted from PLS. To examine the level of collinearity in PLS-SEM, variance inflation factor (VIF) is looked at. Variance inflation factor (VIF) with 5 or higher (Hair, Ringle, & Sarstedt, 2011), or 3.3 (Diamantopoulos & Siguaw, 2006) or higher respectively indicates a potential collinearity problem. Table 4.11 illustrates the findings of the assessment of formative measurement model. Based on this table, this study found that the formative constructs of VIF range from 1.051 to 3.270, which indicate that collinearity does not stretch to the critical levels and there are no problems for the further analysis of the PLS path model.

Based on the findings of Table 4.11, indicators of ETCl, ETMK, ICO, ICS, INPD, INPR, and INSTG were not significant to their corresponding formative constructs. However, due to their high significant of outer loading (above 0.50), this study still retains these indicators (Hair et al., 2013). Therefore, in the final measurement of this study, all the dimensions of the higher order constructs were retained for further analysis.



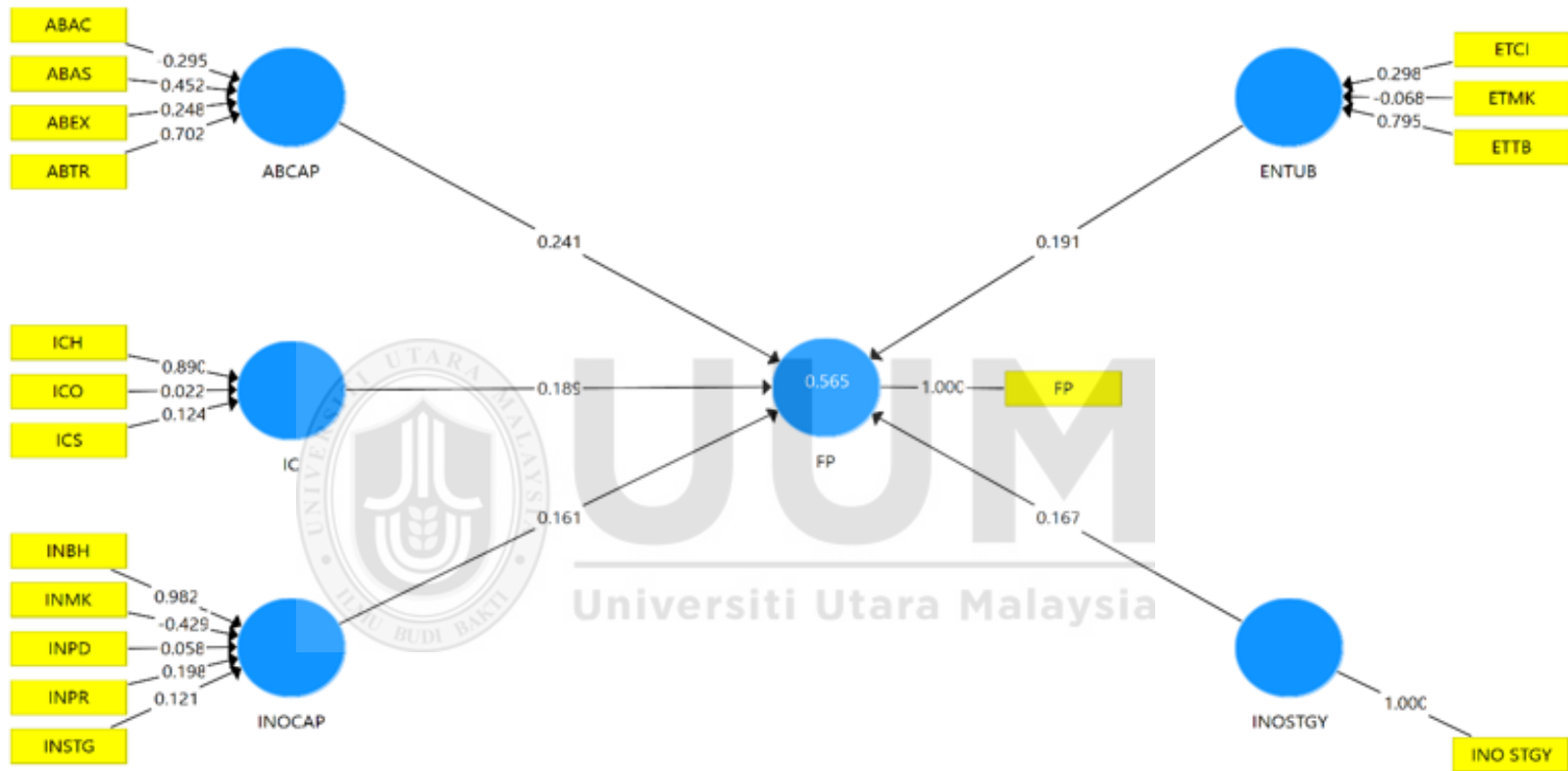


Figure 4. 4

*Second-Order, Two-Stage Approach Formative Measurement Model*

Note: INOCAP = Innovation Capability; IC = Intellectual Capital; ABCAP = Absorptive Capacity; ENTUB = Environmental Turbulence; INOSTGY = Innovation Strategy

Table 4. 11  
*Findings of Measurement Model for Formative construct*

Constructs	Standard Deviation	Outer weights	T-Values	Outer Loadings	T-Values	VIF
ABAC -> ABCAP	0.127	-0.295	2.316	0.801	21.546	2.351
ABAS -> ABCAP	0.107	0.452	4.217	0.860	20.275	2.868
ABEX -> ABCAP	0.087	0.248	2.837	0.822	22.521	2.469
ABTR -> ABCAP	0.115	0.702	6.075	0.918	33.556	1.051
ETCI -> ENTUB	0.162	0.298	0.066(NS)	0.865	18.208	3.031
ETMK -> ENTUB	0.118	-0.068	0.562(NS)	0.599	8.588	1.870
ETTB -> ENTUB	0.128	0.795	0.000	0.925	40.771	2.521
ICH -> IC	0.090	0.890	9.886	0.946	40.569	2.768
ICO -> IC	0.132	0.022	0.164(NS)	0.808	16.253	3.270
ICS -> IC	0.102	0.124	1.219(NS)	0.779	17.108	2.670
INBH -> INOCAP	0.114	0.982	8.619	0.952	33.519	2.293
INMK -> INOCAP	0.125	-0.429	3.441	0.400	3.787	2.313
INPD -> INOCAP	0.100	0.058	0.578(NS)	0.560	7.431	2.748
INPR -> INOCAP	0.115	0.198	1.722(NS)	0.596	7.305	1.938
INSTG -> INOCAP	0.134	0.121	0.902(NS)	0.705	8.230	2.536

Note: IMPD = Innovation Capability (Product Innovativeness); INPR = Innovation Capability (Process innovativeness); INMK = Innovation Capability (Market Innovativeness); INSTG = Innovation Capability (Strategic Innovativeness); INBH = Innovation Capability (Behavioral Innovativeness); ICH = Intellectual Capital (Human Capital); ICS = Intellectual Capital (Social Capital); ICO = Intellectual Capital (Organizational Capital); ABAC = Absorptive Capacity (Acquisition); ABAS = Absorptive Capacity (Assimilation); ABTR = Absorptive Capacity (Transformation); ABEX = Absorptive Capacity (Exploitation). ETMK = Environmental Turbulence (Market Turbulence); ETCI = Environmental Turbulence (Competitive Intensity); ETTB = Environmental Turbulence (Technological Turbulence).

## 4.8 Structural Model (Inner Model) Evaluation and Hypothesis Testing

Once the measurement model was evaluated, the following step involves the assessment of the standardized path coefficients that evaluate the hypothesized structural nexuses. As rooted in Smart PLS-SEM, the bootstrapped procedure was adopted to assess the accuracy of the estimates and significance levels as recommended in the literature (e.g., Chin, 1998; Tenenhaus et al., 2005).

### 4.8.1 Hypothesis Testing and Path Coefficients for Direct Hypotheses

To generate the path coefficients, the PLS algorithm was run initially. A bootstrapping procedure with a sample of 500 cases and a bootstrap sample of 348 cases were run to evaluate the significance of the path coefficients (Hair et al., 2014; Hair et al., 2011; Hair et al., 2012; Henseler et al., 2009). It is important to note that the whole model, including all the variable of interest, was run all at once to establish the results of the direct structural paths in alignment with the objectives of this study.

Table 4. 12  
*Results of the Structural Model Path Coefficient*

Hyp	Structural Path	$\beta$	S.E	Bootstrapped Confidence Interval		T-Value	P-Value	Decision
H1	INOCAP → FP	0.277	0.057	0.147	0.379	4.855	0.000*	Supported
H2	IC → FP	0.182	0.063	0.070	0.319	2.878	0.004**	Supported
H3	ABCAP → FP	0.114	0.053	0.012	0.216	2.153	0.032**	Supported

Note: \*:p<0.01 (2-tailed); \*\*:p<0.05 (2-tailed),

Note: INOCAP = Innovation Capability; IC = Intellectual Capital; ABCAP = Absorptive Capacity; ENTUB = Environmental Turbulence; INOSTGY = Innovation Strategy.



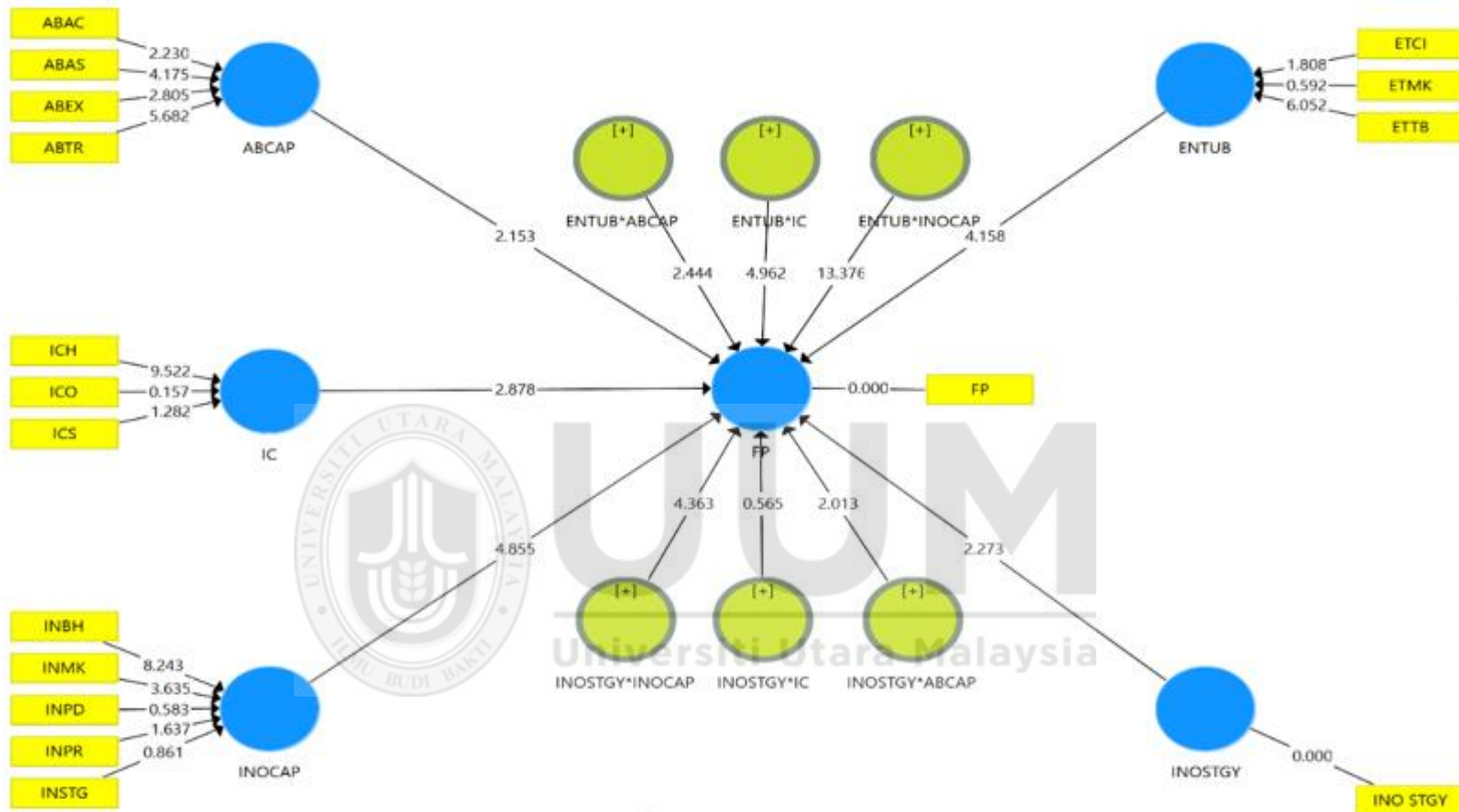


Figure 4. 5  
*PLS Structural Model Path Coefficient and p-Value*

Note: INOCAP = Innovation Capability; IC = Intellectual Capital; ABCAP = Absorptive Capacity; ENTUB = Environmental Turbulence; INOSTGY = Innovation Strategy

The results of the structural model, also known as the inner model, are presented in Table 4.12 above. Based on hypothesis 1 (H1), the results obtained show that Innovation capability has a significant effect on SMEs performance at 0.01 level of significance ( $\beta=0.277$ ,  $t=4.855$ ,  $LL=0.147$ ,  $UL=0.379$   $p<0.01$ ). Likewise, second hypothesis H2 (i.e., Intellectual Capital has a significant effect on SMEs performance) was also proved to be empirically at 0.05 level of significance ( $\beta=0.182$ ,  $t=2.878$ ,  $LL=0.070$ ,  $UL=0.319$   $p<0.05$ ). The third hypothesis H3 (i.e., Absorptive Capacity has a significant effect on SMEs performance) also proved to be supportive at 0.05 level of significance ( $\beta=0.114$ ,  $t=2.153$ ,  $LL=0.012$ ,  $UL=0.216$   $p<0.05$ ). These results indicate a significant positive nexus between Innovation capability and SME performance, Intellectual Capital and SME performance, and between Absorptive Capacity and SME performance.

#### **4.8.2 Evaluation of Variance Explained in the Endogenous Latent Variables**

The evaluation of the structural model also includes the R-squared value, represented with  $R^2$  (Hair et al., 2011; Hair et al., 2012; Henseler et al., 2009). The  $R^2$  also termed as the coefficient of determination is the variance contributed in the endogenous variable(s) by one or more predictor variables (Elliott & Woodward, 2007; Hair et al., 2010; Hair et al., 2006). According to Hair et al., 2010, the acceptable  $R^2$  value is subject to the research context. However, the minimum  $R^2$  value equal to 0.10 is considered acceptable as suggested Falk and Miller (1992). According to Chin (1998),  $R^2$  values of 0.67, 0.33, and 0.19, are regarded as substantial, moderate, and weak, respectively.

Table 4.13 shows the  $R^2$  values obtained for the endogenous construct (i.e., SME performance). The hypothesized model explains 56.5% of the total variance contributed in SME performance, which indicates that innovation capability, intellectual capital, absorptive capacity, environmental turbulence, and innovation strategy as exogenous latent variables jointly explain 56.5 percent variance in SME performance. Therefore, this result signified a moderate and acceptable level of the  $R^2$  value for the endogenous construct.

Table 4. 13  
*Variance Explained in the Endogenous Latent Variables*

<b>Latent Variables</b>	<b>Variance Explained (<math>R^2</math>)</b>	<b>Effect Size</b>
SME performance	56.5%	Moderate

#### 4.8.3 Evaluation of Effect Size

The structural model evaluation was also subject to determine the effect size denoted with  $f^2$ . The  $f^2$  value is referred to the relative effects a particular exogenous construct(s) on a specific endogenous construct using change in the  $R^2$  values (Chin, 1998). So, the formula below can be used to estimate effect size [ $f^2$ ] (Hair et al., 2013):

$$F^2 = \frac{R^2 \text{ included} - R^2 \text{ excluded}}{1 - R^2 \text{ included}}$$

Given what was suggested by Cohen (1988),  $f^2$  values of 0.02, 0.15, and 0.35 stand for small, medium, and large effects, respectively (Hair et al., 2013). Table 4.14 depicted the exogenous constructs' effects on their respective endogenous constructs, which were considered to calculate the effect size.

According to Table 4.14, the endogenous variable (SME performance) was explained by innovation capability, intellectual capital and absorptive capacity with effect size ( $f^2$ ) of 0.031, 0.032 and 0.051 respectively, and thus indicating small effect size of the three respective exogenous variables.

Table 4. 14  
*Effect size*

<b>Exogenous Construct</b>	<b>F<sup>2</sup></b>	<b>Effect Size</b>
Innovation Capability	0.031	Small
Intellectual Capital	0.032	Small
Absorptive Capacity	0.051	Small

Note: 0.02, 0.15, and 0.35 stand for small, medium and large

#### **4.8.4 Evaluation of Predictive Relevance of the Model**

To assess the predictive quality of the model as recommended by Hair et al. (2010), analysis via PLS-SEM requires that the researchers should rely on the measures that indicates the predictive abilities of the model. Predictive ability of a model can also be assessed (Fornell & Cha, 1994; Hair, Sarstedt, Ringle, & Mena, 2012) through the cross-validated redundancy measure, denoted with Q<sup>2</sup> (Geisser, 1974; Stone, 1974).

The model is considered to show predictive validity if the value of redundant communality is greater than a zero for the specific endogenous variable(s) as specified by Fornell and Cha (1994), a value less than zero implies to no predictive relevance or the ability of a model. The process blindfolding technique is recommended to estimate predictive relevance of a model in PLS software that involves the estimation of parameters by excluding some cases and treating them as the missing values (Fararah & Al-Swidi, 2013). Followed by this, the Smart PLS software estimates the parameters

to rebuild the raw data that were assumed as missing and consequently produce a general cross-validating ( $Q^2$ ) metrics (Chin, 1998). However, Chin (2013) is of the opinion that there can be several forms of  $Q^2$ , subject to the form of prediction desired. Using the primary latent variable scores for predicting the data points, a cross-validated communality is obtained. However, a cross-validated redundancy is obtained when the latent variables are utilized for predicting the data points, which predict the block in question (Chin, 1998; Duarte & Raposo, 2010).

Table 4.15 below exhibits the cross-validated redundancy value for the endogenous variable (SME performance). The value of 0.534 shows an adequate level of predictive abilities of the proposed research model based on Fornell and Cha (1994) criteria.

Table 4. 15  
*Predictive Relevance of the Model*

<b>Constructs</b>	<b>Cross-Validated Communality</b>	<b>Cross-Validated Redundancy</b>
SME performance	348.00	0.534

#### **4.8.5 Testing Moderating Effects**

According to Hair *et al.* (2013), if the relationship between two variables of interest, i.e., independent and dependent, is hooked on another variable, there is the presence of moderated influence in that such variable moderates the relation between the two variables. In this study, innovation strategy is proposed to moderate the relationship between intellectual capital and SMEs performance; the relationship between innovation capability and SMEs performance; and the relationship between absorptive capacity and SMEs performance. Likewise, environmental turbulence is proposed to

moderate the relationship between intellectual capital and SMEs performance; the relationship between innovation capability and SMEs performance; and the relationship between absorptive capacity and SMEs performance.

To assess the moderating effects, the two-stage approach via PLS-SEM was used (Chin et al., 2003; Helm, Eggert, & Garnefeld, 2010; Henseler & Chin, 2010a; Henseler & Fassott, 2010b). The two-stage approach is considered equal or better than the group comparison approaches (Henseler & Fassott, 2010a). As the moderating variable in this study is continuous, the two-stage approach deemed fit for testing the moderating effects. This adoption is in line with the recommended supposition of Rigdon, Schumacker, and Wothke (1998). In relation to this study, the two-stage approach involves the creation of a product term among the variables of interests. The product of the two serves as indicators of the interaction term in a structural model (Kenny & Judd, 1984). In relation to the strength of the moderating effect, Cohen's (1988) rules of thumb were followed.

Table 4. 16  
*Results of the Moderating Effect Model*

No	Structural Path	$\beta$	S.E	Bootstrapped CI		T-Value	P-Value	Decision	
H4	ENTUB*I NOCAP	→ FP	0.626	0.047	0.725	0.545	13.376	0.000	Supported
H5	ENTUB*I C	→ FP	0.321	0.065	0.203	0.466	4.962	0.000	Supported
H6	ENTUB* ABCAP	→ FP	0.152	0.062	0.013	0.257	2.444	0.015	Supported
H7	INOSTGY *INOCAP	→ FP	0.210	0.048	0.145	0.314	4.363	0.000	Supported
H8	INOSTGY *IC	→ FP	-0.030	0.053	-0.152	0.066	0.565	0.572	Not Supported
H9	INOSTGY *ABCAP	→ FP	0.131	0.065	0.251	0.010	2.013	0.044	Supported

According to Table 4.16 and Figure 4.6 - 4.10, it can be discerned that hypothesis H4, H5, H6, H7 and H9 were supported ( $\beta = 0.626$ ,  $t = 13.376$ ,  $p < 0.01$ ;  $\beta = 0.321$ ,  $t = 4.962$ ,  $p < 0.01$ ;  $\beta = 0.152$ ,  $t = 2.444$ ,  $p < 0.05$ ;  $\beta = 0.210$ ,  $t = 4.363$ ,  $p < 0.01$ ;  $\beta = 0.131$ ,  $t = 2.013$ ,  $p < 0.05$ ) respectively. With regards to H4, the result signifies that environmental turbulence moderates the relationship between Innovation capability and SMEs performance. Going by Hair et al.'s (2013) analysis on moderation effect, the result signifies that environmental turbulence moderates the relationship between Innovation capability and SMEs performance. This result implies that the relationship between Innovation capability and SMEs performance would increase by the size of the interaction term which means that in a firm with high environmental turbulence, Innovation capability becomes more important for explaining SME performance. In addition, below in Figure 4.6, which represent environmental turbulence -Innovation capability interaction plot (Dawson, 2014), the line tagged high ENTUB, indicating a high level of environmental turbulence, has a steeper gradient as against low environmental turbulence. This result signifies that positive nexuses between

Innovation capability and SME performance get stronger for the firm with high environmental turbulence.

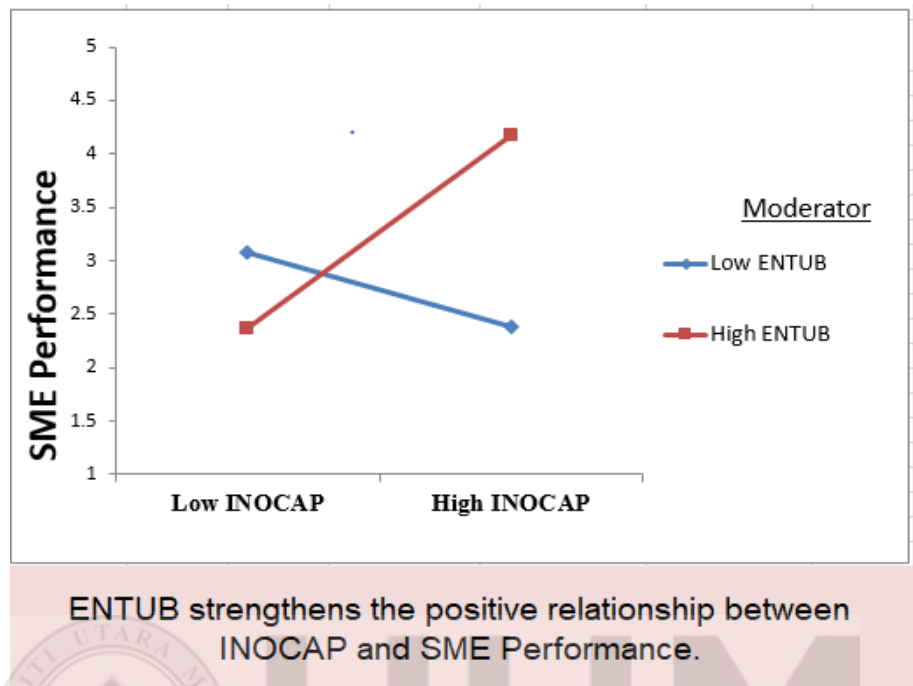


Figure 4. 13  
*ENTUB-INOCAP Interaction Effect on SME Performance*

Furthermore, given the results depicted in Table 4.16 and Figure 4.7 signifies that H5 (i.e., environmental turbulence moderates the relationship between intellectual capital and SMEs performance) was supported. This result implies that the relationship between intellectual capital and SME performance would increase by the size of the interaction term which means that in a firm with high environmental turbulence, intellectual capital becomes more important for explaining SME performance. In addition, in Figure 4.7, which represent environmental turbulence - intellectual capital interaction plot, the line tagged high ENTUB, indicating a high level of environmental turbulence, has a steeper gradient as against low environmental turbulence. This result signifies that positive nexuses intellectual capital capacity and SME performance get stronger for the firm with high environmental turbulence.



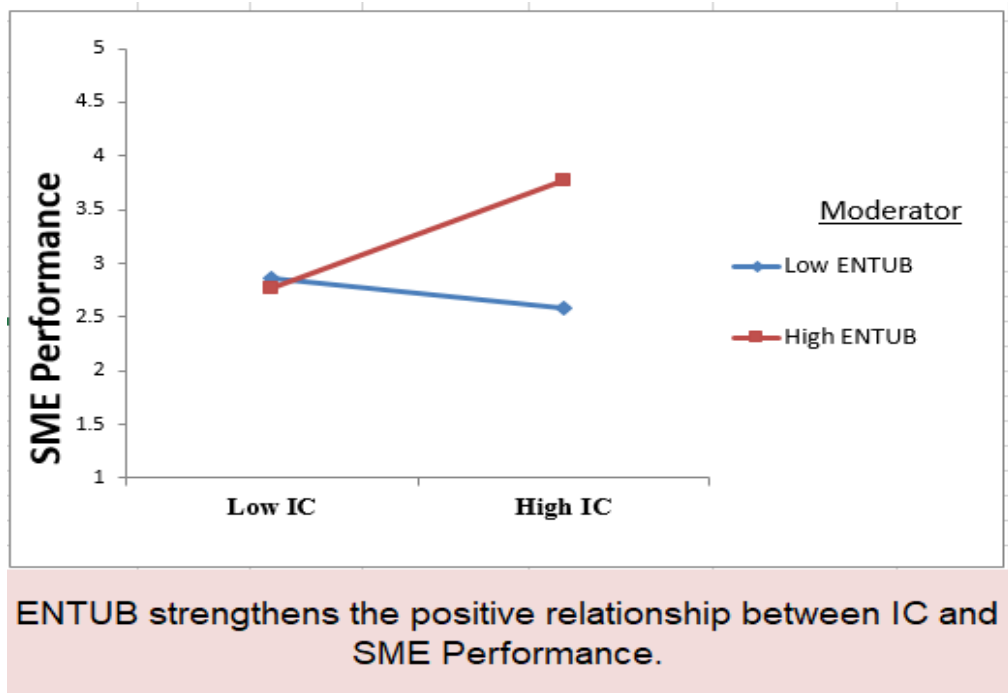


Figure 4. 30  
*ENTUB-IC Interaction Effect on SME Performance.*



Figure 4. 31  
*ENTUB-IC Interaction Effect on SME Performance.*

In the same manner, Table 4.16 and Figure 4.8 signifies that H6 (i.e., environmental turbulence moderates the relationship between absorptive capacity and SMEs performance) was supported. This result implies that the relationship between absorptive capacity and SME performance would increase by the size of the interaction term which means that in a firm with high environmental turbulence, the absorptive capacity becomes more important for explaining SME performance. In addition, in Figure 4.8 below, which represent environmental turbulence - absorptive capacity interaction plot, the line tagged high ENTUB, indicating a high level of environmental

turbulence, has a steeper gradient as against low environmental turbulence. This result signifies that positive nexuses absorptive capacity and SME performance get stronger for the firm with high environmental turbulence.

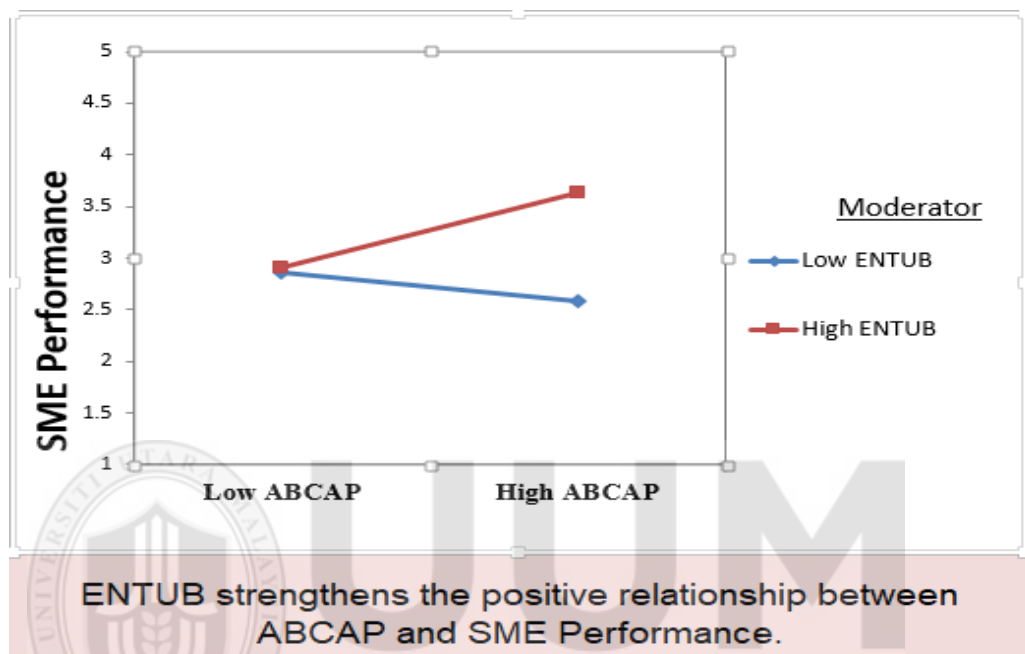
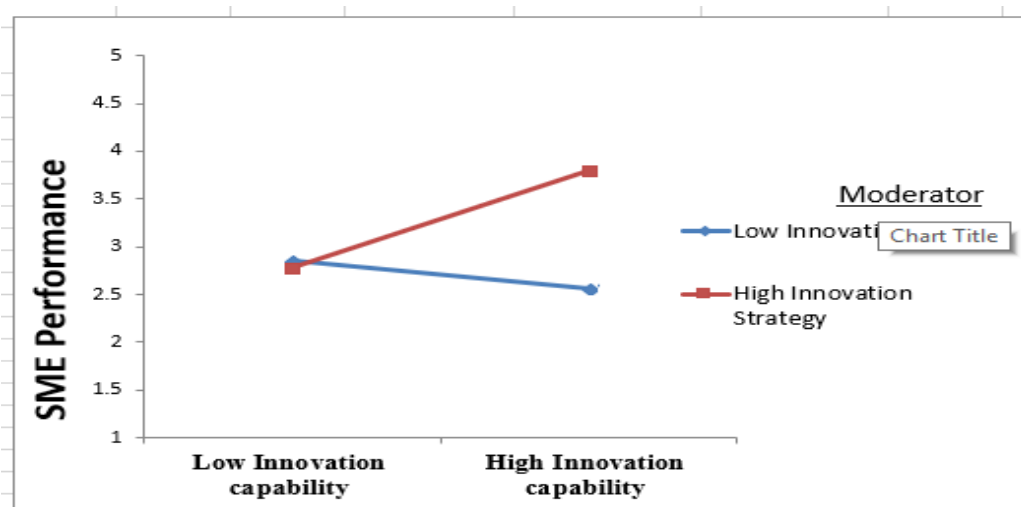


Figure 4. 32  
*ENTUB-ABCAP Interaction Effect on SME Performance*

In the same manner, Table 4.16 and Figure 4.9 signifies that H7 (i.e., innovation strategy moderates the relationship between innovation capability and SMEs performance) was supported. This result implies that the relationship between innovation capability and SMEs performance would increase by the size of the interaction term which means that in a firm with high innovation strategy, innovation capability becomes more important for explaining SME performance. In addition, in Figure 4.9 below, which represent innovation strategy - innovation capability interaction plot, the line tagged high IS, indicating a high level of innovation strategy, has a steeper gradient as against low innovation strategy. This result signifies that

positive nexuses innovation capability and SME performance get stronger for the firm with high innovation strategy.



**Innovation Strategy strengthens the positive relationship between Innovation capability and SME Performance.**

Figure 4. 58  
*IS-INOCAP Interaction Effect on SME Performance.*

Furthermore, Table 4.16 and Figure 4.10 signifies that H9 (i.e., innovation strategy moderates the relationship between absorptive capacity and SMEs performance) was supported. This result implies that the relationship between absorptive capacity and SMEs performance would increase by the size of the interaction term which means that in a firm with high innovation strategy, the absorptive capacity becomes more important for explaining SME performance. Also, in Figure 4.10, below which represent innovation strategy - absorptive capacity interaction plot, the line tagged high IS, indicating a high level of innovation strategy, has a steeper gradient as against low innovation strategy. This result signifies that positive nexuses absorptive capacity and SME performance get stronger for a firm with a high innovation strategy.

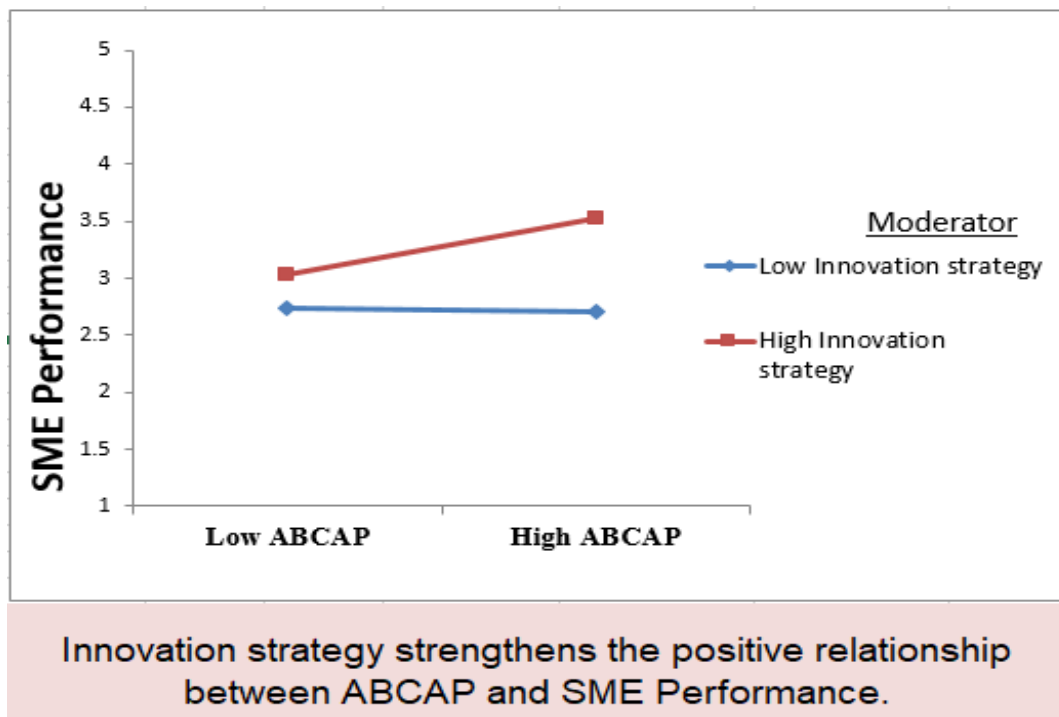


Figure 4. 78  
*IS-ABCAP Interaction Effect on SME Performance*

#### 4.8.6 Evaluation of Strength of the Moderating Effects

Following the prescribed formula for effect sizes, defined by Cohen's (1988), the strength of the moderating effects of environmental turbulence and innovation strategy on the relationship between innovation capability and SMEs performance; the relationship between intellectual capital and SMEs performance; and the relationship between absorptive capacity and SMEs performance were estimated. The formula is presented below:

$$F^2 = \frac{R^2_i - R^2_m}{1 - R^2_i}$$

Where: m stands for main effect model (without moderator); i stands for interaction effect model (with moderator).

The moderating effect sizes of 0.02, 0.15, and above 0.35 are considered as weak, moderate, and strong, respectively (Cohen, 1988; Henseler & Fassott, 2010a). However, Chin *et al.* (2003), argues that a small effect size does not essentially mean that the underlying moderating effect is insignificant. “Even a small interaction effect can be meaningful under extreme moderating conditions, if the resulting beta changes are meaningful, then it is important to take these conditions into account” (Chin *et al.*, 2003, p. 211).

As presented in Table 4.20, the result indicates that the effect size of the moderating effect of environmental turbulence on the relationship between innovation capability and SMEs performance is ( $f^2$  0.755). This signifies that the moderating effect size of environmental turbulence on the relationship between Innovation capability and SMEs performance is large (Henseler, Wilson, Götz, & Hautvast, 2007; Wilden *et al.*, 2013)

Similarly, the moderating effect of environmental turbulence on the relationship between Intellectual Capital and SMEs performance is ( $f^2$  0.158) and between Absorptive capacity and SMEs performance is (0.024). This signifies that the moderating effect size of environmental turbulence on the relationship between Intellectual Capital is medium and SMEs performance, and between Absorptive capacity and SMEs performance is small (Henseler, Wilson, Götz, & Hautvast, 2007; Wilden *et al.*, 2013).

Moreover, the moderating effect of innovation strategy on the relationship between Innovation capability and SMEs performance is ( $f^2$  0.088) and between Absorptive

capacity and SMEs performance is (0.021). This signifies that the moderating effect size of innovation strategy on the relationship between Innovation capability and SMEs performance, and between Absorptive capacity and SMEs performance is small (Henseler, Wilson, Götz, & Hautvast, 2007; Wilden et al., 2013). However, the moderating effect of innovation strategy on the relationship between intellectual capital and SMEs performance is zero, indicating that the moderating effect of innovation strategy on the relationship between intellectual capital and SMEs performance has no effect size.

Table 4. 17  
*Strength of the Moderating Effects on SME Performance*

<b>Exogenous Construct</b>			<b><math>R^2</math> incl.</b>	<b><math>R^2</math> excl.</b>	<b><math>f^2</math></b>	<b>Effect Size</b>
ENTUB * INOCAP	→	FP	0.792	0.635	0.755	Large
ENTUB * IC	→	FP	0.792	0.770	0.108	Medium
ENTUB * ABCAP	→	FP	0.792	0.787	0.024	Small
INOSTGY * INOCAP	→	FP	0.792	0.774	0.088	Small
INOSTGY * IC	→	FP	0.792	0.792	0.001	None
INOSTGY * ABCAP	→	FP	0.792	0.788	0.021	Small

Note: 0.02, 0.15, and 0.35 stand for small, medium and large

#### 4.9 Summary of Hypotheses' Results

Table 4.18 exhibits the summary of results obtained for the structural relationship in this study. All the proposed hypothesized moderated relationships were accepted except hypothesis 8, which could not bring an empirical proof of acceptance:

Table 4. 18  
*Hypotheses' Summary*

<b>Hyp.</b>	<b>Hypothesized Path</b>	<b>Decision</b>
<b>Direct Relationships</b>		
H1	There is a significant relationship between innovation capability and SMEs performance.	Supported
H2	There is a significant relationship between intellectual capital and SMEs performance.	Supported
H3	There is a significant relationship between absorptive capacity and SMEs performance.	Supported
<b>Moderating Effect</b>		
H4	Environmental turbulence moderates the relationship between innovation capability and SMEs performance.	Supported
H5	Environmental turbulence moderates the relationship between intellectual capital and SMEs performance.	Supported
H6	Environmental turbulence moderates the relationship between absorptive capacity and SMEs performance.	Supported
H7	Innovation strategy moderates the relationship between innovation capability and SMEs performance	Supported
H8	Innovation strategy moderates the relationship between intellectual capital and SMEs performance.	Not Supported
H9	Innovation strategy moderates the relationship between absorptive capacity and SMEs performance.	Supported

#### 4.10 Summary of the Chapter

The overall analyses that were focused on preliminary data screening, descriptive statistics, and inferential statistics by utilizing both the SPSS V. 23 and Smart-PLS V.3.2.7. The initial data screening and preliminary analysis included the entry of the data and recoding of negatively worded items. Afterward, the preliminary analysis for detecting missing cases, outliers, normality, multicollinearity, non-response bias, and test for CMV were conducted. The inferential analysis involved the measurement of both the higher and lower order constructs, followed by the assessment of the structural model. The results obtained indicate that out of nine proposed hypotheses, eight hypotheses were supported. The discussions, contributions and implication, limitations, and future directions, and conclusions of this study, are presented in Chapter 5.

## **CHAPTER FIVE**

### **DISCUSSIONS AND CONCLUSIONS**

#### **5.1 Introduction**

This chapter is the last chapter, and it discusses the findings arising from the study. The chapter is structured based on the objectives of the study. The study has five (5) objectives and ten (10) hypotheses which mainly focused on the moderating effect of environmental turbulence and innovation strategy on the relationship between the innovation capability, intellectual capital, absorptive capacity, and SMEs performance in the textile sector on Pakistan.

This Chapter has six sections. Aside from this introductory section 5.1, the second section 5.2 deals with the recapitulation of the study. The third section 5.3 discusses the findings of the research. This section has five subsections, and each subsection discusses the relationship between the variables under examination based on each research objective. The fourth section 5.4 explains the implications of the study comprising the theoretical practical and methodological implications. The fifth section 5.5 discusses the limitations of the study and suggestions for future studies. Finally, the last section 5.6 concludes the study.

#### **5.2 Recapitulation of the Study**

As mentioned in Chapter One, the motivation of this study came from the practical issues related to the performance of SMEs, in the context of the least developed countries, particularly in Pakistan. This leads to the theoretical gaps found in the



pertinent literature in connection with the SMEs performance, in specific. The main aim of this study is on investigating the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance in Pakistan. It also determined the moderating effect of environmental turbulence and innovation strategy on the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance. The outcomes of the study have provided a roadmap and the milestones for SMEs stakeholders by identifying the most significant drivers of the SMEs performance.

Based on the intensive literature review, this study has developed a theoretical model that produces testable relationships among the constructs of the study for SMEs. These constructs include innovation capability, intellectual capital, absorptive capacity, environmental turbulence, innovation strategy, and SMEs performance. The theoretical model verifies the effect of innovation capability, intellectual capital, and absorptive capacity on SMEs performance, and confirms the moderating effect of environmental turbulence and innovation strategy. The examination of these relationships, within the structural model of the study, is grounded and underpinned by the resource-based view (RBV) theory. It is supported by the other two theories, namely the dynamic capabilities theory, and the contingency theory.

Overall, this study had successfully provided empirical evidence concerning the key drivers of the SMEs performance, answering the following research questions. (1) Is there any significant relationship between innovation capability and SMEs performance? (2) Is there any significant relationship between intellectual capital and

SMEs performance? (3) Is there any significant relationship between absorptive capacity and SMEs performance? (4) Does the environmental turbulence moderates the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance? And (5) Does the innovation strategy moderates the relationship between innovation capability, intellectual capital, absorptive capacity, and SMEs performance?

This study used a sample provided by Small Medium Development Authority (SMEDA). The unit of analysis was an organization with the key manager and owners as respondents to the questionnaires using a self-administered survey. A total of 479 questionnaires were distributed. The response rate was 79.5% of the sample size. However, after screening, only 348 questionnaires were valid for further analysis.

To ensure the validity and reliability, all variables employed in this study have been validated. The result shows a satisfactory level of reliability and validity to perform further analysis. This study utilizes PLS-SEM approach to examine the specified relationship between research variables and the moderation effects related to environmental turbulence and innovation strategy. The results have shown that the impact of innovation capability, intellectual capital, and absorptive capacity on SMEs performance were supported. Besides that, the moderating effect of environmental turbulence is also supported. On the other hand, the moderation effect of the innovation strategy is partially supported. The next section discusses the results in more details.

### **5.3. The Findings of Determinant Factors**

The analysis and testing of data had been reported in the previous section, and this section offers further discussions on the findings. It was structured basically to discuss the questions stated previously, hence, accomplishing the objectives of the study while providing some generalization.

#### **5.3.1. Innovation capability and SMEs Performance**

The first research objective is RO1: To examine the significant relationship between innovation capability and SMEs performance. Hypothesis (1): There is a significant relationship between innovation capability and SMEs performance was hypothesized to answer the research objective.

The result of this study revealed the significant relationship between innovation capability and SMEs performance. Furthermore, the bootstrapping of 500 procedures reported that there is a small effect size for the coefficient of determination,  $r^2$ . For this study, innovation capability appears to be significant to SMEs performance, which indicates that owners of SMEs believe that their firm has better performance with the adoption of innovation capability. Hence H1 is supported.

This study concluded that innovation capability influences SMEs performance. As mentioned before, innovation capability refers to the capability to create new ideas with commercial values that consequently improve firm performance. Those new ideas without commercial values are called mistakes because they are considered a loss to the firm. This indicates that improving innovation capability is crucial to achieve high

performance. The result of this study is in line with prior researchers (Koc & Ceylan, 2007; Hassan, Malik, Hasnain, Faiz, & Abbas, 2013; Purwanto & Raihan, 2016; Mohammad Nura Ibrahim Naala, Norshahrizan Nordin, & Wan Ahmad Wan Omar, 2017; Hamidi & Shams Gharneh, 2017; Najafi-Tavani, Najafi-Tavani, Naudé, Oghazi, & Zeynaloo, 2018; Park, Kim, & Paik, 2018) who conducted studies on significant relation between innovation capability and performance.

Besides validating the postulated hypothesis, this result offers an answer to the first research question of the study. It also provides support for the premise of RBV and DC theory by confirming the significant effect of innovation capability as an organization intangible resource on the SMEs performance. In addition, innovation capability is not only important for large firms but also plays a crucial role in facilitating small firms in increasing added value for customers and offering differentiated products and services to the market (Hogan et al. 2011). Keskin (2006) demonstrates that firm innovativeness has a positive impact on firm performance in SMEs. Specifically, when firms frequently try new ideas, seek out new ways to do things, develop new product or services, and are creative in performing different methods of operations, they become more profitable, obtain higher market share, and experience stronger growth rates.

In summary, it can be inferred from the results of the study that to achieve growth and excel, SMEs must embrace innovation capability. It demands newer ways of doing things in all aspects of the business. As the competition gets more intensified and demands of customers become sophisticated, only those businesses would succeed with

who would keep pace with the latest developments happening in their industry and must keep themselves updated by reconfiguring their innovation capability.

### **5.3.2. Intellectual capital and SMEs Performance**

The second research objective is RO2: To examine the significant relationship between intellectual capital and SMEs performance. Hypothesis (2): There is a significant relationship between intellectual capital and SMEs performance was hypothesized to answer the research objective.

The result of this study revealed that intellectual capital has a significant relationship with SMEs performance. Furthermore, the bootstrapping of 500 procedures reported that there is a small effect size for the coefficient of determination,  $r^2$ . For this study, intellectual capital appears to be significant to SMEs performance, which indicates that owners of SMEs believe that their firm has better performance when they are more focused on intellectual capital. Hence, H2 is supported.

In relation to this, intellectual capital refers to a combination of human, structural, and relational capital that creates value and consequently determines the performance of a firm. It can be classified into three components: human capital, organizational capital, and social capital. Human capital refers to the knowledge, abilities, experiences, and attitudes possess by the organizational members; organizational capital refers to a collection of knowledge in an organization embedded in systems, databases, and program; and social capital represents all the knowledge embedded in the relationships with external parties which include alliances, customers, investors, distribution

networks, partners, and suppliers. The finding of this study justifies that the SMEs with more knowledge in the form of intellectual capital (HC, OC, and SC) have better ability to learn and manage changes on the market faster. It affects the skills, abilities, and attitudes of employees, which, in turn, affects the performance of the SMEs.

The findings demonstrated that IC can be used to mobilize, assemble, and manage all intangible resources in order to enhance the growth of SMEs in Pakistan and this concurs with the findings of other studies (Irawanto, Gondomono, & Hussein, 2017; Khalique, Bontis, Shaari, Yaacob, & Ngah, 2018; Wahyuningtyas, Astuti, & Anggadwita, 2018; Crema & Verbano, 2014; Emmanuel, Nnorom, & Kwarbai, 2016; Maji & Goswami, 2016). Undoubtedly, the IC does contribute to the growth of SMEs in Pakistan.

The empirical findings of the study are consistent with the underpinning theory of the study. Based on the RBV and DC, the theories emphasized on the role of intangible resources and organizational capabilities, which include analyzing IC in generating a firm's sustainable competitive advantages. This is because the results show that IC influences the SMEs performance of Pakistan.

To sum up, it can be concluded from the results of the study portray that to achieve higher performance and competitive advantage, SMEs must focus on building the intellectual capital resource. As the competition gets more intensified, markets are changing and economies moving from production-based to knowledge-based, the

SMEs must keep themselves updated by building and reconfiguring their intellectual capital.

### **5.3.3. Absorptive capacity and SMEs Performance**

The third research objective is RO3: To examine the significant relationship between Absorptive capacity and SMEs performance. Hypothesis (3): There is a significant relationship between absorptive capacity and SMEs performance, was hypothesized to answer the research objective.

The result of this study revealed the significant relationship between absorptive capacity and SMEs performance. Furthermore, the bootstrapping of 500 procedure reported that there is a small effect size for the coefficient of determination,  $r^2$ . For this study, absorptive capacity appears to be significant to SMEs performance, which indicates that owners of SMEs believe their firm has better performance with the adoption of absorptive capacity. Hence H3 is supported.

In SMEs, absorptive capacity could combine internal and external knowledge, and apply the two kinds of knowledge in relevant to knowledge-creating communities to develop new products and creative services. In summary, the ability of the firms to acquire, assimilate, transform, and exploit relevant knowledge leads them to understand and use cutting-edge technologies in their areas of operations, which, in turn, assists them in improving their performance. The finding of the current study shows that more knowledge is obtained by the enterprise leads to the higher capabilities of the enterprise to gain competitive advantage and higher performance.

The current result is in line with prior researchers (Becheikh, 2013; Herath & Mahmood, 2014; Kamal & Flanagan, 2012; Rodríguez-Serrano & Martín-Armario, 2017; Saad, Kumar, & Bradford, 2017; Zhai et al., 2018) who conducted studies in absorptive capacity among SMEs and found that this variable has a relationship with the performance in their countries. This shows that absorptive capacity is not just crucial for large organizations, but it is also one of the important capabilities for SMEs to enhance performance. The findings show the importance of externally generated knowledge in improving the enterprises' innovation capabilities, owing to the enterprises' change-oriented nature of AC to evolve and restructure their resource base to adapt to the ever-changing competitive market. Also, this result provides support for theoretical explanations of SMEs performance based on firms' valuable intangible resources as postulated by the RBV and DC.

It seems that SME owners in Pakistan rely heavily on AC, and they realize that concentrating only on existing knowledge cannot enhance their performance due to the scarcity of available knowledge for them. Thus, acquiring externally generated knowledge could successfully enhance their capabilities beyond that of the firm's rivals in industrial SMEs of Pakistan. In this vein, the present study recommends that owners of SMEs in Pakistan should focus on embedding and fully utilizing SMEs' existing knowledge or expertise into daily activities to encourage them to share their lessons learned regarding environmental-related matters to enhance their performance.



#### **5.3.4. The moderating role of Environmental turbulence**

The fourth research objective is RO4: To examine the moderating role of environmental turbulence on innovation capability, intellectual capital, absorptive capacity, and SMEs performance. To that, three moderating hypotheses were made to answer the research objective, which is as follow:

**Hypothesis (4):** Environmental turbulence moderates the relationship between innovation capability and SMEs performance.

The result of this study revealed that environmental turbulence moderates the relationship between innovation capability and SMEs performance. Furthermore, the bootstrapping of 500 procedure reported that there is a small effect size for the coefficient of determination,  $r^2$ . For this study, the moderating role of environmental turbulence between innovation capability and SMEs performance appears to be significant, which indicates that owners of SMEs believe that their firms have better performance by considering the environmental conditions. Hence, H4 is supported.

Looking at the result, it can safely be concluded that the direct effect of this study shows the significant relationship between innovation capability and SMEs performance. However, the moderating testing exhibits that environmental turbulence moderates the relationship between innovation capability and SMEs performance, where firms show a low relative advantage over the SMEs performance when environmental turbulence is low. However, when the environmental turbulence is more intense, SMEs perform better because they focus more on managing and reconfiguring their internal capability

(innovation capability) to gain a competitive advantage over their rival SME. In general, a supportive environment is one that encourages SMEs to function more efficiently. Therefore, it improves the ability of the firms to be more innovative and to increase productivity for sustainable development.

The current result is in line with prior researchers (Mura, Radaelli, Lettieri, & Longo, 2014; Pratono & Mahmood, 2016; Shah, Othman, & Mansor, 2016; Abbas & ul Hassan, 2017; Leonidou, Christodoulides, Kyrgidou, & Palihawadana, 2017) who conducted studies on moderating effects of environmental turbulence in different context. In general, the results of the moderating effects of environmental turbulence on the relationship amid innovation capability and SMEs performance support the literature on the contingency theory that organization's resources and capabilities aligned with the environmental factors determine a firm's long-term competitiveness.

**Hypothesis (5):** Environmental turbulence moderates the relationship between intellectual capital and SMEs performance.

The result of this study revealed that environmental turbulence moderates the relationship between intellectual capital and SMEs performance. Furthermore, the bootstrapping of 500 procedure reported that there is a small effect size for the coefficient of determination,  $r^2$ . For this study, the moderating role of environmental turbulence between intellectual capital and SMEs performance appears to be significant, which indicates that owners of SMEs believe that their firm has better

performance by considering the environmental conditions in the building and reconfiguring their intellectual capital. Therefore, H5 is supported.

The direct effect of this study shows there is a significant relationship between intellectual capital and SMEs performance. Besides, the moderating testing exhibits that environmental turbulence moderates the relationship between intellectual capital and SMEs performance. It shows that when the level of environmental turbulence is high, the relationship between intellectual capital and SMEs performance becomes stronger. It seems that SME owners in Pakistan manage their intellectual resources, i.e., human capital, organizational capital, and social capital accordingly to the environmental turbulence. If they manage intellectual capital resources more effectively and efficiently according to the prevailing environmental turbulence, the better their SMEs will perform. Therefore, SMEs must not ignore and be unresponsive to external environmental factors, and seek information about technological changes, competitors and market trends, and modify their internal capability (intellectual capital).

It has been observed over the past few years that a firm's better survival mainly depends on its capacity to constantly address and satisfy the customer's needs and demands and creates a competitive advantage over competitors (Wilden & Gudergan, 2014). This entails that competition never rests and emphasis should always be to strive for the improvement of performance by reconfiguring their capabilities. The impact of intellectual capital is more significant in a more turbulent environment than in a stable environment. In a stable environment, a firm's investment would be shifted to financing

cost of operations to enhance the delivery of services, but in a turbulent environment, the need to invest in intellectual capital becomes more apparent to deal with environmental uncertainties associated with such turbulence (Liu, 2017).

On the same side of the coming, the current result is in line with prior researchers (Hung & Chou, 2013; Mura, Radaelli, Lettieri, & Longo, 2014; Pratono & Mahmood, 2016; Shah, Othman, & Mansor, 2016; Abbas & ul Hassan, 2017; Leonidou, Christodoulides, Kyrgidou, & Palihawadana, 2017) who conducted studies on moderating effects of environmental turbulence in different context. In general, the results of the moderating effects of environmental turbulence on the relationship amid innovation capability and SMEs performance support the literature on the contingency theory that organization's resources and capabilities aligned with the environmental factors determine the firm's long-term competitiveness.

**Hypothesis (6):** Environmental turbulence moderates the relationship between absorptive capacity and SMEs performance.

The result of this study revealed that environmental turbulence moderates the relationship between absorptive capacity and SMEs performance. Furthermore, the bootstrapping of 500 procedure reported that there is a small effect size for the coefficient of determination,  $r^2$ . For this study, the moderating role of environmental turbulence between absorptive capacity and SMEs performance appears to be significant, which indicates that owners of SMEs believe that their firm has better

performance by considering the environmental conditions in building and reconfiguring their absorptive capacity. Therefore, H6 is supported.

The direct effect of this study shows there is a significant relationship between absorptive capacity (ACAP) and SMEs performance. Also, moderating testing exhibits that environmental turbulence moderates the relationship between absorptive capacity and SMEs performance. It shows that when the level of environmental turbulence is high, the relationship between absorptive capacity and SMEs performance becomes stronger. It seems that SME owners in Pakistan rely heavily on ACAP, and they realize that concentrating only on the existing knowledge cannot enhance their performance due to the scarcity of the available knowledge for them. Thus, acquiring externally generated knowledge could successfully enhance their capabilities beyond that of the firm's rivals in industrial SMEs of Pakistan. In summary, if environmental turbulence is high, the firm will focus more on acquiring external knowledge and align that external changes in the environment with their internal process and capabilities to perform better.

Notwithstanding, the SMEs in Pakistan, which keep tracking and monitoring the turbulence in the environment, gain a more competitive advantage as compared to the SMEs which do not consider the environmental changes. In enhancing absorptive capacity, gaining external knowledge is one of the key elements, so when turbulence is high, the configuring process of absorptive capacity increases.

The current result is in line with prior researchers (Mura, Radaelli, Lettieri, & Longo, 2014; Pratono & Mahmood, 2016; Shah, Othman, & Mansor, 2016; Abbas & ul Hassan, 2017; Leonidou, Christodoulides, Kyrgidou, & Palihawadana, 2017) who conducted studies on the moderating effects of environmental turbulence in different context. In general, the results of the moderating effects of environmental turbulence on the relationship amid absorptive capacity and SMEs performance support the literature on the contingency theory that organization's resources and capabilities aligned with the environmental factors determine the firm's long-term competitiveness.

### **5.3.5. The moderating role of Innovation strategy**

The fifth research objective is RO5: To examine the moderating role of innovation strategy on innovation capability, intellectual capital, absorptive capacity, and SMEs performance. To that, three moderating hypotheses were made to answer the research objective, which is as follow:

**Hypothesis (7):** Innovation strategy moderates the relationship between innovation capability and SMEs performance.

The result of this study revealed that innovation strategy moderates the relationship between innovation capability and SMEs performance. Furthermore, the bootstrapping of 500 procedure reported that there is a small effect size for the coefficient of determination,  $r^2$ . For this study, the moderating role of innovation strategy between innovation capability and SMEs performance appears to be significant, which indicates that owners of SMEs believe that their firm has better performance by focusing on

innovation strategy in building and reconfiguring their innovation capability. Therefore, H7 is supported.

The direct effect of this study shows the significant relationship between innovation capability and SMEs performance. Also, the moderating testing exhibits that innovation strategy moderates the relationship between innovation capability and SMEs performance, when the innovation strategy is more intense, the SMEs perform better because they focus more in managing and reconfiguring their internal capability (innovation capability) to gain a competitive advantage over their rival. This finding implies that innovation strategy enhances the influence of innovation capability on SMEs performance among the Pakistani SMEs.

In SMEs, if innovation strategy is seen from the perspective of agglomeration of strategic decisions, a flexible stance or even an entrepreneurial attitude that contains innovative capabilities are necessary because the old strategy cannot be used to face the market environment in the area of operations with sustainable changes. To achieve good performance on an ongoing basis, innovation strategy plays an essential role in managing the competitive position in the market that contains environmental uncertainties and highly dynamic competition in the region (Yu, Ramanathan, & Nath, 2017). This evidence reveals that innovation capability is not sufficient to explain the changes in the performance of SMEs. It is only when the innovation capability matches or fits with innovation strategy; the innovation capability may be useful in improving the performance of the SMEs (Verbano & Crema, 2016).

Consequently, it is also in line with the normative suggestion of the strategy theorists that effective innovation strategy is developed based on a competitive advantage that can be derived from the internal resources and capabilities of the firm. The innovation strategy developed based on competitive advantage is not only effective but also can help organizations to compete as well as to improve their performance.

Also, theoretical and empirical literature supports the claim that innovation strategy moderates the relationship between firm's tangible and intangible assets and firm performance (Chuang & Lin, 2017; Yu et al., 2017). This finding of the current study is consistent with the moderating role of innovation strategy. Innovation capability has a significant effect on SMEs performance especially when they are aligned with the firm's innovation strategy. The resource-based view has suggested the importance of developing rare and in-imitable resources and capabilities that can be aligned to a firm's strategy that is specific to an entity.

In a nutshell, this result tends to suggest that SMEs, in the context of Pakistan, need to have a clear innovation strategy as it can help them to optimize the innovation capability to achieve higher performance.

**Hypothesis (8):** Innovation strategy moderates the relationship between intellectual capital and SMEs performance.

The result of this study revealed that innovation strategy does not moderate the relationship between intellectual capital and SMEs performance. Furthermore, the bootstrapping of 500 procedure reported that there is no effect size for the coefficient



of determination,  $r^2$ . For this study, the moderating role of innovation strategy between intellectual capital and SMEs performance appears to be insignificant, which indicates that owners of SMEs believe that innovation strategy does not influence the intellectual capital of SMEs to attain better SMEs performance. Therefore, H8 is not supported.

The direct effect of this study shows there is a significant relationship between intellectual capital and SMEs performance. However, the moderating testing exhibits that innovation strategy does not moderate the relationship between intellectual capital and SMEs performance. It shows that when the level of the innovation strategy is high, the relationship between intellectual capital and SMEs performance becomes insignificant. This study does not find any support for the moderating relationship in Pakistani environment. The reasons for this rejection can be lack of proper intellectual capital resources, lack of adequate alignment of IC with innovation strategy, lack of environmental settings, lack of creative thinking for the performance, and can be because of the strong relationship bounding of IC with SMEs performance and many others. Another reason for this supposition not to hold may be related to procedural differences and organizational structural differences. Nonetheless, this does not indicate that innovation strategy is not fundamental for SMEs performance. This hypothesis concludes innovation strategy has no direct influence on the relationship between absorptive capacity and SMEs performance.

This result of this hypothesis is aligned with the previous studies (Song, Di Benedetto, & Nason, 2007; Tang & Tang, 2012) which stated that strategy has an insignificant effect on performance and is not consistent with studies which evident that strategies

moderate the relationship between the firm's tangible and intangible assets and firm performance (Chan, He, Chan, & Wang, 2012; Kim & Huh, 2015; Su, Guo, & Sun, 2017; Mcgee, Dowling, & Megginson, 1995; Vidija, Obonyo, & Ogutu, 2016). RBV and DC have suggested the importance of developing rare and in-imitable resources and capabilities that can be aligned to a firm's strategy that is specific to an entity.

**Hypothesis (9):** Innovation strategy moderates the relationship between absorptive capacity and SMEs performance.

The result of this study revealed that innovation strategy moderates the relationship between absorptive capacity and SMEs performance. Furthermore, the bootstrapping of 500 procedure reported that there is a small effect size for the coefficient of determination,  $r^2$ . For this study, the moderating role of innovation strategy between absorptive capacity and SMEs performance appears to be significant, which indicates that owners of SMEs believe that their firm has better performance by focusing on innovation strategy in building and reconfiguring their absorptive capacity. Therefore, H9 is supported.

The direct effect of this study shows the significant relationship between absorptive capacity and SMEs performance. However, the moderating testing exhibits that innovation strategy moderates the relationship between absorptive capacity and SMEs performance, when the innovation strategy is more intense, SMEs perform better because they focus more in managing and reconfiguring their internal capability (absorptive capacity) to gain a competitive advantage over their rival. This finding

implies that innovation strategy enhances the influence of absorptive capacity on SMEs performance among the Pakistani SMEs.

In SMEs, absorptive capacity could combine internal and external knowledge, and apply the two kinds of knowledge in relevant knowledge-creating communities to develop new products and creative services. In innovation strategy, the SMEs always focus on producing something new and better than prevailing in the current market. Hence, innovation strategy influences the SMEs ability to acquire, assimilate, transform, and exploit relevant knowledge leads them to understand and use cutting-edge technologies in their areas of operations, which, in turn, assists them in improving their performance. This evidence reveals that absorptive capacity acting alone is not sufficient to explain the changes in the performance of SMEs. It is only when the absorptive capacity matches or fits with innovation strategy, then ultimately it improves the performance of the SMEs.

From the previous literature, it is evident that strategies moderates the relationship between firm's tangible and intangible assets and firm performance (Kim & Huh, 2015; Su, Guo, & Sun, 2017; Mcgee, Dowling, & Megginson, 1995; Vidija, Obonyo, & Ogutu, 2016). Specifically moderating role of the innovation strategy is limited in previous studies (Chuang & Lin, 2017; Yu et al., 2017). The result of the current study is consistent with these studies which evident from the moderating effect of innovation strategy. In a nutshell, this result tends to suggest that SMEs, in the context of Pakistan, need to have a clear innovation strategy as it can help them optimize the use of absorptive capacity to attain higher performance. RBV and DC suggested the

importance of developing rare and in-imitable resources and capabilities that can be aligned to a firm's strategy that is specific to an entity.

#### **5.4 Research Contributions and Implications**

Several insights concerning the issues of SMEs performance have been discussed throughout this study. To the best of the researcher's knowledge, this study is one of the very few studies that has been carried out in developing countries, particularly in the textile SMEs of Pakistan to investigate the effect of innovation capability, intellectual capital, absorptive capacity, environmental turbulence, innovation strategy, and SMEs performance.

In addition, this study contributes to expanding the current literature related to examining the moderating role of environmental turbulence and innovation strategy between innovation capability, intellectual capital, absorptive capacity, and SMEs performance with the help of the PLS-SEM. Based on the findings of this research work, the study has more than a few important implications, specifically in terms of the performance of SMEs in the context of Pakistan. The results of this study provide practical, theoretical, and methodological implications. These implications are discussed in the following sub-sections.

##### **5.4.1 Theoretical Implication**

This study provides empirical evidence for the theoretical relationships hypothesized in the research framework. Specifically, it highlights the moderating role of environmental turbulence and innovation strategy on the relationship between

innovation capability, intellectual capital, absorptive capacity, and performance of SMEs in Pakistan. This study has 9 hypotheses, out of which 8 hypotheses are supported, while one is not.

Based on the literature review innovation capability, intellectual capital, and absorptive capacity were selected for this study because they represent the key variables found to predict SMEs performance. Moreover, to the best of researcher's knowledge, there is no any other study attempted that integrates innovation capability, intellectual capital, absorptive capacity with moderating variable of environmental turbulence and innovation strategy on the performance of the small and medium enterprises (SMEs).

The results also provide additional empirical support for the research framework. Thus, this study contributes to the RBV by providing empirical evidence to support the assertion of the theory. The RBV postulates that the performance of the firm is influenced by the firm's bundle of intangible and tangible resources. In the context of this study, innovation capability, intellectual capital, absorptive capacity, and innovation strategy are regarded as a firm's resources. The study also concludes that according to the dynamic capabilities perspective, innovation capability, intellectual capital, and absorptive capacity are recognized as dynamic capabilities that integrate with firm resources and strategy by the turbulence environment to enhance firms' competitiveness and performance. Within the premises of RBV, DC theory and contingency theory, this study found evidence that SMEs performance can be explained by aligning intangible resources, i.e., innovation capability, intellectual capital, and absorptive capacity together that have been moderated by environmental turbulence.

This study also lends valuable support to dynamic capability perspective which put forward by Teece et al., (1997) and Teece (2007) who considered to study the innovation capability, intellectual capital, and absorptive capacity as an integrative capabilities that enable a firm to configure and reconfigure its resource stock and deploy and redeploy it to grasp and exploit dynamic market opportunities and enhance performance. Moreover, the study strengthens the dynamic capability perspective (Teece, 2007) where innovation capability, intellectual capital, and absorptive capacity are regarded as a dynamic capability of the firm in order to sense, create, and seize market opportunities by acquiring, sharing, and utilizing the knowledge existing in the ecosystem of a firm. By investigating the moderating effects of environmental turbulence and innovation strategy on innovation capability, intellectual capital, absorptive capacity, and SMEs performance, the study extends the resource-based view, dynamic capability perspective, and contingency theory.

As argued earlier, despite the importance of the SME sector in any economy of a country, most of the studies concerning innovation capability, intellectual capital, and absorptive capacity were conducted on large scale organizations and developed economies. This study, however, extended the existing literature concerning innovation capability, intellectual capital, and absorptive capacity on SMEs performance of textile in Pakistan.

#### **5.4.2 Practical Implication**

Firstly, SMEs have been recognized as one of the significant contributors to employment, economic growth, and poverty alleviation. Government and policymakers

such as the Small and Medium Enterprise Development Authority (SMEDA) have to recognize that their decisions relating to SMEs have a direct impact on activities of the enterprises. It is, however, necessary to reveal what government and policymakers may do to improve the performance and sustainability of SMEs in Pakistan.

Apart from that, empirical evidence suggests that organizational strategies are important resources that are valuable, rare, inimitable, and non-substitutable and able to create competitive advantage. Realizing the need to emphasize on the growth and development of SMEs, the findings of this study would contribute to managerial implications and encourage the SME managers/owners to implement innovation capability, intellectual capital, and absorptive capacity to create competitiveness and higher performance in the turbulent environment.

This study has implications for policy-makers as it provides an insight into the way through which SMEs can support their innovation capabilities using their resources. SME owners-managers need to ensure that their firms provide clients with products and services of unique benefits, offer innovative ideas and solutions to clients' problems, and encourage employees to look for novel ways to problem-solving, thus promoting innovation capability. This could assist the policy-makers in their issuance of regulations that urges market practices to support the maximization of SMEs' innovative capabilities, and improve the relationship between government entities and industrial SMEs as the pillar of economic development of the country.

Based on this study's findings and several past studies, it seems it is empirically established that intellectual capital generally contributes to SMEs performance. Therefore, SME owners-managers need to acknowledge the importance of intellectual capital in enhancing firm performance. SME owners-managers have to consider intellectual capital as one of the crucial capabilities of the firm to gain competitive advantage and better performance. This research concluded that managing intellectual capital requires greater agility and flexibility, especially in a constantly changing economic environment. Due to its nature of intangible, managing each component of intellectual capital requires different techniques compared to managing the tangibles so that the potential of it can be realized and functioning. Taken this factor into consideration, the researcher recommends business owners and policymakers to manage intellectual capital, which is beneficial to SMEs performance.

Additionally, the results show that absorptive capacity is effective in influencing SMEs' access to finance, which in turn affects firm performance. Therefore, to improve the SMEs' performance, owners-managers should always increase the level of absorptive capacity, which will improve their performance. The government has to provide tools, especially hands-on programs, which SMEs need to have a better chance to succeed. This is where absorptive capacity plays an important role in equipping entrepreneurs with knowledge of better handling the business. Moreover, it is better to provide a particular training school for teaching entrepreneurship for anyone without bias on age or educational background. However, the combination of hands-on activities, absorbing knowledge, and implementation does not deliver the best results and seems to fail if the government still does not make any follow-up after assisting.



The findings also indicate that environmental turbulence and innovation strategy moderates the relationship amid implement innovation capability, intellectual capital, absorptive capacity, and performance of SMEs. The study suggests that SMEs that seek to improve performance should seriously consider integrating management strategies such as innovation strategy and aligning them with environmental turbulence as the study found support for the interaction among them in contributing towards higher performance. The findings lead to many strategic decisions; the firm can adapt to ensure, that they could serve better in the market place and are better able to satisfy the current and future demands and needs of customers.

In conclusion, this study identifies that innovation capability, intellectual capital, absorptive capacity, and innovation strategy are critical resources that can generate a competitive advantage. Therefore, they should be viewed as matching resources, which directly improve the financial outcome and in turn, influence SMEs performance. Strategic capabilities are very different in nature; concentrating on one may not be enough. Therefore, a successful configuration of these firm's capabilities is essential. For SMEs to be more resourceful, the owners-managers should develop the right configuration of these capabilities. This give SMEs a more significant economic outcome, which could, in turn, lead to superior performance. Thus, this study supports the argument that the bundles of firm resources and capabilities are a major source for competitive advantage that leads to superior performance.

The findings are also be important for the policymakers at the national and the organizational level. In the national level, making policy decisions on SME sector

strategies, education, entrepreneurship development, and incentive schemes for the SME sector will be guided by the findings. At the organizational level, it will help make policy decisions on organizational philosophies and business models, employee selection, retention and promotion criterion, inter-functional coordination, long-term directions, and learning processes. The educators and the trainers are also be guided by the findings for designing the courses and the other materials in universities and other educational institutes, identifying training needs of potential entrepreneurs, and developing skills of trainers. Finally, the findings of the study are also be helpful for potential investors in making their decisions.

#### **5.4.3 Methodological Implication**

Besides the practical and theoretical contributions, this study puts forth some other methodological implications. Firstly, previous studies on the performance of SMEs have mainly used SPSS and or AMOS, but to the best knowledge of the researcher, very few have used Smart PLS-SEM 3.2.7 (Ringle et al., 2014) to produce results. Additionally, the measurement scales of these variables in this study were adapted from previous studies, as discussed in the operationalization section. Therefore, replicating these variables measurements in another context is warranted, to confirm the reliability and validity (Frank et al., 2010; Long, 2013). Composite reliability, convergent validity, and discriminant validity were assessed and found to be satisfactory, above the required threshold. Hence, the current study represents a further contribution to methodology and literature of SMEs' performance by establishing the validity and reliability of the adopted measures in the Pakistani context.

Other than that, several significant methodological contributions have emerged from this study. The conceptual model specification in this study that integrates unidimensional and multidimensional constructs has produced a comprehensive view of the elements impacting innovation capability and firm performance. Model specification is important as the modeling process begins at the conceptual level (Hulland 1999). Based on the theory, innovation capability, intellectual capital, absorptive capacity, and environmental turbulence are conceptualized as multidimensional constructs while innovation strategy and SMEs performance are regarded as unidimensional constructs. For multidimensional constructs, separate elements representing each of the dimensions are included in the model. These dimensions act as primary constructs that enable the effects of individual dimensions on other constructs to be examined. For example, intellectual capital comprises three dimensions that are human capital, organizational capital, and social capital. By specifying intellectual capital as a multidimensional construct in the model, the individual effects of human capital, organizational capital, and social capital on intellectual capital can be determined. Subsequently, the impact of innovation capability, intellectual capital, and absorptive capacity on SMEs performance could be identified. This multidimensional construct specification is more consistent with the theory and provides superior empirical results (Hulland 1999).

This study contributes to expanding our understanding of formative hierarchical component models. By using the Reflective-Formative Type II (Becker, Klein & Wetzels 2012) model specification, this study can avoid the misspecification of models whereby problems arise when constructs are modeled as having reflective indicators

although they are more appropriately specified as formative indicators. This problem can lead to biased results (Jarvis, MacKenzie & Podsakoff, 2003). The attention of prior research has been mainly focused on hierarchical component models with reflective relationships (Becker, Klein & Wetzels 2012). Hence, this study responds to Lee and Cadogan & lee's (2013) assertion that researchers should avoid utilizing reflective higher-order constructs because such models are meaningless and misleading.

The application of a two-stage approach permits the value of  $R^2$  for SMEs performance to be obtained. As asserted by Ringle, Sarstedt, and Straub (2012), to determine  $R^2$ , the two-stage approach is appropriate. It is crucial for studies employing PLS to report the  $R^2$  values for all endogenous constructs in the models, and any attempts not to report the  $R^2$  values and replace it with others such as goodness-of-fit values is considered incorrect (Hulland 1999).

## **5.5 Limitations of the Study**

Despite several significant contributions highlighted in this study regarding SMEs' performance, it has several limitations that need to be identified. Firstly, as a potential problem in behavioral research, common method variance is one of the possible limitations of this study (Podsakoff et al., 2003). However, using Harman's single factor analysis to test the common method bias, it is established that the study is free from this problem, but in this study, data were gathered from a single source which can be biased.

Secondly, the current study adopts the quantitative method and relies on a single method of data collection. In other words, the questionnaire is the only instrument used in gathering the data in this study. The respondents may not always be willing to answer questions correctly. Thus, the responses may not consistently and accurately measure the study variables.

Thirdly, this study is limited only to the SMEs textile in the manufacturing sector. There are various other sectors. Fourthly, the study adopts the cross-sectional design for the survey in which the opinions of respondents was captured at one specific point in time. Thus, due to the cross-sectional nature of this study, it is restricted to proving causal relationships between the variables (Sekaran & Bougie, 2010). As the data was collected at one time, this might not permit the data to represent long-term behaviors of the firms.

Lastly, the variance explained ( $R^2$ ) of the model of this study is another limitation. The study recorded the  $R^2$  of 56.5% for SMEs performance. This implies that the variables can jointly explain the dependent variable (SMEs performance) to the tune of 56.5%. Therefore, there is an indication that other factors, such as other capabilities outside the model account for the remaining balance.

## **5.6 Suggestion for Future Research**

The findings and the limitations of the study were a source of ideas and input for future researchers. Thus, the suggestions for future researchers are as follows:

First, the data was gathered from a single source, i.e. owner/manager of the firm, which can be biased. Notwithstanding, future research can collect data from multiple participants (owners, managers, and financiers) separately per enterprise, which can minimize the measurement errors.

Secondly, the current study was quantitative in nature and used questionnaire survey for collection of data; It will be of interest if future studies combine both quantitative and qualitative methods to carry out an in-depth investigation of SMEs' performance in Pakistan. Thirdly, current study just focused on textile SMEs of Pakistan. But more studies are essential in other areas and sector in the country for further validation of the results and the generalization of the results into the entire SME sector.

Fourthly, the study utilized cross-sectional design for the survey in which the opinions of respondents were captured at one specific point in time. In view of these restrictions, a longitudinal study is suggested for future research. This may help researchers to get more understanding on the subject matter and validate the findings from cross-sectional studies. Lastly, The study recorded the  $R^2$  of 56.5% for SMEs performance. It means the remaining 43.5% variance for SMEs performance is left. Based on this, a future study can expand the model of the study to improve the  $R^2$ . In these two moderators and four capabilities were tested, so future studies can consider other capabilities and put insight into mediation.

## 5.7 Conclusion

The main purpose of this research work was to examine the moderating role of environmental turbulence and innovation strategy on the relationship between innovation capability, intellectual capital, absorptive capacity, and performance of SMEs in Pakistan. The study has achieved all the five objectives stated in chapter one.

The first objective was to examine the relationship between innovation capability and SMEs performance. This objective was achieved by testing the direct relationship hypotheses. The study provides empirical evidence of the significant relationship between innovation capability and SMEs performance. The second objective of this study was to examine the relationship between intellectual capital and SMEs performance. Similarly, the hypotheses were tested to accomplish this objective. Empirical evidence shows that intellectual capital has a positive influence on SMEs performance. The third objective of this study was to examine the relationship between absorptive capacity and SMEs performance. The study provides empirical evidence of the significant relationship between absorptive capacity and SMEs performance.

Additionally, the fourth objective of this study was to examine the moderating effect of environmental turbulence on the relationship between innovation capability, intellectual capital, absorptive capacity, and performance of SMEs. Likewise, this objective was achieved by testing the three moderation hypotheses. The findings show that environmental turbulence moderates the relationship between innovation capability, intellectual capital, absorptive capacity, and performance of SMEs. Lastly, the fifth objective of this was to examine the moderating effect of innovation strategy

on the relationship between innovation capability, intellectual capital, absorptive capacity, and performance of SMEs. Three moderating hypotheses were tested to achieve this objective. The results indicate the presence of moderating effect of innovation strategy between innovation capability and SMEs performance and absorptive capacity and SMEs performance. No moderating effect of innovation strategy was found between intellectual capital and SMEs performance.

This study used a sample provided by Small Medium Development Authority (SMEDA). The unit of analysis was an organization with the key manager and owners as respondents to the questionnaires using a self-administered survey. A total of 479 questionnaires were distributed. The response rate was 79.5% of the sample size. However, after screening, only 348 questionnaires were valid for further analysis. This study utilizes PLS-SEM approach to examine the specified relationship between research variables and the moderation effects related to environmental turbulence and innovation strategy.

Moreover, the study provides practical, theoretical, and methodological contributions in terms of the influence of these intangible capabilities and resources on SMEs' performance. Based on the limitations of the study, several directions for future research are outlined.



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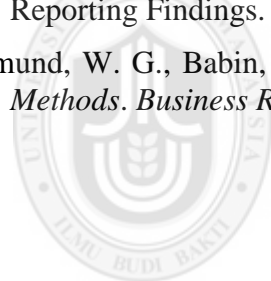
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Universiti Utara Malaysia

## APPENDICES

### Appendix A: Questionnaire (English/Urdu)



Dear Respondent,

I am a Ph.D. scholar at University Utara Malaysia. I am conducting research on "The Effect of Innovation Strategy, Environmental Turbulence on Intellectual Capital, Innovation Capability, Absorptive Capacity and SMEs performance in Pakistan". I request you to participate in this study by answering the attached questionnaire that will hardly take 10 minutes.

The questionnaire is anonymous, and your response will be used for the academic research purpose only. If you have any questions or concerns about the questionnaire or about participating in this study, you may contact me at [muhammad\\_zul@oyagsb.uum.edu.my](mailto:muhammad_zul@oyagsb.uum.edu.my), you can also request for research findings through same email address.

Thanks for your cooperation.

Sincerely,

Muhammad Zulqarnain Arshad  
PhD (Management) Scholar  
School of Business Management,  
Universiti Utara Malaysia,  
Sintok, 06010, Kedah Darul Aman, Malaysia  
Cell # 00923217774414  
[muhammad\\_zul@oyagsb.uum.edu.my](mailto:muhammad_zul@oyagsb.uum.edu.my)

Assoc.Prof. Dr. Darwina Arshad (Supervisor)  
PhD (Strategic Management)  
School of Business Management,  
Universiti Utara Malaysia,  
Sintok, 06010, Kedah Darul Aman, Malaysia  
[darwina@uum.edu.my](mailto:darwina@uum.edu.my)



SECTION A:

Demographic information آبادیاتی معلومات

The following information is strictly confidential and will only be used for research purpose. I will be grateful if you could kindly fill the required information.

اس سوالنامہ سے حاصل کردہ معلومات کو خفیہ رکھا جائے گا اور مذکورہ معلومات کو صرف تحقیقی مقصد کیلئے استعمال کیا جائے گا۔ مطلوبہ معلومات کی فراہمی پر میں آپ کا شکرگزار رہوں گا۔

Please read the following statements and TICK (✓) in the appropriate box.

درج ذیل بیانات کو پڑھیں اور متعلقہ خانے میں (✓) کا نشان لگائیں۔

1. Position:

a. CEO/ Managing Director  b. Senior Manager

c. Other (Please specify) \_\_\_\_\_

1. عہدہ

(الف) CEO / منیجنگ ڈائریکٹر  (ب) سینئر منیجر  (ج) دیگر (وضاحت کریں)

2. Gender

a. Male  b. Female

2. جنس

(الف) مرد  (ب) عورت

3. Marital status

a. Married  b. Single

c. Divorced/ Widow

3. ازدواجی حیثیت

(الف) شادی شدہ  (ب) غیر شادی شدہ  (ج) طلاق یافتہ/بیوہ/رنتوا

4. Age group

a. Below 20  b. 20-30

c. 31- 40  d. 41-50

e. Above 50

4. آپ کی عمر

- (الف) 20 سال سے کم  (ب) 20 تا 30 سال   
 (ج) 31 تا 40 سال  (د) 41 تا 50 سال   
 (ر) 50 سال سے زائد

5. Level of education

- a. Diploma  b. Matric   
 c. Intermediate  d. Bachelor   
 e. Masters  f. PhD

5. تعلیمی قابلیت

- (الف) ڈپلومہ  (ب) میٹرک   
 (ج) انٹرمیڈیٹ  (د) گریجویٹن   
 (ر) ماسٹرز  (ز) پی ایچ ڈی

6. Please TICK (✓) specific range of your firm in three years.

No. of Employees	2015	2016	2017
< 10			
10 – 50			
51 – 150			
151 – 250			
> 250			

6. تین سالوں میں اپنی کمپنی کی افرادی قوت کی اوسط حد پر (✓) کا نشان لگائیں۔

2017	2016	2015	ملازمین کی تعداد
			10 سے کم
			10 تا 50
			51 تا 150
			151 تا 250
			250 سے زائد

7. Sales Turnover (Rupees in Million). Please TICK (✓) the exact range.

Sales Turnover ( Rupees in million)	2015	2016	2017
< 50			
50 - 75			
76 – 100			
101 – 125			
> 125			

7. سالانہ آمدن (روپے ملین میں)۔ اوسط حد پر (✓) کا نشان لگائیں۔

2017	2016	2015	آمدنی (روپے ملین میں)
			50 سے کم
			50 تا 75
			76 تا 100
			101 تا 125
			125 سے زائد

8. Years of operation: Please TICK (✓) one only.

- c. < 1  b. 1 – 3 years
- d. 4 – 7 years  d. 8 – 11 years
- e. 12 – 15 years  f. 16 – 20 years
- g. > 20 years

8. آپ کتنے عرصے سے کاروبار کر رہے ہیں۔ کسی ایک پر (✓) نشان لگائیں۔

<input type="checkbox"/>	1 تا 3 سال	(ب)	<input type="checkbox"/>	ایک سال سے کم	(الف)
<input type="checkbox"/>	8 تا 11 سال	(د)	<input type="checkbox"/>	4 تا 7 سال	(ج)
<input type="checkbox"/>	16 تا 20 سال	(ز)	<input type="checkbox"/>	12 تا 15 سال	(ر)
			<input type="checkbox"/>	20 سال سے زائد	(ہ)

## Universiti Utara Malaysia

### SECTION B: Innovation Capability

#### سیکشن B : جدت طرازی کی صلاحیت

Please read the following statements and Circle (○) the response that closely represents your opinion. The statements are anchored on the following 7 point Likert Scale:

درج ذیل بیانات پڑھیں اور اپنی رائے سے قریب تر جواب پر دائرہ (○) لگائیں۔ اپنے جواب کا اظہار درج ذیل 7 پوائنٹ کے ذریعے کریں۔

#### Innovation Capability

آپ کا اپنی کمپنی کے بارے میں کیا خیال ہے؟ How do you perceive about your company?

بہت متفق Strongly Agree ← → بہت غیر متفق Strongly Disagree

	1	2	3	4	5	6	7
Product Innovativeness مصنوعاتی جدت							

1	In new product and service introductions, our firm is often first-to-market. نئی مصنوعات اور خدمات متعارف کروانے میں ہماری کمپنی مارکیٹ میں سب سے پہلے ہے	1	2	3	4	5	6	7
2	Our new products and services are often perceived as very novel by customers ہماری نئی مصنوعات اور خدمات کو اکثر صارفین بہت جدید تصور کرتے ہیں۔	1	2	3	4	5	6	7
3	In comparison with our competitors, our firm has introduced more innovative products and services during the past five years گزشتہ پانچ سال سے دیگر کاروباری حریفوں کے مقابلے میں ہماری کمپنی جدید مصنوعات اور خدمات متعارف کروا رہی ہے۔	1	2	3	4	5	6	7
4	In comparison with our competitors, our firm has a lower success rate in new products and services launch. دیگر کاروباری حریفوں کے مقابلے میں ہماری کمپنی کی جدید مصنوعات اور خدمات متعارف کروانے میں کامیابی کی شرح کم رہی۔	1	2	3	4	5	6	7
<b>عملی جدت طرازی Process innovativeness</b>								
5	We are constantly improving our business processes. ہم اپنے طرز کاروبار میں مسلسل بہتری لارہے ہیں۔	1	2	3	4	5	6	7
6	During the past five years, our firm has developed many new management approaches. گزشتہ پانچ سالوں میں ہماری کمپنی نے بہت سے نئے انتظامی حکمت عملیوں تک رسائی حاصل کی۔	1	2	3	4	5	6	7
7	When we cannot solve a problem using conventional methods, we improvise on new methods جب ہم روایتی طریقوں سے کسی مشکل کا حل نہ نکال سکیں تو جدید طریقے اپناتے ہیں۔	1	2	3	4	5	6	7
8	Our firm changes production methods at a great speed in comparison with our competitors. اپنے کاروباری حریفوں کے مقابلے میں ہماری کمپنی پیداواری طریقوں کو فوری طور پر تبدیل کر دیتی ہے۔	1	2	3	4	5	6	7
<b>بازاری جدت طرازی Market Innovativeness</b>								
9	In comparison with our competitors, our products' most recent marketing program is revolutionary in the market. کاروباری حریفوں کے مقابلے میں ہماری مصنوعات کا جدید مارکیٹنگ پروگرام مارکیٹ میں ایک انقلاب ہے۔	1	2	3	4	5	6	7
10	Our recent new products and services are only minor changes from our previous products and services. ہماری حالیہ نئی اور گزشتہ مصنوعات اور خدمات میں معمولی سی تبدیلی آئی ہے۔	1	2	3	4	5	6	7
11	In new product and service introductions, our company is often at the cutting edge of technology.	1	2	3	4	5	6	7

	نئی مصنوعات اور خدمات متعارف کروانے میں اکثر ہماری کمپنی ٹیکنالوجی کی انتہائی بلندیوں پر ہوتی ہے۔							
12	New products and services in our firm often take us up against new competitors. نئے کاروباری حریفوں کے مقابلے میں ہماری کمپنی کی نئی مصنوعات اور خدمات اکثر ہمیں اونچا مقام دلادیتی ہیں۔	1	2	3	4	5	6	7
<b>Strategic Innovativeness</b> <b>حکمت عملی میں جدت طرازی</b>								
13	Our firm's R&D or product development resources are adequate to handle the development need of new products and services. مصنوعات اور خدمات میں ترقیاتی ضرورت کو پورا کرنے کیلئے ہمارے پاس تحقیق و ترقی یا مصنوعات کی تیاری کے مناسب ذرائع موجود ہیں۔	1	2	3	4	5	6	7
14	Top level management of the firm are willing to take risks to seize and explore growth opportunities. ہماری کمپنی کی اعلیٰ سطحی انتظامیہ ترقیاتی مواقعوں کے حصول اور فروغ کیلئے نقصان کا خطرہ/ریسک لینے کو تیار ہیں۔	1	2	3	4	5	6	7
15	Top level management constantly seek unusual, novel solutions to problems. اعلیٰ سطحی انتظامیہ ہمیشہ مسائل کے غیرروایتی جدید حل تلاش کرتی ہے۔	1	2	3	4	5	6	7
16	When we see new ways of doing things, we are last at adopting them. کام کرنے کے جدید طریقے سامنے آنے کے باوجود ہماری کمپنی بہت تاخیر سے انہیں اختیار کرتی ہے۔	1	2	3	4	5	6	7
<b>Behavioral Innovativeness</b> <b>روئے میں جدت طرازی</b>								
17	We get a lot of support from managers if we want to try new ways of doing things. اگر ہم کاموں کو نئے طریقے سے کرنا چاہیں تو ہمیں اپنے مینیجر صاحبان سے بہت معاونت ملتی ہے۔	1	2	3	4	5	6	7
18	In our firm, we tolerate individuals who do things in a different way. اپنی کمپنی میں ہم نئی طرز پر کام کرنے والے افراد کیلئے لچک کا مظاہرہ کرتے ہیں۔	1	2	3	4	5	6	7
19	We are willing to try new ways of doing things and seek unusual, novel solutions. ہم اپنے کاموں میں نئے تجربات کیلئے تیار رہتے ہیں اور غیرمعمولی اور جدید حل تلاش کرتے ہیں۔	1	2	3	4	5	6	7
20	We encourage people to think and behave in original and novel ways. ہم لوگوں کے تفکر اور اچھے سلوک کی حوصلہ افزائی کرتے ہیں۔	1	2	3	4	5	6	7

### SECTION C: Intellectual Capital شعوری اثاثہ

Please read the following statements and Circle (○) the response that closely represents your opinion. The statements are anchored on the following 7 point Likert Scale:

درج ذیل بیانات پڑھیں اور اپنی رائے سے قریب تر جواب پر دائرہ (O) لگائیں۔ اپنے جواب کا اظہار درج ذیل 7 پوائنٹ کے ذریعے کریں۔

### Intellectual Capital شعوری اثاثہ

آپ درج ذیل سے کس حد تک اتفاق کرتے ہیں؟ To what extent do you agree with the following capitals?

		بہت متفق Strongly Agree ← → بہت غیر متفق Strongly Disagree						
		1	2	3	4	5	6	7
<b>Human Capital</b> <b>افرادى اثاثہ</b>								
21	We are highly skilled . ہم انتہائی پرمند ہیں۔۔	1	2	3	4	5	6	7
22	We are widely considered the best in our industry. ہمیں اپنے شعبے میں بہت اچھا مانا جاتا ہے۔۔	1	2	3	4	5	6	7
23	We are creative and bright. ہم تخلیقی اور شفاف ہیں۔	1	2	3	4	5	6	7
24	We are experts in their particular jobs and functions. ہم اپنے مخصوص کام اور خدمات میں ماہر ہیں۔	1	2	3	4	5	6	7
25	We develop new ideas and knowledge. ہم جدید طریقوں اور معلومات کو فروغ دیتے ہیں۔	1	2	3	4	5	6	7
<b>Social Capital</b> <b>معاشرى اثاثہ</b>								
26	We are skilled at collaborating with each other to diagnose and solve problems. ہم باہمی معاونت کے ذریعے مسائل کی شناخت اور انہیں حل کرنے کے ماہر ہیں۔	1	2	3	4	5	6	7
27	We share information and learn from one another. ہم معلومات کا اشتراک کرتے ہیں اور ایک دوسرے سے سیکھتے ہیں۔	1	2	3	4	5	6	7
28	We interact and exchange ideas with people from different areas of the company. کمپنی کے مختلف شعبوں سے تعلق رکھنے والے لوگوں سے میل جول رکھتے ہیں اور حکمت عملی کا باہمی تبادلہ کرتے ہیں۔	1	2	3	4	5	6	7
29	We partner with customers, suppliers, alliance partners, etc. to develop solutions. ہم کسٹمرز، سپلائرز، اتحادی شراکت داروں وغیرہ کے مسائل حل کرنے میں ان کا ساتھ دیتے ہیں۔	1	2	3	4	5	6	7
30	We apply knowledge from one area of the company to problems and opportunities that arise in another. ہم کمپنی کے ایک شعبے کی مشکلات اور مواقع سے حاصل شدہ تجربات/معلومات کا اطلاق دوسرے شعبے پر کرتے ہیں۔	1	2	3	4	5	6	7
<b>Organizational Capital</b> <b>تنظیمى اثاثہ</b>								
31	Our organization uses patents and licenses as a way to store knowledge. ہماری تنظیم معلومات کو محفوظ رکھنے کیلئے مخصوص اور لائسنس کے ذرائع استعمال کرتی ہے۔	1	2	3	4	5	6	7

32	Much of our organization's knowledge is contained in manuals, databases etc. ہماری تنظیم کی بیشتر معلومات کتابچے، ڈیٹا بیس وغیرہ پر مشتمل ہے۔	1	2	3	4	5	6	7
33	Our organization's culture (stories, rituals) contains valuable ideas, ways of doing business. ہماری تنظیم کی بیش قیمت حکمت عملی، کاروباری طریقہ کار پر مشتمل ثقافت (کہانیاں، اقدار) ہیں۔	1	2	3	4	5	6	7
34	Our organization embeds much of its knowledge and information in structures, systems and processes. ہماری تنظیم کو ساخت، انتظامی امور اور طریقہ کار سے متعلق اچھی معلومات رکھنے پر سراپا جاتا ہے۔	1	2	3	4	5	6	7

#### SECTION D: Absorptive Capacity ارتقائی صلاحیت

Please read the following statements and Circle (○) the response that closely represents your opinion. The statements are anchored on the following 7 point Likert Scale:

درج ذیل بیانات پڑھیں اور اپنی رائے سے قریب تر جواب پر دائرہ (○) لگائیں۔ اپنے جواب کا اظہار درج ذیل 7 پوائنٹ کے ذریعہ کریں۔

#### Absorptive Capacity ارتقائی صلاحیت

		← Strongly Disagree بہت غیر متفق      Strongly Agree بہت متفق →						
		1	2	3	4	5	6	7
<b>Acquisition حصول</b>								
35	The search for relevant information concerning our industry is every-day business in our company. اپنے شعبے سے متعلق کاروباری معلومات کی تلاش کمپی کا روزمرہ کاروباری عمل ہے۔	1	2	3	4	5	6	7
36	Our management motivates the employees to use information sources within our industry. ہماری انتظامیہ ملازمین کو اپنے شعبے میں معلوماتی ذرائع کے استعمال کی حوصلہ افزائی کرتی ہے۔	1	2	3	4	5	6	7
37	Our management expects that the employees deal with information beyond our industry. ہماری انتظامیہ ملازمین کے اپنے بورے شعبے کی مکمل معلومات سے منسلک رہنے کی توقع رکھتی ہے۔	1	2	3	4	5	6	7
38	Our interaction with our suppliers is characterized by mutual trust. ہماری اپنے سپلائرز سے ہم آہنگی کی بنیاد باہمی اعتماد ہے۔	1	2	3	4	5	6	7
		1	2	3	4	5	6	7

فہم اور استعمال Assimilation								
39	In our firm ideas and concepts are communicated cross-departmental. ہماری کمپنی میں حکمت عملی اور تصورات کا مختلف شعبہ جات کے مابین باہمی اشتراک کیا جاتا ہے۔	1	2	3	4	5	6	7
40	Our management emphasizes cross-departmental support to solve problems. مسائل کے حل کیلئے ہماری انتظامیہ شعبہ جاتی معاونت پر زور دیتی ہے۔	1	2	3	4	5	6	7
41	In our company there is a quick information flow, e.g., if a business unit obtains important information, it communicates this information promptly to all other business units or departments. ہماری کمپنی میں معلومات تیز رفتاری سے سرایت کرتی ہیں مثلاً اگر کسی کاروباری یونٹ کو اہم معلومات حاصل ہوں تو وہ ان معلومات فوری طور پر دوسرے کاروباری یونٹوں یا شعبوں کو منتقل کر دیتا ہے۔	1	2	3	4	5	6	7
42	Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements. ہماری انتظامیہ مختلف شعبوں کے مابین نئی تبدیلیوں، مشکلات اور کامیابیوں کے اشتراک کیلئے ہفتہ وار میٹنگ کرنے کا مطالبہ کرتی ہے۔	1	2	3	4	5	6	7
منتقلی / تغیر پذیری Transformation		1	2	3	4	5	6	7
43	Our employees have the ability to structure and to use collected knowledge. ہمارے ملازمین میں تخلیقی اور مجموعی معلومات کو استعمال کرنے کی صلاحیت موجود ہے۔	1	2	3	4	5	6	7
44	Our employees are used to absorb new knowledge as well as to prepare it for further purposes and to make it available. ہمارے ملازمین جدید معلومات پر عمل کرنے اور ان کے مقاصد کے حصول اور دستیاب رہنے کیلئے استعمال ہوتے ہیں۔	1	2	3	4	5	6	7
45	Our employees successfully link existing knowledge with new insights. ہمارے ملازمین کامیابی سے موجودہ معلومات کو جدید سوچ و فہم سے منسلک کرتے ہیں۔	1	2	3	4	5	6	7
46	Our employees are able to apply new knowledge in their practical work. ہمارے ملازمین اپنے عملی کام میں جدید معلومات کے استعمال کی قابلیت رکھتے ہیں۔	1	2	3	4	5	6	7
مفادات کا حصول Exploitation.		1	2	3	4	5	6	7
47	Our management supports the development of prototypes. ہماری انتظامیہ پروٹوٹائپ ترقی کی حمایت کرتی ہے۔	1	2	3	4	5	6	7
48	Our firm regularly reconsiders technologies and adapts them accordant to new knowledge.	1	2	3	4	5	6	7



	ہماری کمپنی ٹیکنالوجی پر باقاعدہ نظرثانی کرتی ہے اور جدید معلومات کے مطابق انہیں اپناتی ہے۔							
49	Our firm has the ability to work more effective by adopting new technologies. ہماری کمپنی جدید ٹیکنالوجی کو اپنا کر مزید مؤثر عمل کرنے کی صلاحیت رکھتی ہے۔	1	2	3	4	5	6	7
50	Our enterprise has the capabilities needed to exploit the knowledge obtained from the outside. ہماری کمپنی باہر سے حاصل شدہ معلومات سے ضروری استفادہ کرنے کی صلاحیت رکھتی ہے۔	1	2	3	4	5	6	7

### SECTION E: Environmental Turbulence رجحانی مشکلات

Please read the following statements and Circle (○) the response that closely represents your opinion. The statements are anchored on the following 7 point Likert Scale:

درج ذیل بیانات پڑھیں اور اپنی رائے سے قریب تر جواب پر دائرہ (○) لگائیں۔ اپنے جواب کا اظہار درج ذیل 7 پوائنٹ کے ذریعے کریں۔

#### Environmental Turbulence رجحانی مشکلات

How strongly do you agree or disagree with each of the following types of turbulence which your firm experienced?

آپ درج ذیل مشکلات میں سے اپنی کمپنی کے تجربات سے کس حد تک متفق یا غیر متفق ہیں؟

Strongly Disagree بہت غیر متفق ← → بہت متفق Strongly Agree

		1	2	3	4	5	6	7
<b>Market Turbulence بازاری مشکلات</b>								
51	In our kind of business, customers' product preferences change quite a bit over time. ہمارے کاروبار میں کسٹمرز کی مصنوعات کی ترجیحات میں وقت کے ساتھ ساتھ بہت کم تبدیلی آتی ہے۔	1	2	3	4	5	6	7
52	Our customers tend to look for new product all the time. ہمارے کسٹمرز ہر وقت جدید مصنوعات کی تلاش میں رہتے ہیں۔	1	2	3	4	5	6	7
53	We are witnessing demand for our products and services from customers who never bought them before. ہم اپنی مصنوعات اور خدمات کا ان کسٹمرز کی طرف سے طلب کا مشاہدہ کرتے ہیں جنہوں نے پہلے یہ نہیں خریدیں۔	1	2	3	4	5	6	7
54	New customers tend to have product-related needs that are different from those of our existing customers. نئے کسٹمرز کی طرف سے مصنوعات کی ضروریات ہمارے موجودہ کسٹمرز سے مختلف ہوتی ہے۔	1	2	3	4	5	6	7

55	We cater many of the same customers that we used to in the past. ہم بہت سے ایسے کسٹمرز کی طلب بوری کرتے ہیں جنہیں ہم ماضی میں بھی فراہم کرتے تھے۔	1	2	3	4	5	6	7
<b>Competitive Intensity</b> سبقت بازی کی شدت		1	2	3	4	5	6	7
56	Competition in our industry is cutthroat. ہمارے صنعتی شعبے میں سخت مقابلہ ہے۔	1	2	3	4	5	6	7
57	There are many "promotion wars" in our industry. ہمارے صنعتی شعبے میں بہت سے "ترقیاتی محاذ" ہیں۔	1	2	3	4	5	6	7
58	Anything that one competitor can offer, others can match readily. ایک کاروباری حریف کی طرف سے کوئی پیشکش دینے پر دوسرا فوری طور پر وہی پیشکش فراہم کر سکتا ہے۔	1	2	3	4	5	6	7
59	Price competition is a hallmark of our industry. قیمتوں میں مقابلہ ہمارے کاروباری شعبے کا وصف ہے۔	1	2	3	4	5	6	7
60	One hears of a new competitive move almost every day. ہر روز ایک نئے کاروباری حریف کی افواہیں گردش میں رہتی ہیں۔	1	2	3	4	5	6	7
61	Our competitors are relatively weak. کاروباری حریف ہمارے مقابلے میں نسبتاً کمزور ہیں۔	1	2	3	4	5	6	7
<b>Technological Turbulence</b> تکنیکی مشکلات		1	2	3	4	5	6	7
62	The technology in our industry is changing rapidly. ہمارے کاروباری شعبے کی ٹیکنالوجی تیزی سے تبدیل ہو رہی ہے۔	1	2	3	4	5	6	7
63	Technological changes provide big opportunities in our industry. کاروباری شعبے میں تکنیکی تبدیلیاں وسیع مواقع فراہم کرتی ہیں۔	1	2	3	4	5	6	7
64	A large number of new product ideas have been made possible through technological breakthroughs in our industry. ہمارے کاروباری شعبے میں بڑی تعداد میں جدید مصنوعات کی حکمت عملیوں نے تکنیکی کامیابیوں کو ممکن بنا دیا ہے۔	1	2	3	4	5	6	7
65	Technological developments in our industry are rather minor. ہمارے کاروباری شعبے میں تکنیکی ترقی نسبتاً بہت کم ہے۔	1	2	3	4	5	6	7

SECTION F: Business Strategy **کاروباری حکمت عملی**

Please read the following statements and Circle (○) the response that closely represents your opinion. The statements are anchored on the following 7 point Likert Scale:

درج ذیل بیانات پڑھیں اور اپنی رائے سے قریب تر جواب پر دائرہ (○) لگائیں۔ اپنے جواب کا اظہار درج ذیل 7 پوائنٹ کے ذریعے کریں۔

		بہت غیر متفق Strongly Disagree ← → بہت متفق Strongly Agree						
		1	2	3	4	5	6	7
<b>Innovation strategy <b>جدید حکمت عملی</b></b>								
66	The organization's vision or mission includes a reference to innovation. تنظیمی نقطہ نظر یا مقصد میں جدید حوالہ جات شامل ہیں۔	1	2	3	4	5	6	7
67	Innovation strategy has helped the organization to achieve its strategic goals. جدید حکمت عملی تنظیم کے ابدائی مقاصد حاصل کرنے میں مددگار ہے۔	1	2	3	4	5	6	7
68	Increasing our production volume is an important measure of our process innovation. پیداوار میں اضافہ ہمارے جدید طریقہ کار کا ایک اہم اقدام ہے۔	1	2	3	4	5	6	7
69	Improving administrative routines is seen as part of our innovation strategy. انتظامی معمولات میں بہتری کو ہمارے جدید حکمت عملی کے ایک حصے کے طور پر دیکھا جاسکتا ہے۔	1	2	3	4	5	6	7
70	Internal cooperation is an important part of innovation strategy implementation. امداد باہمی جدید حکمت عملی پر عمل درآمد کا ایک اہم حصہ ہے۔	1	2	3	4	5	6	7
71	Customer satisfaction is part of our innovation strategy. کسٹمرز کا اطمینان ہماری جدید حکمت عملی کا ایک اہم حصہ ہے۔	1	2	3	4	5	6	7
72	Improving product or service quality is one of our key objectives of innovation strategy. مصنوعات یا خدمات کے معیار میں بہتری جدید حکمت عملی کے اہم مقاصد میں سے ایک ہے۔	1	2	3	4	5	6	7
73	Formulating innovation strategy increases employee skills. جدید حکمت عملی کی تشکیل ملازم کی پرمندی میں اضافے کا باعث ہے۔	1	2	3	4	5	6	7
74	Improving employee commitment, morale, or both is part of our innovation strategy monitoring. ملازم سے عہد یا اس کا اعتماد یا دونوں ہماری جدید مشاہداتی حکمت عملی کا حصہ ہے۔	1	2	3	4	5	6	7

### SECTION G: Firm Performance کمپنی کی کارکردگی

Please read the following statements and Circle (○) the response that closely represents your opinion. The statements are anchored on the following 7 point Likert Scale:

درج ذیل بیانات پڑھیں اور اپنی رائے سے قریب تر جواب پر دائرہ (○) لگائیں۔ اپنے جواب کا اظہار درج ذیل 7 پوائنٹ کے ذریعے کریں۔

#### Firm Performance کمپنی کی کارکردگی

Please indicate your firm performance relative to that of your major competitor over the past 12-months.

اپنے بڑے کاروباری حریف کے مقابلے میں آپ گزشتہ 12 ماہ میں اپنی کمپنی کی کارکردگی کو ظاہر کریں۔

Much lower than Competitor مدمقابل سے بہت کم Much higher than competitor مدمقابل سے بہت زیادہ

		1	2	3	4	5	6	7
<b>Firm Performance کمپنی کی کارکردگی</b>								
75	Sales growth. فروخت میں اضافہ	1	2	3	4	5	6	7
76	Revenue growth. آمدن میں اضافہ	1	2	3	4	5	6	7
77	Growth in number of employee. افراد کی قوت میں اضافہ	1	2	3	4	5	6	7
78	Net profit margin. خالص آمدن کا تناسب	1	2	3	4	5	6	7
79	Product/service innovation. مصنوعات / خدمات میں جدت	1	2	3	4	5	6	7
80	Process innovation. طریقہ کار میں جدت	1	2	3	4	5	6	7
81	Adoption of new technology. جدید ٹیکنالوجی کی اپنائیت	1	2	3	4	5	6	7
82	Product/service quality. مصنوعات / خدمات کا معیار	1	2	3	4	5	6	7
83	Product /service variety. مصنوعات / خدمات کی نئی اقسام	1	2	3	4	5	6	7
84	Customer satisfaction. کسٹمرز کا اطمینان	1	2	3	4	5	6	7

Any Suggestions/Comments کوئی رائے/تبصرہ

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THANK YOU VERY MUCH FOR YOUR TIME AND EFFORT, IT IS GREATLY APPRECIATED.

آپ کے وقت اور کوشش کا شکریہ، یہ انتہائی قابل ستائش ہے۔

## Appendix B: Descriptive Statistics for Demographic Variables

### Position

	Frequency	Percent	Valid Percent	Cumulative Percent
CEO/MD	316	91.0	91.0	91.0
Senior Valid Manager	42	32.0	32.0	100.0
Others	0	0	0	
Total	348	100.0	100.0	

### Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
male	310	89.6	89.6	89.6
Valid Female	38	10.4	10.4	100.0
Total	348	100.0	100.0	

### M-status

	Frequency	Percent	Valid Percent	Cumulative Percent
Married	285	82.1	82.1	82.1
Valid Single	63	17.9	17.9	100.0
Total	348	100.0	100.0	

### Age Group

	Frequency	Percent	Valid Percent	Cumulative Percent
20-30	44	12.4	12.4	12.4
31-40	184	52.9	52.9	65.3
Valid 41-50	99	28.6	28.6	93.9
> 50	21	6.1	6.1	100.0
Total	348	100.0	100.0	

### Education

	Frequency	Percent	Valid Percent	Cumulative Percent
Diploma	36	10.4	10.4	10.4
Matric	33	9.2	9.2	19.6
Intermediate	93	26.6	26.6	46.2
Bachelor	80	23.1	23.1	69.3
Master's	106	30.6	30.6	100.0
Total	348	100.0	100.0	

### No. of Employees 2016

	Frequency	Percent	Valid Percent	Cumulative Percent
<10	25	7.2	7.2	7.2
10-50	117	33.8	33.8	41.0
Valid 51-150	194	55.8	55.8	96.8
151-250	12	3.2	3.2	100.0
Total	348	100.0	100.0	

### No. of Employees 2017

	Frequency	Percent	Valid Percent	Cumulative Percent
<10	14	3.8	3.8	3.8
10-50	84	24.3	24.3	28.1
Valid 51-150	154	44.2	44.2	72.3
151-250	96	27.7	27.7	100.0
Total	348	100.0	100.0	

### No. of Employees 2018

	Frequency	Percent	Valid Percent	Cumulative Percent
<10	0	0.0	0.0	0.0
10-50	15	3.8	3.8	3.8
Valid 51-150	116	33.5	33.5	37.3
151-250	217	62.7	62.7	100.0
Total	348	100.0	100.0	

### Sales Turnover 2016

	Frequency	Percent	Valid Percent	Cumulative Percent
<50	175	50.6	50.6	56.6
Valid 50-75	137	39.0	39.0	89.6
76-100	36	10.4	10.4	100.0
Total	348	100.0	100.0	

### Sales Turnover 2017

	Frequency	Percent	Valid Percent	Cumulative Percent
<50	121	34.4	34.4	34.4
Valid 50-75	164	47.4	47.4	81.8
76-100	63	18.2	18.2	100.0
Total	348	100.0	100.0	

### Sales Turnover 2018

	Frequency	Percent	Valid Percent	Cumulative Percent
<50	34	9.2	9.2	9.2
Valid 50-75	197	56.6	56.6	65.8
76-100	117	33.8	33.8	100.0
Total	348	100.0	100.0	

### Years of Operation

	Frequency	Percent	Valid Percent	Cumulative Percent
1-3	22	6.4	6.4	6.4
4-7	64	18.5	18.5	24.9
8-11	35	9.5	9.5	34.4
Valid 12-15	81	23.6	23.6	58.0
16-20	79	22.8	22.8	80.8
>20	67	19.4	19.4	100.0
Total	348	100.0	100.0	

### Appendix C: Common method Variance.

#### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	27.279	32.475	32.475	27.279	32.475	32.475
2	7.591	9.037	41.512	7.591	9.037	41.512
3	6.078	7.235	48.748	6.078	7.235	48.748
4	4.269	5.082	53.829	4.269	5.082	53.829
5	3.424	4.076	57.906	3.424	4.076	57.906
6	3.159	3.761	61.666	3.159	3.761	61.666
7	2.822	3.359	65.025	2.822	3.359	65.025
8	2.274	2.708	67.733	2.274	2.708	67.733
9	2.146	2.555	70.288	2.146	2.555	70.288
10	2.109	2.510	72.799	2.109	2.510	72.799
11	1.729	2.059	74.857	1.729	2.059	74.857
12	1.668	1.985	76.843	1.668	1.985	76.843
13	1.647	1.961	78.803	1.647	1.961	78.803
14	1.375	1.636	80.440	1.375	1.636	80.440
15	1.269	1.511	81.951	1.269	1.511	81.951
16	1.199	1.428	83.379	1.199	1.428	83.379
17	1.136	1.352	84.731	1.136	1.352	84.731
18	1.086	1.293	86.024	1.086	1.293	86.024
19	1.040	1.239	87.262	1.040	1.239	87.262
20	.936	1.114	88.376			
21	.817	.972	89.349			
22	.738	.879	90.227			
23	.713	.848	91.076			
24	.690	.822	91.898			
25	.592	.704	92.602			
26	.560	.667	93.269			
27	.527	.627	93.896			
28	.463	.551	94.447			
29	.451	.537	94.983			
30	.397	.473	95.456			
31	.373	.444	95.900			
32	.352	.419	96.319			
33	.340	.405	96.724			
34	.308	.367	97.090			
35	.273	.324	97.415			
36	.213	.254	97.668			



37	.206	.246	97.914
38	.194	.231	98.145
39	.175	.208	98.354
40	.157	.187	98.541
41	.138	.164	98.705
42	.124	.148	98.852
43	.106	.126	98.979
44	.098	.116	99.095
45	.085	.101	99.196
46	.078	.093	99.289
47	.067	.080	99.370
48	.061	.072	99.442
49	.052	.062	99.504
50	.049	.059	99.562
51	.047	.056	99.619
52	.043	.051	99.670
53	.040	.047	99.717
54	.031	.037	99.755
55	.031	.036	99.791
56	.026	.031	99.822
57	.021	.025	99.847
58	.019	.023	99.870
59	.017	.020	99.889
60	.015	.018	99.907
61	.014	.017	99.924
62	.013	.015	99.939
63	.009	.010	99.950
64	.008	.009	99.959
65	.007	.009	99.967
66	.006	.007	99.974
67	.005	.006	99.980
68	.003	.004	99.984
69	.003	.004	99.988
70	.003	.003	99.991
71	.002	.002	99.993
72	.002	.002	99.995
73	.001	.001	99.997
74	.001	.001	99.998
75	.001	.001	99.998
76	.001	.001	99.999
77	.001	.001	99.997

78	.001	.001	99.998		
79	.001	.001	99.998		
80	.001	.001	99.999		
81	.001	.001	99.997		
82	.001	.001	99.998		
83	.001	.001	99.998		
84	.001	.001	100.000		

Extraction Method: Principal Component Analysis.



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## Appendix D: Discriminant Validity (Fornell-Larcker Criterion).

### *Discriminant Validity (Fornell-Larcker Criterion)*

Cons.	ABAC	ABAS	ABEX	ABTR	ETCI	ETMK	ETTB	FP	ICH	ICO	ICS	INBH	INMK	INOSTGY	INPD	INPR	INSTG
ABAC	<b>0.827</b>																
ABAS	0.769	<b>0.836</b>															
ABEX	0.716	0.721	<b>0.818</b>														
ABTR	0.713	0.650	0.655	<b>0.775</b>													
ETCI	0.416	0.336	0.300	0.448	<b>0.787</b>												
ETMK	0.301	0.215	0.391	0.393	0.674	<b>0.803</b>											
ETTB	0.487	0.388	0.331	0.465	0.772	0.587	<b>0.829</b>										
FP	0.529	0.568	0.543	0.606	0.460	0.319	0.524	<b>0.770</b>									
ICH	0.636	0.570	0.523	0.705	0.371	0.346	0.383	0.632	<b>0.796</b>								
ICO	0.763	0.612	0.454	0.823	0.553	0.419	0.527	0.512	0.777	<b>0.824</b>							
ICS	0.735	0.557	0.496	0.755	0.535	0.412	0.513	0.494	0.717	0.767	<b>0.808</b>						
INBH	0.464	0.542	0.533	0.536	0.366	0.324	0.292	0.505	0.630	0.418	0.461	<b>0.829</b>					
INMK	0.328	0.297	0.364	0.320	0.404	0.518	0.302	0.212	0.326	0.347	0.290	0.608	<b>0.809</b>				
INO STGY	0.567	0.583	0.455	0.537	0.608	0.386	0.679	0.590	0.468	0.556	0.653	0.374	0.265	<b>0.740</b>			
INPD	0.354	0.441	0.354	0.408	0.306	0.437	0.215	0.297	0.442	0.425	0.430	0.605	0.706	0.256	<b>0.793</b>		
INPR	0.356	0.234	0.366	0.416	0.272	0.338	0.029	0.316	0.444	0.404	0.368	0.554	0.589	0.127	0.651	<b>0.826</b>	
INSTG	0.379	0.468	0.382	0.443	0.220	0.147	0.113	0.374	0.521	0.416	0.393	0.708	0.611	0.267	0.675	0.564	<b>0.856</b>

Note: IMPD = Innovation Capability (Product Innovativeness); INPR = Innovation Capability (Process innovativeness); INMK = Innovation Capability (Market Innovativeness); INSTG = Innovation Capability (Strategic Innovativeness); INBH = Innovation Capability (Behavioral Innovativeness); ICH = Intellectual Capital (Human Capital); ICS = Intellectual Capital (Social Capital); ICO = Intellectual Capital (Organizational Capital); ABAC = Absorptive Capacity (Acquisition); ABAS = Absorptive Capacity (Assimilation); ABTR = Absorptive Capacity (Transformation); ABEX = Absorptive Capacity (Exploitation). ETMK = Environmental Turbulence (Market Turbulence); ETCI = Environmental Turbulence (Competitive Intensity); ETTB = Environmental Turbulence (Technological Turbulence); INO STGY = Innovation Strategy; and FP = SME performance.

## Appendix E: Discriminant Validity (HTMT criterion).

### *Discriminant Validity (HTMT criterion)*

Cons.	ABAC	ABAS	ABEX	ABTR	ETCI	ETMK	ETTB	FP	ICH	ICO	ICS	INBH	INMK	INO STGY	INPD	INPR	INSTG
ABAC																	
ABAS	0.863																
ABEX	0.852	0.847															
ABTR	0.040	0.804	0.807														
ETCI	0.490	0.372	0.351	0.527													
ETMK	0.340	0.245	0.446	0.459	0.777												
ETTB	0.573	0.431	0.404	0.562	0.876	0.709											
FP	0.594	0.633	0.612	0.710	0.462	0.352	0.534										
ICH	0.734	0.650	0.587	0.859	0.399	0.388	0.440	0.696									
ICO	0.804	0.720	0.532	0.718	0.641	0.467	0.611	0.570	0.898								
ICS	0.859	0.639	0.571	0.813	0.611	0.470	0.596	0.540	0.839	0.804							
INBH	0.527	0.583	0.594	0.597	0.378	0.396	0.316	0.502	0.679	0.445	0.500						
INMK	0.442	0.307	0.370	0.445	0.454	0.561	0.363	0.245	0.403	0.470	0.392	0.682					
INOSTGY	0.641	0.631	0.500	0.630	0.690	0.414	0.749	0.603	0.537	0.644	0.739	0.432	0.286				
INPD	0.449	0.497	0.414	0.516	0.355	0.483	0.246	0.338	0.548	0.518	0.527	0.737	0.891	0.294			
INPR	0.437	0.306	0.455	0.533	0.312	0.391	0.122	0.373	0.548	0.497	0.451	0.709	0.810	0.180	0.895		
INSTG	0.442	0.535	0.419	0.526	0.214	0.185	0.142	0.364	0.573	0.495	0.446	0.766	0.685	0.298	0.816	0.676	

Note: IMPD = Innovation Capability (Product Innovativeness); INPR = Innovation Capability (Process innovativeness); INMK = Innovation Capability (Market Innovativeness); INSTG = Innovation Capability (Strategic Innovativeness); INBH = Innovation Capability (Behavioral Innovativeness); ICH = Intellectual Capital (Human Capital); ICS = Intellectual Capital (Social Capital); ICO = Intellectual Capital (Organizational Capital); ABAC = Absorptive Capacity (Acquisition); ABAS = Absorptive Capacity (Assimilation); ABTR = Absorptive Capacity (Transformation); ABEX = Absorptive Capacity (Exploitation). ETMK = Environmental Turbulence (Market Turbulence); ETCI = Environmental Turbulence (Competitive Intensity); ETTB = Environmental Turbulence (Technological Turbulence); INO STGY = Innovation Strategy; and FP = SME performance.

**Appendix F: Cross-Loadings of the constructs to assess Discernment-validity.**

*Cross-Loadings of the constructs to assess Discernment-validity*

	ABAC	ABAS	ABEX	ABTR	ETCI	ETMK	ETTB	FP	ICH	ICO	ICS	INBH	INMK	INPD	INPR	INSTG	INO STGY
ABAC1	<b>0.846</b>	0.604	0.617	0.664	0.259	0.162	0.277	0.413	0.562	0.672	0.646	0.343	0.261	0.288	0.325	0.281	0.436
ABAC2	<b>0.831</b>	0.641	0.587	0.663	0.263	0.281	0.394	0.457	0.459	0.543	0.572	0.340	0.144	0.201	0.203	0.225	0.435
ABAC3	<b>0.830</b>	0.708	0.589	0.615	0.540	0.274	0.495	0.402	0.478	0.711	0.652	0.353	0.411	0.415	0.310	0.346	0.635
ABAC4	<b>0.802</b>	0.598	0.576	0.737	0.330	0.273	0.442	0.469	0.600	0.609	0.569	0.487	0.285	0.280	0.342	0.398	0.388
ABAS1	0.698	<b>0.818</b>	0.602	0.695	0.321	0.159	0.335	0.475	0.380	0.575	0.546	0.467	0.288	0.340	0.217	0.368	0.558
ABAS2	0.618	<b>0.833</b>	0.564	0.489	0.207	0.021	0.273	0.392	0.420	0.430	0.352	0.380	0.168	0.248	0.128	0.306	0.332
ABAS3	0.615	<b>0.825</b>	0.682	0.479	0.237	0.318	0.323	0.514	0.588	0.464	0.387	0.551	0.275	0.384	0.246	0.472	0.411
ABAS4	0.638	<b>0.866</b>	0.550	0.508	0.347	0.182	0.356	0.499	0.498	0.563	0.557	0.395	0.246	0.474	0.176	0.398	0.620
ABEX1	0.729	0.569	<b>0.764</b>	0.671	0.388	0.355	0.320	0.421	0.424	0.506	0.559	0.544	0.339	0.295	0.406	0.450	0.405
ABEX2	0.556	0.598	<b>0.822</b>	0.546	0.190	0.209	0.229	0.514	0.587	0.422	0.443	0.483	0.345	0.402	0.453	0.452	0.368
ABEX3	0.520	0.624	<b>0.883</b>	0.478	0.185	0.418	0.277	0.428	0.386	0.263	0.356	0.386	0.235	0.225	0.119	0.153	0.408
ABEX4	0.541	0.563	<b>0.800</b>	0.441	0.232	0.319	0.264	0.395	0.268	0.278	0.246	0.314	0.259	0.207	0.182	0.159	0.302
ABTR1	0.634	0.495	0.570	<b>0.782</b>	0.313	0.323	0.234	0.498	0.527	0.595	0.543	0.529	0.456	0.431	0.485	0.575	0.431
ABTR2	0.688	0.600	0.426	<b>0.768</b>	0.332	0.267	0.392	0.390	0.587	0.821	0.611	0.306	0.219	0.373	0.303	0.309	0.396
ABTR3	0.597	0.467	0.429	<b>0.830</b>	0.413	0.270	0.429	0.510	0.672	0.708	0.579	0.453	0.215	0.276	0.242	0.360	0.398
ABTR4	0.616	0.475	0.598	<b>0.715</b>	0.326	0.355	0.396	0.464	0.396	0.454	0.617	0.343	0.085	0.190	0.253	0.104	0.439
ETCI1	0.378	0.214	0.202	0.328	<b>0.796</b>	0.574	0.592	0.215	0.205	0.486	0.407	0.196	0.393	0.250	0.250	0.138	0.388

Continue

*Cross-Loadings of the constructs to assess Discernment-validity*

	ABAC	ABAS	ABEX	ABTR	ETCI	ETMK	ETTB	FP	ICH	ICO	ICS	INBH	INMK	INPD	INPR	INSTG	INO STGY
ETCI2	0.436	0.325	0.250	0.363	<b>0.757</b>	0.470	0.602	0.422	0.284	0.414	0.483	0.233	0.250	0.268	0.158	0.132	0.566
ETCI3	0.333	0.255	0.220	0.312	<b>0.765</b>	0.421	0.668	0.270	0.238	0.405	0.317	0.306	0.203	0.058	0.159	0.113	0.498
ETCI4	0.298	0.235	0.256	0.304	<b>0.754</b>	0.600	0.553	0.178	0.131	0.378	0.451	0.181	0.420	0.248	0.135	0.034	0.467
ETCI5	0.324	0.243	0.240	0.385	<b>0.874</b>	0.597	0.649	0.437	0.404	0.480	0.430	0.393	0.485	0.321	0.268	0.267	0.498
ETCI6	0.218	0.276	0.243	0.375	<b>0.768</b>	0.551	0.575	0.442	0.334	0.437	0.420	0.321	0.215	0.243	0.267	0.233	0.423
ETMK1	0.185	0.145	0.284	0.192	0.544	<b>0.808</b>	0.439	0.166	0.131	0.161	0.187	0.323	0.397	0.310	0.178	0.048	0.143
ETMK2	0.392	0.164	0.404	0.469	0.512	<b>0.877</b>	0.509	0.262	0.391	0.464	0.443	0.264	0.469	0.334	0.319	0.168	0.380
ETMK3	0.248	0.254	0.416	0.329	0.574	<b>0.841</b>	0.507	0.345	0.320	0.368	0.400	0.281	0.431	0.348	0.319	0.076	0.404
ETMK4	0.206	0.252	0.342	0.320	0.557	<b>0.790</b>	0.392	0.232	0.244	0.255	0.276	0.427	0.531	0.494	0.308	0.252	0.335
ETMK5	0.137	0.008	0.035	0.207	0.524	<b>0.688</b>	0.495	0.209	0.230	0.365	0.265	0.004	0.228	0.263	0.175	0.039	0.184
ETTB1	0.491	0.341	0.228	0.455	0.637	0.522	<b>0.833</b>	0.377	0.354	0.547	0.500	0.191	0.213	0.252	0.118	0.140	0.595
ETTB2	0.462	0.350	0.351	0.363	0.667	0.503	<b>0.861</b>	0.392	0.334	0.449	0.494	0.185	0.259	0.153	0.070	0.033	0.614
ETTB3	0.378	0.365	0.267	0.428	0.708	0.454	<b>0.902</b>	0.602	0.340	0.461	0.421	0.362	0.260	0.172	0.040	0.135	0.613
ETTB4	0.292	0.182	0.279	0.264	0.519	0.557	<b>0.706</b>	0.235	0.218	0.245	0.264	0.150	0.311	0.146	0.008	0.033	0.381
FPAPNT7	0.588	0.466	0.449	0.664	0.437	0.343	0.594	<b>0.829</b>	0.593	0.555	0.537	0.443	0.243	0.271	0.262	0.347	0.533
FPCS10	0.444	0.332	0.312	0.466	0.290	0.130	0.300	<b>0.708</b>	0.592	0.498	0.401	0.353	-0.064	0.113	0.311	0.296	0.378
FPEG3	0.412	0.527	0.506	0.490	0.389	0.340	0.447	<b>0.866</b>	0.525	0.382	0.448	0.475	0.220	0.269	0.236	0.261	0.471
FPNPM4	0.305	0.362	0.418	0.370	0.252	0.255	0.298	<b>0.775</b>	0.454	0.308	0.325	0.393	0.256	0.431	0.344	0.332	0.374
FPPI6	0.360	0.404	0.397	0.388	0.445	0.258	0.475	<b>0.844</b>	0.500	0.308	0.369	0.412	0.083	0.153	0.157	0.210	0.529

Continue

*Cross-Loadings of the constructs to assess Discernment-validity*

	ABAC	ABAS	ABEX	ABTR	ETCI	ETMK	ETTB	FP	ICH	ICO	ICS	INBH	INMK	INPD	INPR	INSTG	INO STGY
FPPSI5	0.315	0.399	0.373	0.443	0.302	0.173	0.379	<b>0.753</b>	0.483	0.381	0.326	0.312	0.016	0.073	0.113	0.232	0.470
FPPSQ8	0.365	0.384	0.450	0.430	0.307	0.245	0.337	<b>0.707</b>	0.431	0.345	0.304	0.365	0.260	0.351	0.407	0.364	0.454
FPPSV9	0.400	0.419	0.334	0.332	0.245	-0.004	0.320	<b>0.700</b>	0.414	0.310	0.194	0.278	0.033	0.028	0.158	0.187	0.305
FPRG2	0.446	0.591	0.523	0.489	0.515	0.410	0.511	<b>0.805</b>	0.462	0.407	0.472	0.470	0.268	0.278	0.215	0.284	0.575
FPSG1	0.414	0.481	0.404	0.584	0.303	0.255	0.293	<b>0.684</b>	0.372	0.439	0.381	0.360	0.341	0.354	0.256	0.390	0.404
ICH1	0.597	0.526	0.542	0.566	0.254	0.168	0.243	0.608	<b>0.840</b>	0.651	0.548	0.510	0.132	0.220	0.373	0.404	0.390
ICH2	0.557	0.530	0.411	0.632	0.542	0.481	0.502	0.546	<b>0.815</b>	0.717	0.648	0.620	0.393	0.484	0.378	0.465	0.381
ICH3	0.448	0.388	0.383	0.564	0.115	0.247	0.092	0.450	<b>0.818</b>	0.569	0.623	0.502	0.334	0.423	0.439	0.431	0.360
ICH4	0.399	0.397	0.271	0.429	0.384	0.161	0.381	0.395	<b>0.695</b>	0.570	0.505	0.410	0.216	0.320	0.303	0.443	0.485
ICH5	0.491	0.396	0.424	0.599	0.170	0.307	0.303	0.472	<b>0.805</b>	0.568	0.532	0.444	0.242	0.339	0.272	0.345	0.270
ICO1	0.565	0.552	0.422	0.558	0.515	0.387	0.487	0.374	0.572	<b>0.773</b>	0.639	0.365	0.390	0.493	0.328	0.466	0.534
ICO2	0.631	0.434	0.330	0.625	0.604	0.366	0.485	0.423	0.656	<b>0.843</b>	0.723	0.216	0.223	0.288	0.334	0.237	0.491
ICO3	0.654	0.542	0.335	0.703	0.344	0.280	0.418	0.352	0.575	<b>0.831</b>	0.628	0.309	0.213	0.291	0.318	0.263	0.428
ICO4	0.659	0.504	0.405	0.798	0.368	0.344	0.369	0.508	0.726	<b>0.846</b>	0.558	0.463	0.312	0.341	0.347	0.398	0.399
ICS1	0.624	0.413	0.443	0.677	0.363	0.204	0.320	0.451	0.588	0.626	<b>0.824</b>	0.428	0.142	0.307	0.385	0.365	0.438
ICS2	0.611	0.430	0.332	0.648	0.527	0.463	0.473	0.362	0.675	0.711	<b>0.864</b>	0.462	0.455	0.522	0.383	0.462	0.495
ICS3	0.551	0.380	0.257	0.480	0.365	0.237	0.378	0.368	0.572	0.567	<b>0.787</b>	0.193	0.150	0.234	0.181	0.253	0.562
ICS4	0.593	0.510	0.498	0.521	0.494	0.564	0.473	0.344	0.566	0.589	<b>0.753</b>	0.346	0.373	0.429	0.293	0.245	0.547
ICS5	0.586	0.514	0.456	0.688	0.434	0.260	0.446	0.446	0.510	0.608	<b>0.808</b>	0.411	0.112	0.279	0.239	0.263	0.604

*Cross-Loadings of the constructs to assess Discernment-validity*

	ABAC	ABAS	ABEX	ABTR	ETCI	ETMK	ETTB	FP	ICH	ICO	ICS	INBH	INMK	INPD	INPR	INSTG	INO STGY
INBH1	0.504	0.579	0.574	0.596	0.373	0.285	0.283	0.582	0.677	0.497	0.487	<b>0.897</b>	0.502	0.516	0.467	0.636	0.388
INBH2	0.289	0.387	0.304	0.398	0.315	0.231	0.205	0.392	0.445	0.302	0.337	<b>0.832</b>	0.530	0.484	0.495	0.629	0.268
INBH3	0.338	0.420	0.475	0.362	0.243	0.313	0.253	0.345	0.498	0.228	0.347	<b>0.876</b>	0.529	0.572	0.428	0.565	0.268
INBH4	0.386	0.314	0.346	0.302	0.235	0.280	0.229	0.162	0.341	0.260	0.289	<b>0.696</b>	0.521	0.476	0.537	0.509	0.304
INMK1	0.255	0.311	0.367	0.259	0.394	0.493	0.328	0.267	0.278	0.238	0.234	0.616	<b>0.959</b>	0.673	0.473	0.604	0.295
INMK2	0.326	0.217	0.318	0.294	0.355	0.477	0.250	0.112	0.331	0.431	0.304	0.460	<b>0.847</b>	0.552	0.597	0.458	0.233
INMK3	0.189	0.045	0.128	0.228	0.067	0.251	-0.103	0.041	0.209	0.212	0.103	0.303	<b>0.604</b>	0.597	0.587	0.399	-0.030
INMK4	0.470	0.277	0.244	0.414	0.391	0.392	0.274	0.052	0.306	0.457	0.382	0.476	<b>0.785</b>	0.545	0.542	0.497	0.129
INPD1	0.262	0.384	0.334	0.363	0.308	0.436	0.228	0.291	0.423	0.370	0.394	0.613	0.682	<b>0.902</b>	0.520	0.630	0.195
INPD2	0.275	0.184	0.161	0.266	0.146	0.146	-0.035	0.097	0.305	0.271	0.282	0.395	0.549	<b>0.545</b>	0.702	0.502	0.125
INPD3	0.262	0.286	0.298	0.220	0.125	0.317	0.072	0.234	0.334	0.239	0.315	0.420	0.573	<b>0.851</b>	0.518	0.489	0.195
INPD4	0.360	0.480	0.290	0.441	0.346	0.397	0.297	0.260	0.353	0.462	0.378	0.486	0.498	<b>0.827</b>	0.517	0.562	0.277
INPR2	0.216	0.206	0.287	0.304	0.227	0.387	0.089	0.291	0.240	0.229	0.244	0.431	0.570	0.637	<b>0.850</b>	0.445	0.139
INPR3	0.238	-0.010	0.154	0.323	0.187	0.244	-0.011	0.208	0.337	0.290	0.307	0.449	0.400	0.497	<b>0.810</b>	0.393	0.073
INPR4	0.422	0.337	0.435	0.403	0.253	0.191	-0.019	0.271	0.529	0.482	0.369	0.496	0.467	0.467	<b>0.818</b>	0.548	0.094
INSTG1	0.294	0.373	0.395	0.369	0.258	0.231	0.136	0.461	0.504	0.295	0.331	0.716	0.580	0.588	0.546	<b>0.902</b>	0.272
INSTG2	0.352	0.415	0.237	0.389	0.122	0.057	0.064	0.255	0.463	0.452	0.359	0.523	0.466	0.588	0.428	<b>0.841</b>	0.212
INSTG3	0.280	0.338	0.345	0.304	0.210	0.115	0.037	0.153	0.297	0.318	0.273	0.494	0.538	0.566	0.590	<b>0.787</b>	0.210
INSTG4	0.402	0.503	0.308	0.459	0.128	0.018	0.102	0.249	0.445	0.420	0.389	0.598	0.506	0.599	0.391	<b>0.889</b>	0.191

Continue



*Cross-Loadings of the constructs to assess Discernment-validity*

	ABAC	ABAS	ABEX	ABTR	ETCI	ETMK	ETTB	FP	ICH	ICO	ICS	INBH	INMK	INPD	INPR	INSTG	INO STGY
Inostg1	0.339	0.546	0.381	0.177	0.441	0.351	0.508	0.384	0.297	0.272	0.326	0.284	0.143	0.229	-0.041	0.112	<b>0.728</b>
Inostg2	0.308	0.346	0.280	0.281	0.412	0.202	0.472	0.443	0.325	0.333	0.392	0.319	0.165	0.194	0.044	0.156	<b>0.736</b>
Inostg3	0.517	0.556	0.529	0.514	0.349	0.269	0.516	0.591	0.372	0.459	0.470	0.193	0.116	0.087	0.063	0.121	<b>0.751</b>
Inostg4	0.409	0.390	0.261	0.407	0.479	0.271	0.500	0.283	0.299	0.465	0.474	0.353	0.150	0.088	0.015	0.160	<b>0.675</b>
Inostg5	0.310	0.196	0.115	0.345	0.403	0.107	0.380	0.315	0.308	0.399	0.477	0.196	0.113	0.176	0.256	0.268	<b>0.687</b>
Inostg6	0.414	0.457	0.354	0.496	0.409	0.331	0.486	0.551	0.352	0.409	0.570	0.328	0.305	0.378	0.197	0.332	<b>0.787</b>
Inostg7	0.575	0.507	0.329	0.427	0.629	0.356	0.689	0.508	0.427	0.518	0.583	0.261	0.229	0.178	0.099	0.206	<b>0.841</b>
Inostg8	0.460	0.444	0.441	0.489	0.519	0.474	0.423	0.358	0.427	0.454	0.613	0.317	0.233	0.149	0.120	0.167	<b>0.721</b>
Inostg9	0.374	0.306	0.172	0.381	0.497	0.159	0.522	0.269	0.272	0.401	0.439	0.310	0.340	0.188	0.091	0.291	<b>0.719</b>

Note: IMPD = Innovation Capability (Product Innovativeness); INPR = Innovation Capability (Process innovativeness); INMK = Innovation Capability (Market Innovativeness); INSTG = Innovation Capability (Strategic Innovativeness); INBH = Innovation Capability (Behavioral Innovativeness); ICH = Intellectual Capital (Human Capital); ICS = Intellectual Capital (Social Capital); ICO = Intellectual Capital (Organizational Capital); ABAC = Absorptive Capacity (Acquisition); ABAS = Absorptive Capacity (Assimilation); ABTR = Absorptive Capacity (Transformation); ABEX = Absorptive Capacity (Exploitation). ETMK = Environmental Turbulence (Market Turbulence); ETCI = Environmental Turbulence (Competitive Intensity); ETTB = Environmental Turbulence (Technological Turbulence); INO STGY = Innovation Strategy; and FP = SME performance.