

“The Impact of Dynamic Capabilities on Firm Performance with Moderating Role of Top Management Attitude and Mediating Role of Dynamic Talent Capability: A Case Study of Big Data Environment”



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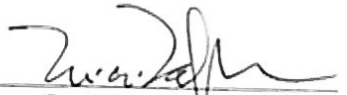


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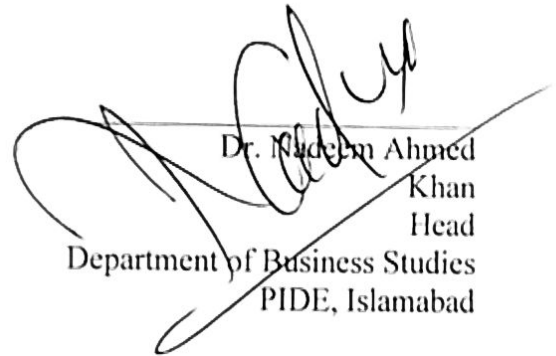
CERTIFICATE

This is to certify that this thesis entitled: “**The Impact of Dynamic Capabilities on Firm Performance with Moderating Role of Top Management Attitude and Mediating Role of Dynamic Talent Capability: A Case Study of Big Data Environment**” submitted by Mr. Tasneem ur Rehman is accepted in its present form by the Department of Business Studies, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Science in Management Sciences**.

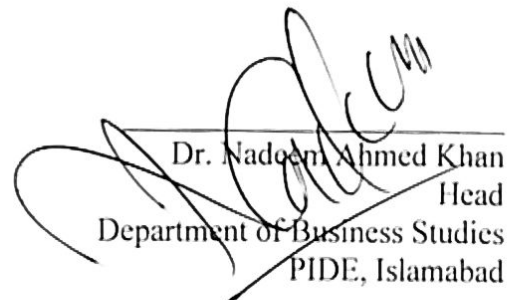
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Dedication

This thesis is humbly dedicated to my supervisor Dr Nadeem Khan who always stood beside me with guidance, politeness and encouragement beside my hectic routine of service.

I further dedicate this work to my parents, siblings and my friends for always inspiring me, believing in me, and encouraging me to achieve this piece of work.

Acknowledgement

“Oh Allah! Make useful for me what you have taught me and teach me knowledge that will be useful to me”.

I am very grateful to Almighty ALLAH for his kindness and compassion. He has provided me with the opportunity and power to complete my research work within the prescribed time.

I want to thank my supervisor, Dr. Nadeem Ahmed Khan. I am very obligated to his guidance and cooperation. He provided unreserved help and guidance to gradually complete my thesis. What I learned from him was not only how to write a thesis to meet the post-graduation requirements, but also how to look at the world from a new and dynamic perspective.

I also want to thank and express my feelings to my friends. They were always supportive and upcoming in making my work easy and encouraging me. Their words always inspired me and made me enter a higher level of thinking. It was because of their consistent support that I successfully completed this research.

Last but not least, my parents deserves special place as they stood beside me with their valuable support and prayers. I sincerely thank you for everything they have provided me.

Finally, I am very grateful to the Pakistan Institute for Development Economics (PIDE) for providing me with a good learning platform and learning opportunities.

Tasneem Ur Rehman

Declaration

I, Tasneem Ur Rehman , hereby solemnly declare that the work presented in this research has not been presented in any other institution for a degree

Abstract

By integrating big data analytics, companies can improve their strategies. Big data analytics can effectively help operations improve efficiency. This helps to increase the company's profits along with performance. Forming the base of Resource Based View in developing Dynamic Capabilities the theory will subsequently extend to form the shape of Service Analytics Capabilities and its impact on firm performance, however this research has examined the potential mediating role of talent capability in reshaping SAC to improve firm performance. In addition to it, the Moderating role of Top Management Attitude (toward adoption of analytics) between BDA and Firm Performance has been evaluated. The model is tested on data analysts working at Telecom sectors of Telenor, Ufone and Mobilink (located at the headquarters of Islamabad in Pakistan) . A questioner was recorded from 100 respondents and the data was analyzed using PLS smart software. The technique is applied to find the relationship between independent and dependent variables with the help of moderating and mediating effect. Our findings suggest that Dynamic Talent Capability mediate the role of Dynamic Information and Dynamic Technology capability with Firm Performance in Big Data Analysis (BDA) and Top Management Attitude toward adoption of analytics have significant impact to moderate the association between Service Analytics Capability and Firm Performance in BDA Environment. On the other hand dynamic information, dynamic talent and dynamic technology capability have an insufficient effect on firm performance.

Keywords: BDA (Big Data Analytics), RBV (Resource Based View), DC (Dynamic Capabilities), SAC (Service Analytics Capabilities), Talent Capability, Top Management Attitude (in adaptation of data analytics)

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CHAPTER#01

INTRODUCTION

Big data is extremely important in present era since analysis of such a huge data is challenge. This huge data is summarized and analyzed through analytics. The use of analytics by the management in a smart manner is relatively new in Pakistan. Therefore, the research shows the importance of analytics combined with the talent in conjunction with the firm performance. the analytics adoption by the management and its effect on the firm performance is examined. It is important to know what is big data and how it effects service analyst. How different variables of Service analytics capability impact the firm performance.

The chapter starts with the importance of Big data analytics, its utility, then the importance of analytics in big data. The capabilities require in the field of analytics. The research further explains how dynamic capabilities differ from normal capabilities. These capabilities are then categorized as Service analytic capabilities. These capabilities effect on firm performance is then discussed with the help of literature. Finally, the role of talent and top management attitude toward adoption of analytics have been discussed with the help of available literature.

Big data is an opportunity to change the rules of the game today, facing unmatched challenges. Thus we reside in an age of big data (Mikalef, Pappas, Krogstie, & Giannakos, 2018). It has grasp the attention of practitioners and scholars and is still emerging (Wamba, et al., 2016). Big data analytics understanding and its application is discussed subsequently. Thus, Big Data Analytics is defined by Wamba, et al., 2015 as a complete adoption of management, processes and analysis of 5V dimensions of data-related i.e Volume, variety, velocity, veracity and value, which enable actionable ideas for value creation, performance measurement and gaining competitive advantage. Because of big data, service analysts now know more about their customers and provide solid

insights for improved decision-making and better performance (Kiron, Prentice, P.K, & R.B, 2014). Business analytics is the fastest growing industry and till 2020 it is forecast to grow to \$22.8 billion (Gartner, 2018). Although it's not a very new idea, Analytics is possible to find references to corporate analytics as far back as the 1940s. Analytics began to command more attention in the late 1960s, when computers were used in decision support systems (Delen, 2014). BDA certainly help HR practitioners to increase analytical abilities and resultantly increase firm performance (Kryscynski, Reeves, Stice-Lusvardi, & Ulrich, 2017). Owing to this importance, challenge of identifying Big Data impact on productivity of services organizations while dependent on the analytics capabilities for service organization is paramount (Akter, Wamba, & Barrett , 2018). Although Big Data Analytics (BDA) has become more main stream for service firms, leveraging and applying analytics capabilities continues to be a challenge (Akter et al , 2018). Specifically, little is known about effective operationalization of big data-driven service analytics capability (SAC) with a special focus on talent capability (Akter, Wamba, & Barrett , 2018). Illuminating the role of talent capability, Ransbotham, Kiron, and Prentice (2015, p. 5) state, 'talent is clearly a key driver in innovating and gaining a competitive advantage with analytics'.

1.1. How Dynamic capability differ from normal capabilities:

DC is the ability of an organization to purposefully create, extend, or modify its repository to gain a competitive advantage (Helfat et al., 2009). Dynamic functions / capabilities involves "Complex routines" which enable companies to cope up with rapid changing environments (Teece, Pisano, G, & Shuen, 1997). Dynamic capabilities are essential to promote organizational development in an agile organizational environment (Harsch & Festing, 2019). Thus these capabilities are dynamic in nature and are designed to adjust the need of the time. The literature as a whole argue dynamic ability rely on the company's personnel or material resources with a purpose of adapting to

innovation, technology and information in an effective and efficient way to achieve firm strategic objectives (Eisenhardt, M, Martin, & A, 2000; Helfat, et al., 2007; Teece, et al., 1997).

1.2. Importance of dynamic talent capability in relation to firm performance:

Hence these are not the casual or basic capabilities of the firm. In this research we are drawing the importance of dynamic capabilities and subsequently we discuss talent capability as a key driver in innovation and competitive advancement. Here we try to elaborate those organizations Process which deploy and develop key human resources which we define as “talent” and understand the Talent capability as the development of dynamic capabilities (Collings, D, Mellahi, Cascio, & W, 2019). So for dynamic environment, dynamic talent capability is key driver for success of an organization which is either created by employing through talent management induction or either through training of existing pool of management. Talent capabilities and practices once aligned to the company’s goals which are long term, channelizing strategy , company’s culture which are characterized as strategic orientation would contribute to Firm performance (Lawler, E, Worley, & C, 2015).

1.3. Importance of dynamic technology capability:

Technical or technological capabilities are the ability to analyze infrastructure (for example, networks and application), which has both a direct impact on company performance and an indirect impact through talent capabilities (Akter, Wamba, & Barrett , 2018). Three main contributing factors of technological capabilities are connectivity of data, modularity by flexibly adjusting to dynamic models and compatibility through cloud based networking and decision based on real time flow of data. (Davenport , et al., 2012; Davenport & H, 2006; Manyika, et al., 2011)

1.4. Importance of dynamic information capability:

It is defined as the “Company mobilization and deployment of its IT-based capabilities along with resources or co-presented with other resources and features” (Bharadwaj, 2000). The concept of IT capabilities is based on the assumptions that it’s easy to copy resources; however a unique set of features company mobilization will lead to continuous competitive advantage (Santhanam & Hartono, 2003). Firms these days are transforming their information capability by integrating AI and smart technologies which includes BDA along with other firm resources to increase its firm performance (Akter, Wamba, & Barrett , 2018). Companies that develop effective Information Technology capabilities can achieve superior financial performance compared to companies that do not develop effective IT capabilities (Santhanam & Hartono, 2003). Previous studies also validate the notion that Information capability directly and positively affects the Firm performance and value creation (Chen, et al., 2014; Lu & Ramamurthy, 2011; Lin & W, 2007).

1.5. Importance of top management attitude toward adaption of analytics:

The data analysis use is becoming more and more important in the field of human resource development and common as well. The rise in popularity is accompanied by the ability of HR professionals to effectively leverage data analysis capabilities (King, 2016). The attitude of senior management toward change may have a positive impact on work outcomes and organization Performance and create a positive atmosphere for organizational innovation (Giauque, 2016). Thus here we proposes that that attitude or provide a healthy environment for adoption of analytics by top management would yield a positive effect on overall firm performance.

Motivated with this challenge, this study will address the problem by evaluating the impact of Big Data Analytics (BDA) on firm performance with dimensions of BDA. Secondly having special emphasis on Talent capability we intend to evaluate the mediating role of Dynamic talent

capability in BDA and Firm Performance. Lastly the Moderating role of Top Management Attitude (toward adoption of analytics) between BDA and Firm Performance will be accessed.

1.6. Problem Statement

The present-day business environment is fast and rapidly adapting to complex dynamic environment. Rapid changes are taking place which demand firm performance prediction in an accurate and smart manner while having a realistic guideline for future direction, by making use of the modern Big Data Analytics. Thus the “Role of managers/management in adaption of analytics and integrating Service Analytics Capabilities must be evaluated in order to know the overall impact on firm performance.

As for now very little is known that how big data-based Service Analytical Capabilities are integrated and play its valuable role in data driven service organizations. We also have little knowledge of the potential role of Talent Capability in facilitating and augmenting the Service Analytics Capabilities (SAC). At the same time the impact of both Talent Capability and SAC on Firm Performance (FPER) is yet to be examined (Akter, Wamba, & Barrett , 2018).

Drawing on the dynamic capabilities (DC) approach, this study will investigate the link between Service Analytics Capabilities and Firm Performance, along with this examining the mediating role of talent capability and the moderating role of manager’s attitude toward adoption of analytics for an overall impact on Firm Performance.

1.7. Research Gap:

BDA being present day important tool laid an emphasis to study the role of dynamic capabilities on firm performance while examining the mediating effect of talent capability on SAC and firm performance and moderating role of top management attitude toward acceptance and implementing of analytics.

Study of Akter et.al. (2018) suggest finding of mediating effect of Talent capability between SAC and Firm performance. So this study investigate the mediating effect of Talent capability on the link between SAC and FPER in telecom sector. The concept of which is relatively new in Pakistan, at the same time using top management attitude toward adoption of analytics as moderator between SAC and FPER is also to be examined (Akter, Wamba, & Barrett , 2018). So the study will also investigate this Gap. Despite the importance of Talent Capability in service analytics environment, many companies still struggle with how to use it in a big data environment (Akter, Wamba, & Barrett , 2018). The Study also investigate the importance of Talent Capability in SAC enviroment. Therefore, SAC is taken as independent variable in this study, whereas FPER is taken as dependent variable. The study will also check the generalization of SAC impact on FPER as positive.

1.8. Significance of the Study:

In the complex era of technology coupled with talent capability firms maximize their profit with many innovation and applied tactics, this made HR practices much more complex and demanding thus it must be aligned in adoption and implementation of analytics in order to retain the competitive advantage coupled with evaluation at every stage (Akter, Wamba, & Barrett , 2018). Analytics becomes an integral part of profit maximization along with calculated and accurate decisions. This study thus helps in examining how analytics could prove vital for managers to take right decisions based on concrete facts and figures while implementation of Service Analytics Capability (SAC) in Big Data Analytics (BDA) environment. In this study we are trying to evaluate Top manager's attitude encouraging adoption of analytics in firm, affecting the relationship of SAC on FPER. Secondly, we are trying to improve service analytics research by identifying technology, talent and information capabilities as higher order, dynamic SAC, which enhance firm performance. SAC has been defined as the joint effect of Dynamic Technological and Dynamic

Information capability along with Dynamic Talent Capability. Besides knowing the importance of the use of analytics, this study will encourage practitioner to focus more on the use of analytics in different fields as well to take accurate and measured decisions.

1.9. Research Questions:

1. What is the impact of BDA on firm performance?
2. Does Dynamic Talent Capability mediate the BDA and Firm Performance relationship?
3. Does Top Management Attitude toward adoption of analytics moderate the role of BDA and Firm Performance?

1.10. Research Objectives:

1. To evaluate the impact of BDA on Firm Performance.
2. To examine the Mediating role of Dynamic Talent Capability between BDA and Firm Performance.
3. To examine the Moderating role of Top Management Attitude toward adoption of analytics between BDA and Firm Performance.

CHAPTER#02

LITERATURE REVIEW

2.1. Introduction

This chapter critically reviews firm performance. Starting from its basic definition to the ingredients which are associated with firm performance. Firm Performance has drawn from Resource Based View Theory (RBV) perspective in subsequently. RBV theory is further extended and linked with the Dynamic capabilities. Dynamic capabilities (DC) are then associated with Dynamic Information Capability, Dynamic Technology Capability and Dynamic Talent Capabilities. Technology and Information Capabilities in combination with the formal grounds of Big Data Analytics, is referred as Service Data Analytics Capabilities (SAC). At the end the mediating role of Talent Capability and moderating role of Managers attitude toward adoption of Analytics is discussed in relation to firm performance.

The explanation and evolution of RBV of firm to SAC is depicted below for better understanding:

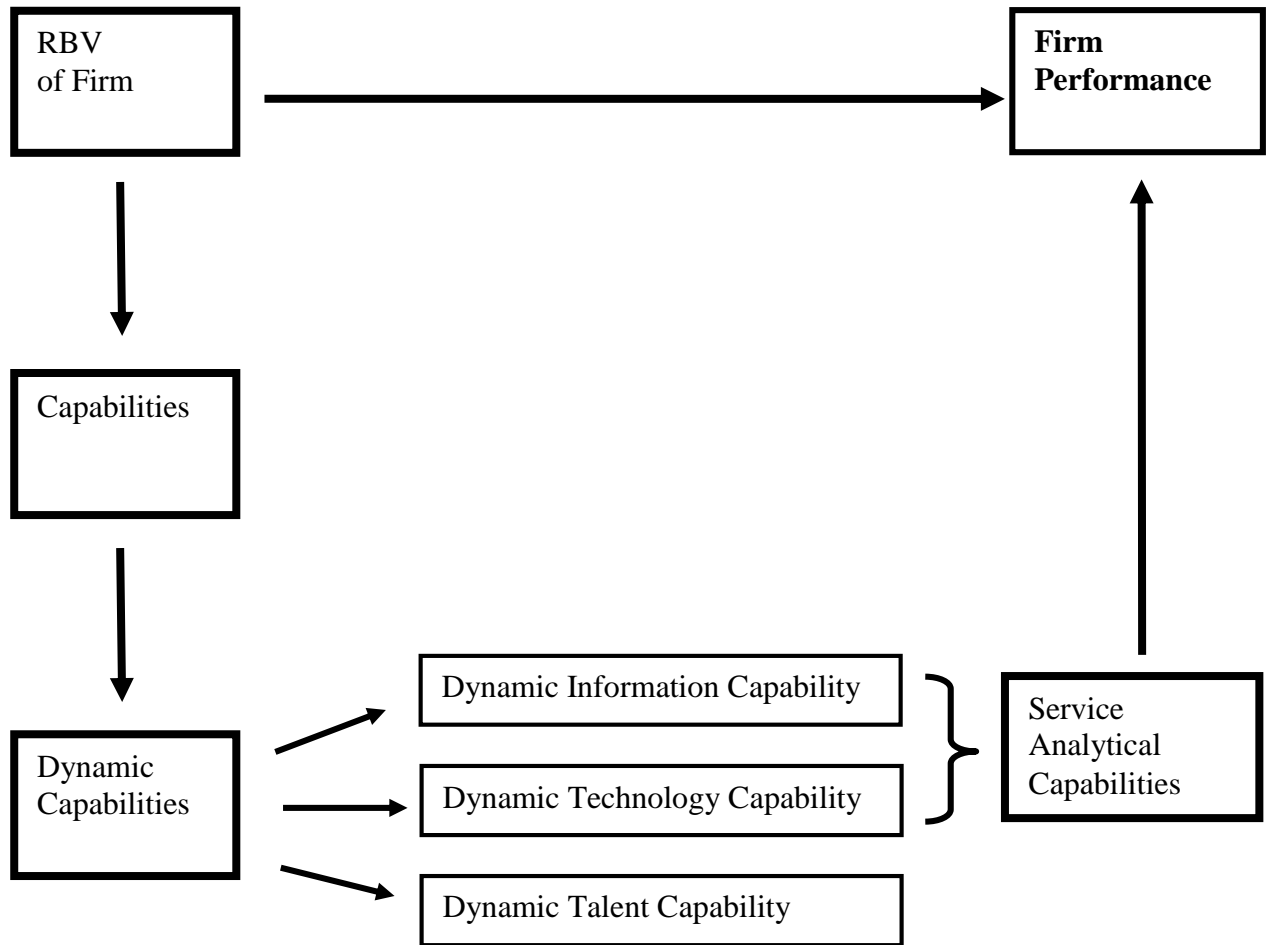


Figure 1.1. Theoretical framework of Research Study

2.2. Firm performance

Huge literature has contested on the topic of firm performance. We will here first present how it should be seen differently and after that we will narrow it down in the realm of big data environment having special focus on service analytics.

The performance of firm is an important construct, in strategic management study, across the world and often it is applied as a dependent variable (Selvam, Gayathri, Vasanth, Lingaraja, & Marxiaoli, 2016). In spite of its significance, there is hardly any consent about its definition, dimension and depth (Selvam, et al., 2016). Since several different dimensions exist, a researcher has to choose all the dimensions most relevant to the intended relevant research and evaluate the outcomes of this choice (Richard, et al., 2009). The field of Big Data Analytics Environment needs a clear conceptualization of Firm Performance and its different dimensions in a realm of Service Capabilities. The potential indicators for firm performance aspect could be growth performance, market value performance, profitability performance, customers' satisfaction and employees' satisfaction, corporate governance performance, environmental performance, environmental audit performance and social performance (Selvam, et al., 2016). Literature argues it as a complex term which may include different shadows of meaning as long as it relates to organizational performance, working of the firm and results of its operations (Selvam, et al., 2016). According to Selvam (2016) Business performance or firm performance is a subset of organizational effectiveness that covers both operational and financial outcomes. Normally, the firm performance suggests the organizational performance, including manufacturing of products and services, working of different units of the firm, performance of its employees and outcomes of their work as a whole (Becker & Gerhart, 2017). At the same time, the firm performance can be viewed in a

broader context as a part of the business development of the firm (What Might We Mean By Firm Performance, 2013). Resource based view (RBV) of firm performance has also been a focused area therefore, central here is the resource based perspective (J, 1991) such that, collectively, a firm's human resources are believed to have implications for firm performance and provide a unique source of competitive advantage that is difficult to replicate (Wright, M, McMahan, C, & McWilliams, 1994). The systems and strategic perspectives view it as the desired outcomes at the firm level, such as productivity, financial performance, and competitive advantage (Bowen & Ostroff, 2004).

After analyzing different approach of explaining firm performance, this study will be restricted with the study of Shahriar Akter (2018) which drew the firm performance from Resource Based View (RBV) theory to Dynamic capabilities. The RBV refers to bundles of diverse resources which are valued, scarce, rare, unique and non-substitutable, has been employed as an important theoretical framework in marketing capability literatures to explain why some firm are able to have competitive advantage and thus remain successful (Barney & J, 1991). Resource-based theory argues that if a company possesses strategic resources it can provide an organization an unmatched chance to develop competitive advantages as compare to its competitors, which in turn increase firm performance in terms of profit (Barney & J, 1991). In RBV model of Barney, 1991 key managerial tasks are to identify the firm's prospective important resources, evaluate whether the resources fulfill the VRIN criteria i.e Valuable (which facilitate to employ and execute firm strategies that improve its efficiency and effectiveness), Rare (not accessible to competitors, imperfectly imitable (not easy for others to implement) and Non-substitutable (not been able to replace by any other non-rare resource). At the final stage managers are to develop, foster and protect resources that pass all quoted evaluations. Later on Rothaermel's, 2012 modified the model

by replacing non-substitutable resources with organizing assets to capture value. Considering extensive applications of the RBV in the broader HR literatures, researchers oppose that strategic human resource management research is built purely on the RBV and that too to a large extent (Kozlenkova, et al., 2014). Beside the importance and wide range utility of RBV applications, it has been contested, criticized and reviewed in the strategic management literature and strategic marketing (Nason, S, Wiklund, & J, 2015). An important criticism to RBV is that it is unable to explain convincingly that why some firm are able to sustain competitive advantage in a rapid and continuous changing market dynamics (Akter, Wamba, & Barrett , 2018). This led scholars to extend the RBV to Dynamic Capability (Eisenhardt, M, Martin, & A, 2000). For example, Kodak upkeep itself to the technological change in the digital photography industry which indicate optimization of Dynamic Capability (Griffith, et al., 2006). Capability perspective augment the RBV by highlighting which specific capabilities are requires to effectively utilize its resource in dynamic environment (Vanpoucke, et al., 2014). It is argued that DCs enable firms to integrate, reconfigure, gain and release resources in order to cope effectively with changing circumstances and achieve new resource configurations as their markets advance (Vanpoucke, et al., 2014). The above mentioned four ingredients i.e VRIN leads to sustained competitive advantage which means a firm can outclass other firms in a longer run.

2.3. From RBV to Capabilities:

The theory of RBV progresses by utilizing these resources mix into two categories i.e tangible and intangible resources (Kozlenkova, et al., 2014). It is important here not to mix these resources with ordinary resources, since these refer to the strategic resources (Kozlenkova, et al., 2014). As compare to tangible resources intangible are the most important here i.e they are the knowledge

and skills that makes the real difference in strategic resource-(Valuable, difficult to imitate, Rare, and non substitutable) (Kozlenkova, et al., 2014).

This lead to the importance of capabilities based on knowledge, skill and training. Capabilities are required to exploit and manage the resources to provide a value addition which in turn provide a firm or an organization a futuristic lead or advantage on others (Makadok, 1999). Capabilities make the subsets of any firm's resources, which present "an organizationally rooted non-transferable firm specific resource whose rationale is to advance the productivity of the other resources possessed by the firm" (Makadok, Interfirm differences in scale economies and the evolution of market share, 1999). They are normally information-based, intangible or tangible practices that facilitate a firm to organize its other resources more efficiently hence enhancing the productivity of those resources. Therefore, capabilities are unique types of resources whose purpose is to improve the productivity of other resources carried by the firm (Makadok, 2001).

2.4. From Capabilities to Dynamic Capabilities (DC) and Service Data Analytics Capabilities (SAC):

Researchers argued that some firms couldn't maintain competitive advantages in dynamic environments until and unless they reconfigure its resources according to the changing needs (Ambrosini, Bowman, & Collier, 2009). In the same manner, it is asserted that DCs facilitates the firms to create, expand and transform their tactics to ensure their continued existence in fast changing environments (Helfat et al., 2009). DCs enable firms to incorporate, reconfigure, grow and leverage the resources in order to cope up effectively with changing situation and achieve new resource configurations as their markets progress (Vanpoucke et al., 2014). DCs are referred to as higher level capabilities that orchestrate a firm's resources to enhance firm performance in changing environments (Teece, 2014). DCs enable firms to establish competitive advantages in innovation-driven competition. The foundation of the DC framework is suitable for the current big

data environment in which analytics professionals are keen to capitalize on DCs to gain an edge in the market. We define SAC as a DC since it can generate superior profits by solid insights in a constantly changing multi-channel business environment (Akter, Wamba, & Barrett , 2018). SAC is also considered to be a DC because the holistic analytics process must be able to adapt to environmental change to facilitate continuous generation of solid insights for better decision-making (Akter, Wamba, S, & F, 2016). Thus, firms in a dynamic big data environment focus on developing strong analytics capabilities that can adapt, orchestrate and innovate with market and technology developments (Teece, 2014).

2.5. Impact of Dynamic Capabilities on Firm Performance

Dynamic capabilities have a positive impact on Firm performance as suggested by Scholars in different ways (Akter et al., 2018). Like it can increase financial growth with innovative processes while developing and extending distinctive services as compare to its competitors who rest on their ordinary capabilities (Ghobadian, A, Regan, Howard, & G, 2007). Secondly Dynamic Capabilities grasp the speed of changing environmental changes thus it retain dynamic efficiency and effectiveness as compare to other firms (Akter et. al, 2018). Lastly Dynamic Capabilities offer increased options for decision making which result in increases firm performance (Eisenhardt, M, Martin, & A, 2000). Amazon for that matter use data analytics for optimum service performance while linking it to talent capability of service analyst (Sparrow, P, Hird, Cooper, & L, 2015).

2.6. Technology capability, Talent capability and Firm Performance

Technology is the cohesive integration of complex network-based operation with integration of social and cultural aspect to form a uniform grounds of competitive and imitative aspect of innovation, which results in the increased Firm Performance in a competitive environment. (Lin H. m., 2009) As the name implies, technology is an analytical capability infrastructure, such as

networks and integrated applications. It has a direct impact on company performance and an indirect impact on talent capacity. Technical and technological capabilities make up the compatibility, connectivity, adaptability and modular umbrella (Akter et.al, 2018). Connectivity is the linking and analyses of big data from different units. For example, United Parcel Service (UPS) predict customer defection by examining usage patterns and complaints of its customers (Davenport & H, Competing on analytics, 2006). Compatibility is done while using cloud technologies for quick analysis ease and integrates real time decision-making (Davenport, H, Harris, & G, 2017). For example, Amazon applies collaborative filtering using various customer data to predict ‘you might also want ...’ prompts (Manyika, et al., 2011). Modularity is the flexibility of an analysis platform that can advance dynamic models while integrating changing opportunities. For example, Wal-Mart has developed Retail Link so that suppliers know when they should replenish inventory without having to wait for orders from Wal-Mart stores. (Manyika et al., 2011).

Finally, privacy refers to the ability of the BDA platform to provide a safe and protected environment for user information. For example, name and address, social security number, credit card number, and financial information may be another challenge for big data management. Accordingly, we posit that:

H1: There is a relationship between Dynamic Technology Capability and Firm Performance.

Talent and technology focus on how organizations adopt world-leading technology and form a unique technology system to overcome their talent recruitment challenges. Its three core goals are: reduce hiring time (rearrange existing processes to streamline technical processes) , Reduce the cost of each employee (internal capabilities and technology compared with the recruitment agency)

and improve the quality of employees (through engagement, retention rate and performance measurement).

Technical capabilities enable data scientists to develop in the direction of big data companies, thereby developing and improving technical skills. For a dynamic firm, which requires greater analytics capability, enhancement of technology capability is must for data scientist so that in uncertain business or corporate strategies they can flexibly adapt to it (Akter, Wamba, & Barrett , 2018). For example, citing the impact of technology capability on talent capability, Davenport (2013, p. 67) states that "Many innovative technologies must be created, acquired, and mastered... As a supplement, new "agile" analytical methods and machine learning techniques are being used to generate insights at a faster rate.". Thus, we hypothesize that:

H2: There is a positive relationship between Dynamic Talent Capability and Firm performance.

2.7. Information Capability, Talent Capability and Firm Performance

Talent technology is where human resources management and technology systems and processes intersect. The basic functions of human resources are combined with technology. Talent technology makes the daily tasks of HR easier and more efficient through technology. In recent years, the automation of the talent training process has surpassed the traditional working committees (Monster, Indeed, LinkedIn) and has developed to social media, outreach and applicant tracking systems through Big Data information gathering. With the information from these social media platform and analytics an accurate trend could be found and preferred data be provided to the user or customer based on liking/preference, increasing the value addition. Information capability is the ability of providing precise, comprehensive, organized and up to date information fulfilling the changing business needs and direction. For example, Netflix provides customers with reliable information about movie preferences by feeding back more than one billion reviews

(Akter, Wamba, S, & F, 2016). With the use of solid information in BDA environment provided by technology, we can have valuable insight and enhancement of analytical ability thus results in high firm performance (Davenport , et al., 2012). It is therefore important to know the components of technology and information enhances data analytics capability in data economy. Thus, we hypothesize:

H3: The relationship between Dynamic Information Capability (DIC) and Firm Performance is positive.

2.8. The mediating role of Talent Capability

Although talent capability can be define in many ways, here we will be specific to analytics in BDA environment. Therefore, Akter, Wamba, & Barrett (2018) defined it as service analyst professional ability to perform designated task in BD environment. These scholars further argue for effective utilization of BDA, recruitment and retaining of frontline employees with talent capability is very important as they bridge technology and firm performance. Talent Capabilities are the Technical and Technological ‘know-how’ and other types of knowledge that can create or sustain competitive advantage (Constantiou, D, Kallinikos, & J, 2014). Technology therefore form a base line for analytics supporting firm performance, but it should be linked with right talent to have a thorough insight.

Back in 2010, Davenport et al. (2010) note that leading companies such as Google, Best Buy, P&G and Sysco are using sophisticated data collection techniques and analysis to get the most value from their talents. These companies use analytics to improve their methods of attracting and retaining talent, linking their employee data to business performance, and distinguishing them from competitors, thereby eliminating guesswork in employee management. Seeing the role of

Dynamic Talent Capability in Dynamic Technology capability, which enhances firm performance, we get sufficient evidence of talent capability role in information capability and firm performance from literature (Akter, Wamba, & Barrett , 2018). Service analysts should be empowered with statistical, contextual and cognitive skills, and other related knowledge so that they can turn data into solid insights for customer service (McAfee, A, Brynjolfsson, & E, 2012) and Kiron, et al., 2014). Service analysts can make critical decisions looking at predictive models to attract and retain customers (Ransbotham, Kiron, Prentice, & K, 2015). Thus, we put forward the hypothesis:

H4: Dynamic Talent Capability will mediate the role of Dynamic Information and Dynamic Technology capability with Firm Performance in Big Data Analysis (BDA).

2.9. The moderating role of Top Management attitude:

Top management attitude plays an important role in self-adoption of analytics and promoting the same culture from top to bottom for enhancing of not only talent capability but also integration of information readily available to make decisions easily and keep firm in line with the outcome and direction which is the firm performance (Akter, Wamba, & Barrett , 2018). Therefore, adoption is defined by Rogers (2003) as, ‘Adoption is a decision to make full use of an innovation as the best course of action available’ (p. 177). For adoption readiness or acceptance is paramount, thus the readiness level of the HR professional to move towards HR Analytics is the HR professionals’ willingness and commitment to learning and intention to adopt this ‘new’ way of measuring HR. (R, M, V, & G, 2014). Top HR managers must become a strategic partner by providing insight through data analytics that can be used to develop competitive strategies (Angrave, Charlwood, & Lawrence, 2016);

When HR professionals make better decisions, initiate dynamism appropriately, identify important future trends and integrate well with other business functions, they may create more value for the

business. They may not only be regarded as valuable business partners in the human resources department, but also outside the human resources department (Vargas, et al. , 2018). Accordingly, we expect that HR professionals with higher analytical ability will receive higher job performance ratings (Kryscynski, Reeves, Stice-Lusvardi, & Ulrich, 2017). HR managers with higher BDA capabilities certainly have higher job performance and resultantly higher firm performance (Kryscynski, Reeves, Stice-Lusvardi, & Ulrich, 2017).

Top management attitude toward adoption of analytics is the step toward innovative and integrative capability (Vargas, Yurova, Ruppel, Tworoger , & Greenwood, 2018). An innovation as defined by Rogers (2003, p. 12) is ‘an idea, practice, or object that is perceived as new by an individual or other unit of adoption’. He further expanded the application of the decision-making process to acknowledge that the lapse of time since discovery of innovation is irrelevant as far as the individual making the decision is concerned. If it is new to the unit of adoption, in this case individuals, then they will behave in ways consistent with it being new to them individually (Rogers & M, 2003). Applying this logic Marler and Boudreau (2017) classified HR Analytics as an innovation to most individuals and organizations. Analytics is more complex since knowledge and skills are needed in each of the multiple steps such as collecting appropriate data, developing models, conducting analysis, and interpreting results are also needed (Vargas, Yurova, Ruppel, Tworoger , & Greenwood, 2018). Here dynamic talent, information and technological capabilities are referred as higher degree of Service analytical capabilities. Where the moderation effect on SAC on FP is an important aspect to be evaluated.

Thus we hypothesize that:

H5: Top Management Attitude toward adoption of analytics will have significant impact to moderate the association between Service Analytics Capability and Firm Performance in BDA Environment.

2.10. Research Model:

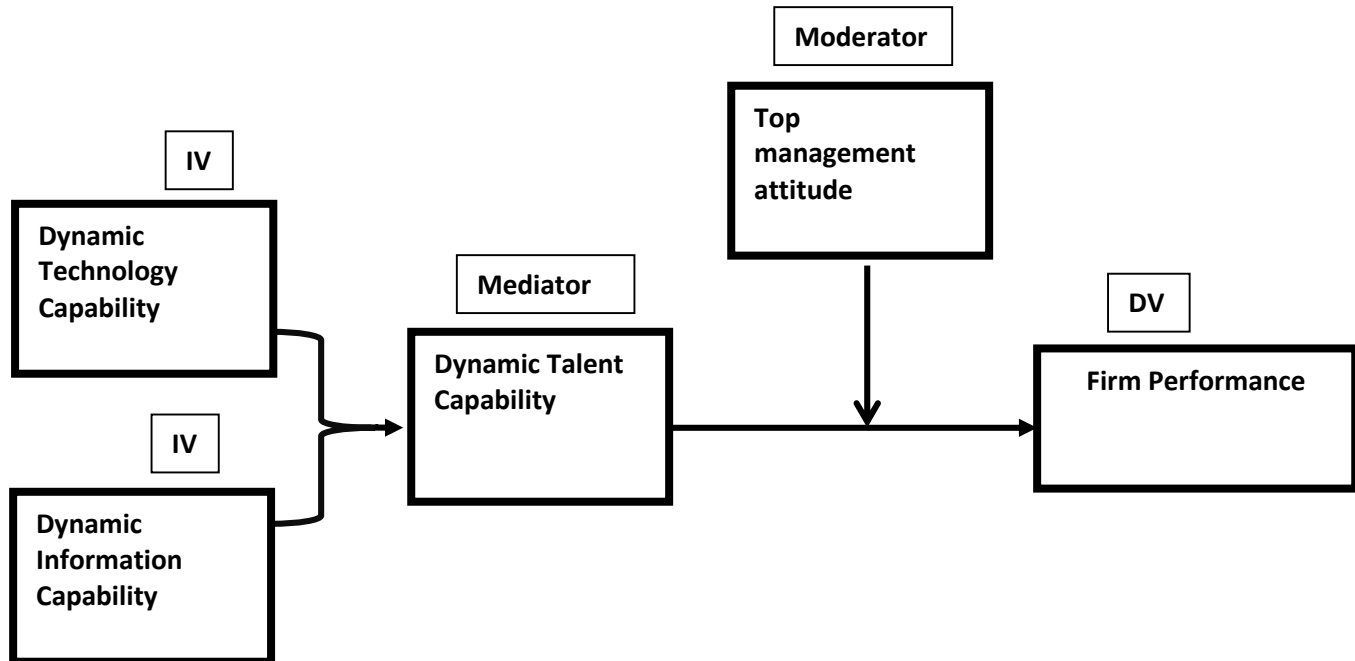


Figure 2.1. Research Framework Model

This figure shows the positive relationship of independent Variables (Dynamic Technology Capability and Dynamic Information Capability) with Dependent Variable (Dynamic Technology Capability). While Dynamic Talent capability is taken as mediator between IV and DV. Top Management Attitude is taken as moderator between Service Analytic Capabilities (Dynamic Technology capability, Dynamic Information Capability and Dynamic Talent Capability) and Dynamic Technology capability

Figure 2.1

2.11. Hypothesis:

H1: There is a relationship between Dynamic Technology Capability and Firm Performance.

H2: There is a positive relationship between Dynamic Technology Capability and Dynamic Talent Capability.

H3: The relationship between Dynamic Information Capability (DIC) and Firm Performance is positive.

H4: Dynamic Talent Capability will mediate the role of Dynamic Information and Dynamic Technology capability with Firm Performance in Big Data Analysis (BDA).

H5: Top Management Attitude toward adoption of analytics will have significant impact to moderate the association between Service Analytics Capability and Firm Performance in BDA Environment.

CHAPTER#03

METHODOLOGY

3.1. Introduction

This chapter will explain research methodology of the study. This chapter begins with setting up design and philosophy of the research, approaches adopted methods and techniques to be used and research setting. This chapter will also explain measures to be used in the study.

3.2. Research Design

The methodology of this research would be based on the research design to explain a processes and plan of investigation to get the output which is aligned with the research questions and the objectives. The research design is further focused to deal with the methodology of data collection, time dimension and the role of the current research (Cooper & Emory, 1995). The research design of the current research is further elaborated in the light of research onion (Saunders, 2011).

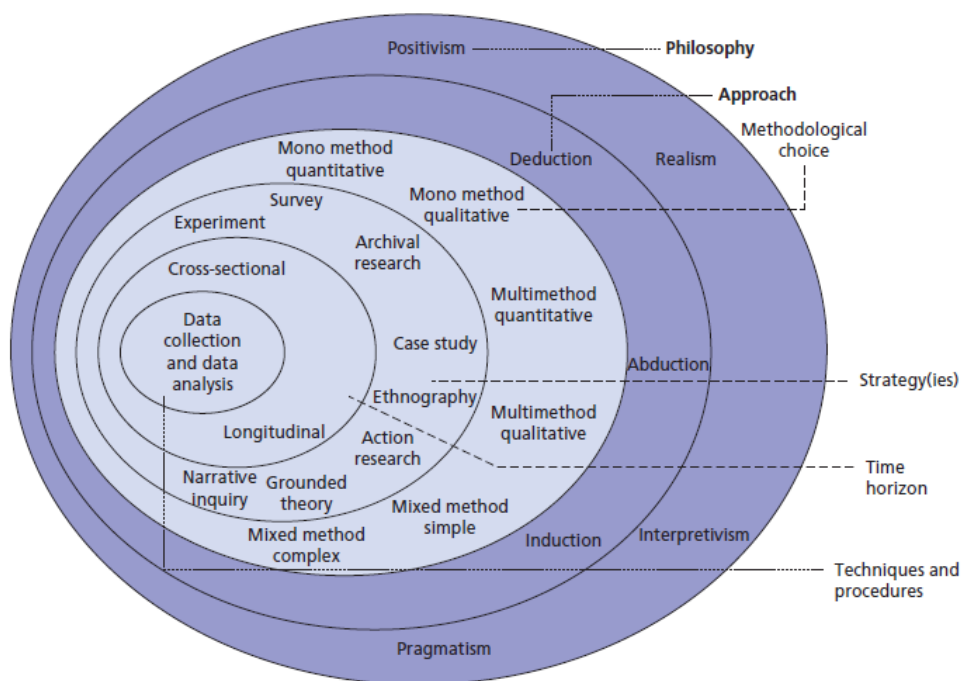


Figure 3.1. Research Onion (Saunders, 2011)

3.3. Philosophy

The philosophical stance is highlighted as a first layer in the research onion. Positivism is a philosophical stance which deals with the extension of knowledge by creating a research question or propositions and measured the results on the basis of the data (both primary and secondary) to achieve the desired objectives of the research. Here we will follow positivist approach by testing the hypothesis based on previous literature and in addition to it making it fit in the business analytics context.

3.4. Approach

The approach used in the current research is deductive method approach in which research questions or research propositions are taken to find out the results. The process shifts from the existing literature to the research questions or research objectives, to the process of data collection and to explain the results of acceptance or rejection of the research questions.

3.5. Strategy

The strategy adopted in the current research would be survey based strategy which deals with the research questions or objectives for diagnosis the actual problem and to collect the data for further analysis. Survey is also related with the deductive method approach and the most economical method for the purpose of data collection (Sapsford, 2007). Furthermore, the methodology employed in the present research is qualitative data is used in order to fulfill the philosophical stance, approach and the choices. The data is collected and scales of researchers were used in accordance with the study and were plotted on likert scale.

3.6. Time Horizon

The current research is also based on the time horizon and deals with the cross sectional data which is collected on the same time of span. In this regard, the primary data will be collected from 3 Telecom sectors i.e Jazz and Ufone and Telenor based in Islamabad, Pakistan.

3.7. Population

The entire group of specific elements relevant to the current research is explained as the populations (Zikmund, Babin, Carr, & Griffin, 2013). The population of the current research includes managerial post employees dealing with analytics posted at Telenor, Jazz and Ufone Headquarters, Islamabad, Pakistan. Which were 150 in total approximately posted at the strength of Headquarters of Telenor, Jazz and Ufone. The population was selected since beside banking sector they are using the analytics at the most currently in Pakistan. So relevant population of telecom sector was selected for the study.

3.8. Unit of Analysis

In the current research, individuals at the post of managers and using analytics or supports its use are taken as the unit of analysis. Specifically, the primary data will be collected from the managers at the Headquarters of Telenor, Jazz and Ufone in Islamabad.

3.9. Sample Size

The sample size is the number of observations taken from the target population (Zikmund et al., 2013). Here the observations would be the Questioner distributed among data analyst managers. Out of 150 Data analyst, 100 employees replied as a sample. This sample is taken to further analyse the collected data in the current research. 50 employees either were not willing to share the data or they didn't respond to the questioner.

3.10. Sampling Technique

The simple random sampling is the best technique employed to generalize the output of the collected data (Sekaran & Bougie, 2013). According to (Christensen, Johnson, Turner, & Christensen, 2011), the simple random technique is used in the current research where an equal chance of each element of target population is accepted in the sample. Secondly it reduces selection bias. A specific advantage is that it is the most straightforward method and is possible in less time with limited resources.

3.11. Measurement

The present research is based on qualitative as well as quantitative research and measured on the basis of primary data. The qualitative data will further be measured through the coding method and the quantitative data through PLS smart software.

3.12. Instrument

All the study variables, will be measured on a 5 point Likert scale ranging from Strongly Disagreed=1 to strongly agree=5.

3.12.1. Dynamic information capability

(Nelson, Todd, & Wixom, 2005) item scale will be used for dynamic talent capability and total number of items are 11 i.e “The service analytics used provide a complete set of information”, “The service analytics used produce comprehensive information”, “The service analytics used provide all the information needed”, “The service analytics used produce correct information”, “The service analytics used provide few errors in the information”, “The service analytics in use provide accurate information”.

3.12.2. Dynamic Talent Capability

11 item of scale is applied for dynamic talent capabilities like “ Our service analytics personnel are very capable in terms of programming skills”, “Our service analytics personnel are very capable in terms of managing project life cycles”, “Our service analytics personnel are very capable in the areas of data and network management and maintenance” and this tool is developed by (Kim, Shin, & Kwon, 2012).

3.12.3. Dynamic Technological capability

Byrd & Turner (2003) has developed a tool to measure dynamic technological capability; and we will also use this scale to further our study. Total number of items are 12 some examples are “Compared to rivals within our industry” , “Our organization has the foremost available big data driven service analytics systems”, “All remote branch and mobile offices are connected to the central office for service analytics”, “Our big data driven service analytics platform protects information about personal issues”, “Our big data driven service analytics platform protects information about personal identity”.

3.12.4. Top management attitude

A six-item scale will be used for top management attitude towards big data analytics, developed by (Johnston & Warkentin, 2010) and (Venkatesh & Thong, 2012). Some items are “Analytics makes our job more interesting”, “Working with analytics is satisfying”, “People who influence my behavior think that I should use analytics”.

3.12.5. Firm performance

Tippins & Sohi (2003) has developed tool to measure firm performance, especially in I.T industry, and we will use same four items of scale for this study. Some items are,

“Using service analytics capabilities in big data environment improved during the last three years relative to competitors, ROI, profitability”.

CHAPTER#4

RESULTS AND ANALYSIS

4.1. Introduction

Various analysis would be performed in this chapter. 100 respondent data was collected for analysis from telecom sector. These analyses are One Way ANOVA, normality of data demographics of sample, correlation analysis, reliability analysis, multiple regression analysis like moderation regression analysis.

To control the variation in project success, One Way ANOVA test was performed on the basis of demographic variables used in the study.

Table 4.1. One Way ANOVA

Demographics	Firm Performance	
	f statistics	p value
Gender	.966	.033
Age	.666	.045
Marital status	.515	.673
Qualification	.453	.048
Experience	.237	.046
Designation	.736	.533

The table 4.1 shows the one way ANOVA impact of demographics variable on dependent variable. These variables are controlled when the P value is less than .05. So, we controlled the demographics variable during the regression analysis. The value of marital status and designation is not significant because my respondents were categorized more in these two variations.

4.2. Demographics of Sample

Through questionnaires there are 100 respondent's responses received in this study which is described by characteristics based on demographics variable such are as gender, marital status, education, age of respondents. The details are as following one by one in the table.

Table 4.2. Gender of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	66	66.0	66.0	66.0
Valid	Female	34	34.0	34.0	100.0
	Total	100	100.0	100.0	

This table shows that we have 66% males and 34% females in this sample size. The target respondents were having different positions at Mobilink and Telenor mobiles company headquarters located at Islamabad. The analysis shows that males share a major portion in analytics work.

Table 4.3. Marital Status of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Married	55	55	55	55
Unmarried	45	44	44	100.0
Total	100	100.0	100.0	

This table shows the marital status in which 55 % are married and 45 % are unmarried out of the total sample. Hence most of the sample constitutes married people in these organizations.

Table 4.4. Qualification

	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelors	56	56.0	56.0	56.0
Masters	38	38.0	38.0	94.0
Valid M.phil/MS	5	5.0	5.0	99.0
P.hd	1	1.0	1.0	100.0
Total	100	100.0	100.0	

The table shows the result of education of respondent's there are 56 % bachelors, 38% masters, 5% M.Phil./MS and 1% doctoral. Hence most of them have bachelor and master's degrees.

Table 4.5. Experience

	Frequency	Percent	Valid Percent	Cumulative Percent
1-5 years	24	24.0	24.0	24.0
6-10 years	52	52.0	52.0	76.0
Valid 11-15 years	17	17.0	17.0	93.0
16 and above	7	7.0	7.0	100.0
Total	100	100.0	100.0	

The table shows that 24% respondent were having 1-5 years of experience, 52% have 6-10 years of experience, 17% have 11-15 years of experience, while 7% have 16 and above years of experience. Most of the respondents were having sufficient experience bracket of 6-10 years.

Table 4.6.Age of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
20-25	10	10.0	10.0	10.0
26-30	31	31.0	31.0	41.0
Valid 31-35	25	25.0	25.0	66.0
36 and above	34	34.0	34.0	100.0
Total	100	100.0	100.0	

Mentioned above table depicts the age of respondents. 10% have age bracket of 20-25 years, 31% have age bracket of 26-30 years, 25% have 31-35 years of age, and 34% have 36 and above age bracket. Most of them have an age of either 26-30 years or 36 years and above which shows maturity level of these organizations as well.

Table 4.7. Designation

	Frequency	Percent	Valid Percent	Cumulative Percent
Data Scientist	34	34.0	34.0	34.0
Data Experts	40	40.0	40.0	74.0
Valid Data Specialist	18	18.0	18.0	92.0
Data Managers	8	8.0	8.0	100.0
Total	100	100.0	100.0	

The table depicts that the primary level i.e Data Scientist constitute 34% of respondents, second level is of Data Experts and 40% fall in this category, third level is of Data Specialist and comprises of 18% respondents, and the top level is called Data Managers which comprises of 8% of respondents. Data shows that most of the employees fall in the category of Data Experts.

Correlational Analysis:

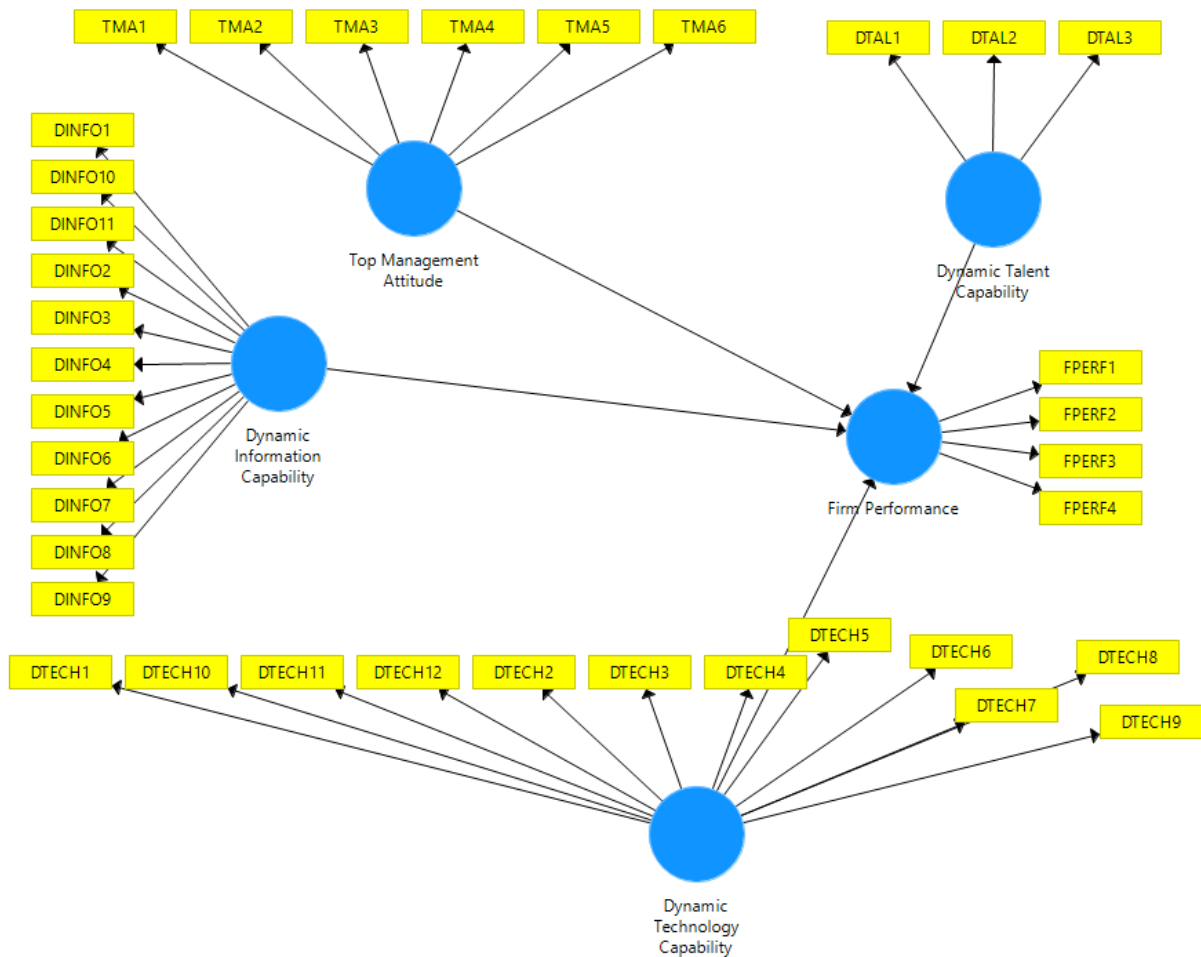
		Dynamic Capability	Dynamic information Capability	Dynamic Talent Capability	Dynamic Talent Capability	Firm Performance
Dynamic Capability	Pearson Correlation	1	.643**	.604**	.615**	.788**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	100	100	100	100	100
Dynamic Information Capability	Pearson Correlation	.643**	1	.856**	.887**	.689**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	100	100	100	100	100
Dynamic Talent Capability	Pearson Correlation	.604**	.856**	1	.886**	.612**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	100	100	100	100	100

	Pearson					
Firm	Correlation	.615**	.887**	.886**	1	.654**
Performance	Sig. (2-tailed)	.000	.000	.000		.000
	N	100	100	100	100	100

4.3. Confirmatory Factor Analysis (CFA) Analysis

Testing the measurement model or outer model is done by using Smart PLS approach. CFA assess reliability and validity of the models construct. This analysis consists of different type of analysis such as reliability, convergent validity and discriminant validity. Convergent reliability consist of three further categories like, factor loading, composite reliability (CR) and average variance extracted (AVE).

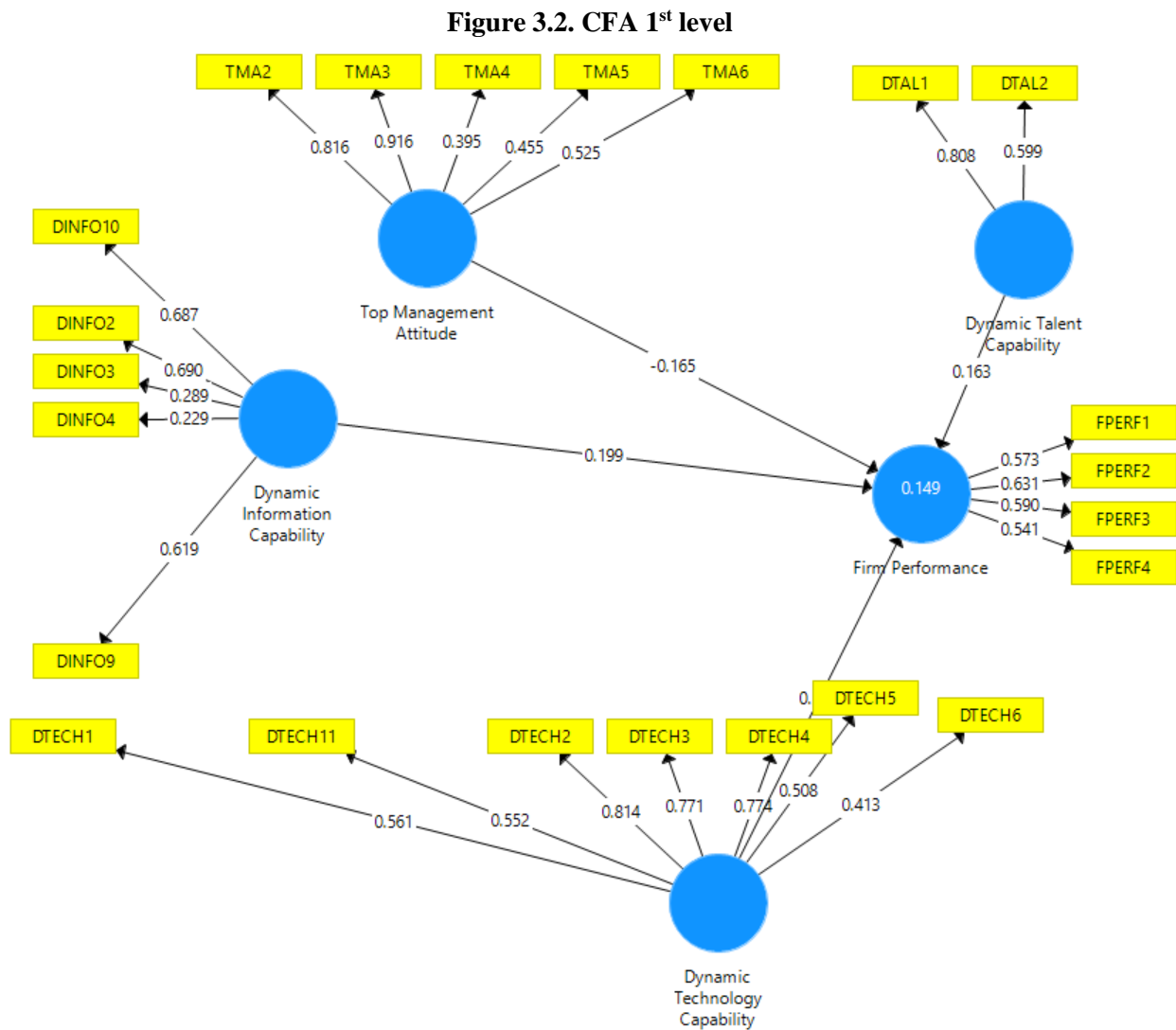
Figure 3.1. CFA



4.3.1 CFA 1st Level

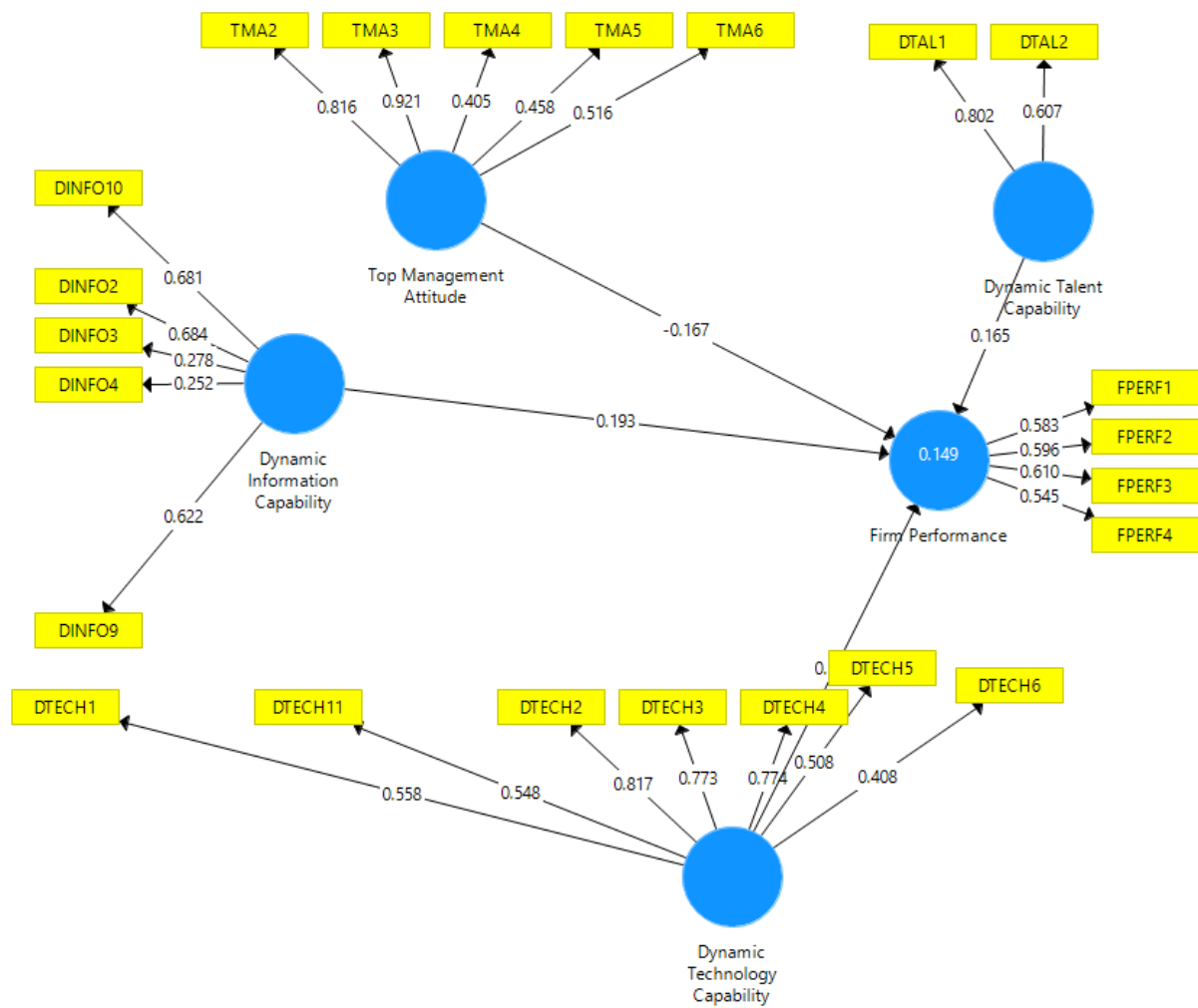
Factor loading should be greater than 0.6 in most cases but can be less if the scale is well proven.

Apply the PLS Logarithm factor for calculating the factor loading.



Delete the item which has less value and repeated from calculate PLS factors. After deleted the less value the remaining items will be used in further analysis.

Figure 3.3. CFA 2



Above figure show the constructs of each variable with factor loading. Factor loading should be greater than 0.6 in most of the cases, but it could be less than if the scale is well proven.

Table 4.8. Reporting CFA

Convergent Validity							
s	Construct	Items	Cronbach's alpha	Factor Loading	Composite Reliability	Average Variance Extracted	
	Dynamic Technology	DTC1		0.63			
		DTC2		0.69			
		DTC3		0.56			
		DTC4	0.791	9	0.72	0.848	0.446
		DTC5		4	0.67		
		DTC6		3	0.71		
		DTC11		7	0.64		
	Dynamic Talent	DTAL		0.74			
		DTAL	0.762	3	0.82	0.848	0.583
				0			
	Dynamic Information	DIC1		0.98			
		DIC2	0.935	4	0.92	0.951	0.866
		DIC3		6	0.88		
		DIC4			0.61		
	Top Management Attitude	TMA2		0.51			
		TMA3		7	0.92		
		TMA4		7	0.56		
		TMA4		3			

				0.52		
	TMA5	0.812	9		0.848	0.498
				0.67		
	TMA6		4			
Dynamic Technology				0.73		
	DTC1		7			
				0.69		
	DTC2		7			
				0.66		
	DTC3		3			
					0.82	
	DTC4	0.791	9		0.755	0.544
				0.56		
	DTC5		4			

Direct Effect of IV 1-DV

Effect of IV 1 on DV

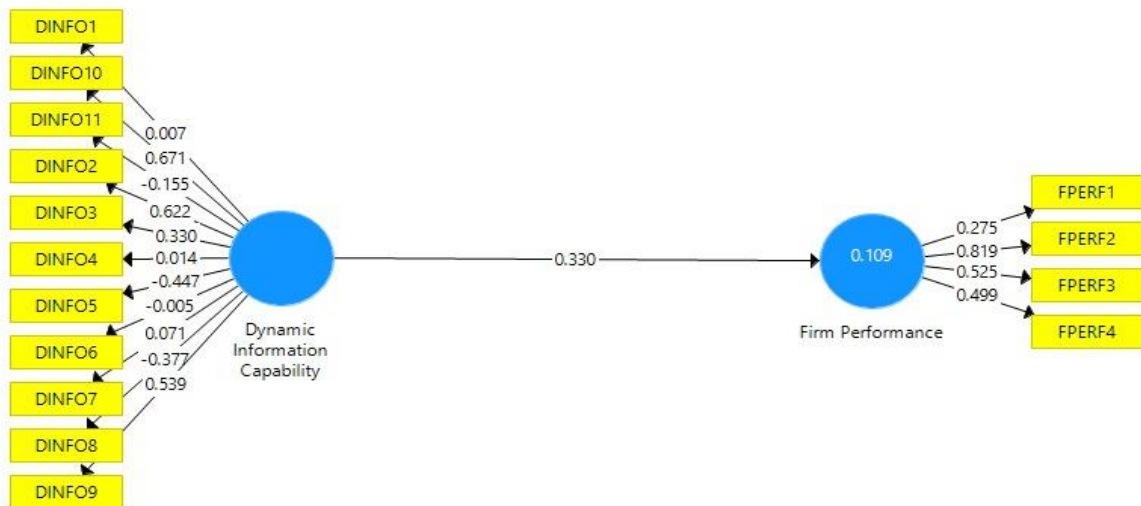


Figure 3.4. IV1 effect on DV

Above diagram shows the direct effect of IV 1 on DV, after applying the factor loading the regression analysis of each IV on DV is appear and we have beta value 0.330 and R square 0.109.

Direct Effect of IV 2-DV

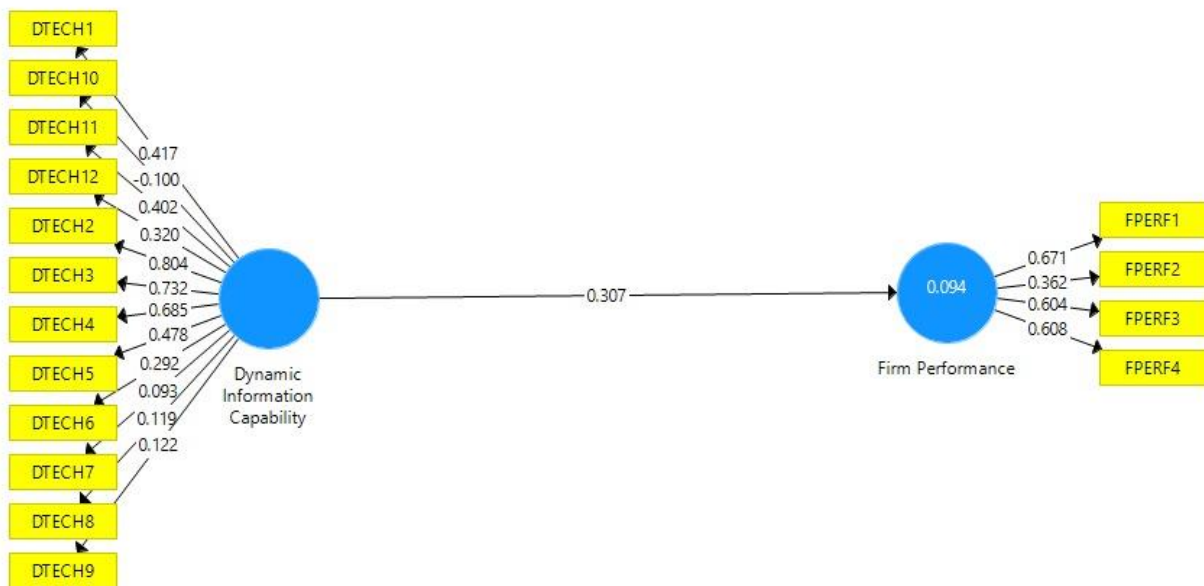


Figure 3.5. Effect of IV 2 on DV

Above diagram shows the direct effect of IV 2 on DV, after applying the factor loading the regression analysis of each IV on DV is appear and we have beta value 0.307 and R square 0.094.

Moderation Effect

Moderation on IV on DV

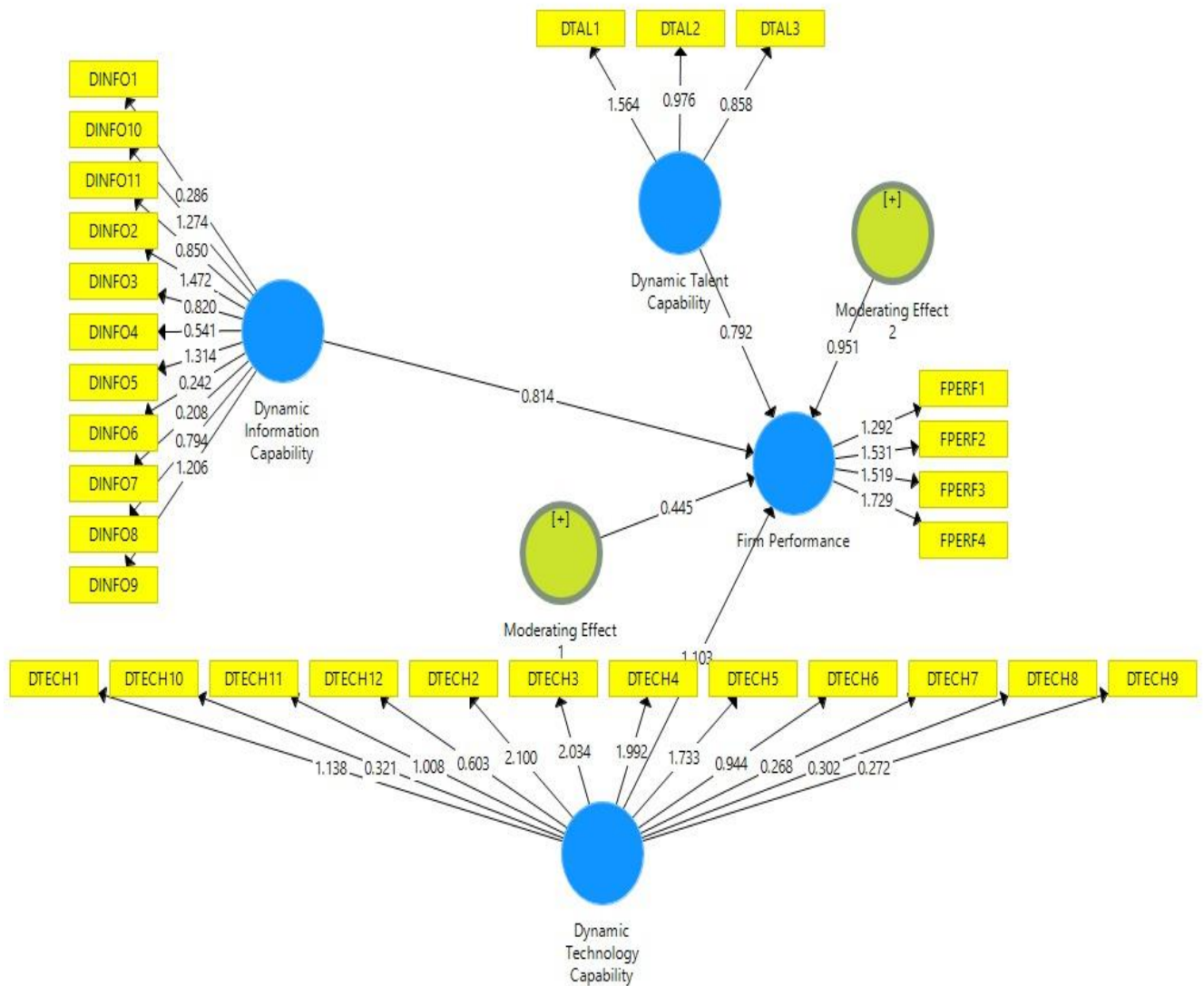


Figure 3.6. Moderation on IV on D**4.4.Moderation / Mediation Analysis****Table 4.9. Moderation Analysis of IV on dependent variables**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Dynamic information Capability> firm performance	0.295	0.137	0.362	0.814	0.416
Dynamic talent Capability> firm performance	0.147	0.099	0.185	0.792	0.429
Dynamic technology Capability > firm performance	0.264	0.155	0.239	1.103	0.270
Mediating effect 1 > Firm performance	-0.051	-0.033	0.115	0.445	0.023
Moderating effect 2> Firm performance	-0.132	-0.056	0.138	0.951	0.031

The above table show the moderation effect of independent variable on dependent variable i.e. dynamic information capability effect on firm performance. This result shows that the direct effect of dynamic information capability on firm performance is not accepted because the value of p is greater than 0.05 (p=0.416). So here we reject this hypothesis same as p value is greater than 0.05 in all these cases so we reject dynamic talent capability hypothesis (0.429). Dynamic technology capability is also greeter than 0.05 (p= 0.270) so our these three hypothesis are rejected.

Summary of Hypothesis Acceptance / Rejection

Hypothesis	Statements	Results
H1	Dynamic information capability would be negatively associated to Firm performance	Rejected
H2	Dynamic talent capability would be negative associated to firm Performance	Rejected
H3	Dynamic technology capability would be negatively associated to Firm performance	Rejected
H4	Dynamic Talent Capability will mediate the role of Dynamic Information and Dynamic Technology capability with Firm Performance in Big Data Analysis (BDA).	Accepted
H5	Top Management Attitude toward adoption of analytics will have significant impact to moderate the association between Service Analytics Capability and Firm Performance in BDA Environment.	Accepted

4.5. Quality criteria

Reliability Analysis

The table given below summarize the reliability of the variables, using measurement tools such that Cronbach's Alpha is descriptive statics. The reliability statics items of the firm performance variables in data collection instrument is shown below this define actual results of outcomes of reliability test run on data collection instrument of firm performance . Reliability is used to which an assessment tool produce stable and consistent result. as validity test is use to evidence that theory support the interpretations of test and it also determine that what types of tests is use .

Table 4.10. Reliability of Data

Name of Variable	Cronbach's Alpha	Average Varince Extracted (AVE)
Dynamic information capability	0.251	0.137
Dynamic talent capability	0.059	0.335
Dynamic technology capability	0.824	0.212
Firm performance	0.359	0.341
Mediating effect 1	1.000	1.000
Moderating effect 2	1.000	1.000

Table is divided into two columns the right side columns describes total numbers of items use in data collection instruments and the left side column shows the value of Cronbach's Alpha .

Cronbach's Alpha is basically a statistically measurement of how items are scale consistent with the construct of the variables.

Table

R2	0.231
-----------	--------------

The coefficient of determination R2 is 0.231 for firm performance. Endogenous latent variable this mean that the 3 latent variables dynamic information capability, dynamic talent capability, dynamic technology capability, and moderating effect 1 and moderating effect 2.

Path coefficients

Independent variables	Dependent variables
Dynamic information capability	0.295
Dynamic talent capability	0.147
Dynamic technology capability	0.264
Moderating effect 1	-0.051
Moderating effect 2	-0.132

Inner model path coefficient sizes and significant

The inner model suggest that the dynamic information capability has the strongest effect on firm performance 0.295

The hypothesized path relationship between dynamic talent capabilities has the strongest effect on firm performance 0.147

However, the hypothesized path relationship between moderating effect 1 and firm performance is not statistically significant this is because it's standardized path coefficient -0.051

The hypothesized path relationship between moderating effect 2 and firm performance is not statistically significant this is because it's standardized path coefficient -0.132

The hypothesized path relationship between dynamic technology capabilities has the strongest effect on firm performance 0.264.

CHAPTER#05

Discussion and Conclusion

5.1. Discussion and Conclusion

Findings of the five hypothesis are formulated in this study, all the hypothesis were tested against the variables moderator among independent variables and dependent variable. In above study three independent variables have been taken i.e. dynamic information capability, and dynamic technology capability while the dependent variable was firm performance. Dynamic talent was taken as a mediator and Top management attitude as a moderator.

In hypothesis 1, dynamic information capability negatively influences the firm performance. Our study focuses on one core question: why some firms are better at developing and applying DCs than others since here these firms were unable to contribute their technology, talent and information with the firm performance. By answering this question, we contribute to the strategic management literature in four ways. First, we theorized one of DCs' most important antecedent factors – success traps which could be possible contributing factor for the negative impact. It states that “The self-reinforcing effect of success (Sitkin et al., 2011) often results in firms overemphasizing existing competences and exploitative learning at the cost of exploratory learning (Levinthal and March, 1993). It is not something new, cultural and social factors also contribute to it. Moreover, Prior research has long warned against the danger of learning traps, success traps and competence traps (Ahuja and Lampert, 2001; Levinthal and March, 1993; March, 1991) which may play a role in not achieving the desired results i.e Firm performance enhancement in our research. However, no systematic evidence exists to gauge the effect of success traps on DCs and firm performance. Our study is the first to examine the possibility of effect of success traps on DCs, and we found a strong negative effect. This confirms that firms' ability to avoid

being trapped in own success is crucial to the strategic renewal and creation of their resources and capabilities in the light of environmental change. Our findings reinforce the message that firms must avoid excessive exploitative learning in order to embrace a balanced approach to exploitative and exploratory learning (Gibson and Birkinshaw, 2004). Therefore Firms for achieving the desired result must incorporate a systematic approach in adopting Talent, Technology and Information rather than following success in other part of the world where Big data analytics are integrated in a very systematic and professional manner.

In hypothesis, there was negative relationship between dynamic talent capability and firm performance, which might be the lack of or insufficient knowledge about new innovations and challenges faced by the SMEs in different environment. There is an inverse relationship between them. It also implies that talent was not nourished properly with the technology in accordance with the cultural prospective of Pakistan.

In hypothesis 3, technology found to be negatively associated with firm performance. As industries with greater aggregate levels of research and development (R&D) intensity are home to higher rates of firm-level innovation, And, though innovation is more common when industry dynamism is high, innovative firms are likely to enjoy revenue growth, irrespective of the industry in which they operate. The research also shows that firm knowledge, industry dynamism and innovation interact in the way they influence firm performance. A highly skilled workforce is most beneficial to firm performance in dynamic environments, while firms in stable manufacturing industries benefit more from investments in training. But in Pakistan there is a weak performance of technology and innovation setup so dynamic technology capability have negatively associated with firm performance which be because of lack of training while embracing technology (David Beach, 2016).

In hypothesis 4, Dynamic Talent Capability mediate the role of Dynamic Information and Dynamic Technology capability with Firm Performance in Big Data Analysis (BDA). Drawing on the resource-based view and the literature on big data analytics (BDA), information system (IS) success and the business value of information technology (IT), this study proposes a big data analytics capability (BDAC) importance. The study extends the above research streams by examining the direct effects of BDAC on firm performance (FPER), as well as the mediating effects of process-oriented dynamic capabilities (PODC) i.e talent capability on the relationship between BDAC and FPER. To test our proposed research model. The findings confirm the value of the entanglement conceptualization of the hierarchical BDAC model, which has both direct and indirect impacts on FPER. The results also confirm the strong mediating role of PODC in improving insights and enhancing FPER. Finally, implications for practice and research are discussed.

In hypothesis 5; Top Management Attitude toward adoption of analytics have significant impact in moderating the association between Service Analytics Capability and Firm Performance in BDA Environment. Since human resource management bundles consisting of multiple complementary practices are typically considered superior to individual best practices in influencing firm performance. This study investigates the relationship between the important element of Human resource management i.e managers or top management involvement or embracing and encouraging the acceptance of technology in conjunction with talent and information which resultantly increase the firm performance. Individual practices, are positively related to business outcomes, and display effect sizes that are comparable to or larger than those of high-performance work systems. These findings reaffirm the case for firm-level investments in synergistic HRM

combinations and highlight the importance of investing in complementary practices. © 2009 Wiley Periodicals, Inc.

5.2. Policy implementation

The challenge for firms to manage existing competences based on past success and constantly renew themselves in the light of environmental change is relevant to superior firm performance. We find that those firms that are better at developing and applying DCs are able to avoid success traps and possess stronger absorptive and transformative capabilities. Our findings also suggest that the effects of firm strategy, market dynamism, industry type and firm size on developing and applying DCs deserve further attention. Overall, we find that the development and application of DCs is more related to internal factors (such as success traps) rather than external factors (such as market dynamism). Our results also point out the complex relationship between DCs and environmental and organizational factors. This warrants future research.

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Appendix a.

Dear Respondent!

I am a student of Pakistan Institute of Development Economics (PIDE) Islamabad and doing this survey as I am working on my thesis entitled “**The Impact of Dynamic Capabilities on Firm Performance with moderating role of Top Management Attitude and mediating role of Dynamic Talent Capability: A case study of Big Data Environment**”.

These questions require answers based on your experiences at your current job. Your answers will be kept strictly confidential and will be used only for research purpose. Your identity will not be disclosed in this document so an honest opinion would be appreciated to make this research unbiased. You are requested to take 10-15 minutes out of your busy schedule to fill this questionnaire. Although you are not bound to answer these questions at any time and space, you can quit answering but still I will be privileged by your kind opinion in this research work. If you need findings of this research, please order a copy at tasneem_16@pide.edu.pk

Once again thanks for your precious time and cooperation

Regards,

Tasneem ur Rehman,

Research Scholar, MS-Management Sciences (HR)

Demographics

Your Name: (Optional)					
Your gender:		1. Male		2. Female	
Your Education:	1. Matric	2. Intermediate	3. Graduation	4. Masters	5. MS/Phil 6. PhD
Your E-mail: (Optional)					
Your age (in years, like 40 years)					
Your area of specialization: (Optional)					
Your job title in this organization: (Optional)					
Working experience (in years):					

Use following five options to fill the subsequent questioner

Strongly Disagree	Disagree	Not disagree/neither Agreed	Agreed	Strongly Agreed
1	2	3	4	5

	Firm Performance					
Q	Using service analytics capabilities in big data environment it has improved following during the last three years relative to competitors:					
	1. Customer retention	1	2	3	4	5
	2. Sales growth	1	2	3	4	5
	3. Profitability	1	2	3	4	5
	4. Return on investment	1	2	3	4	5

Dynamic Talent Capability					
Technical Knowledge					
1. Our service analytics personnel are very capable in terms of programming skills	1	2	3	4	5
2. Our service analytics personnel are very capable in terms of managing project life cycles	1	2	3	4	5
3. Our service analytics personnel are very capable in the areas of data and network management and maintenance	1	2	3	4	5
Dynamic Informational Capabilities					
Completeness					
1. The service analytics used, provide a complete set of information	1	2	3	4	5
2. The service analytics used, produce comprehensive information	1	2	3	4	5
3. The service analytics used, provide all the information needed	1	2	3	4	5
Currency					
1. The service analytics used, provide the most recent information	1	2	3	4	5
2. The service analytics used, produce the most current information	1	2	3	4	5
3. The service analytics used, always provide up-to-date information	1	2	3	4	5
Format					
1. The information provided by the service analytics is well laid out	1	2	3	4	5
2. The information provided by the service analytics is clearly presented on the	1	2	3	4	5

	<p>Accuracy</p> <ol style="list-style-type: none"> 1. The service analytics used, produce correct information 2. The service analytics used, provide few errors in the information 3. The service analytics used, provide accurate information 	1	2	3	4	5
	<p style="text-align: center;">Dynamic Technological Capabilities</p> <p>Connectivity</p> <ol style="list-style-type: none"> 1. Compared to rivals within our industry, our organization has the foremost available big data driven service analytics system 2. All remote, branch and mobile offices are connected to the central office for service analytics 3. Our organization utilizes open systems network mechanisms to boost service analytics connectivity <p>Compatibility</p> <ol style="list-style-type: none"> 1. Software applications can be easily transported and used across multiple analytics platforms 2. Our user interfaces provide transparent access to all platforms and applications 3. Big data Analytics-driven service insights is shared seamlessly across our organization, regardless of the location <p>Modularity</p> <ol style="list-style-type: none"> 1. Reusable software modules are widely used in new analytics model development 2. End-users utilize object-oriented tools to create their own analytics applications 	1	2	3	4	5

	<p>3. Object-oriented technologies are utilized to minimize the development time for new analytics application</p> <p>Privacy</p> <p>1. Our big data driven service analytics platform protects information about personal issues</p> <p>2. Our big data driven service analytics platform protects information about personal identity</p> <p>3. Our big data driven service analytics platform offers a meaningful guarantee that will not share personal information</p>	1	2	3	4	5
	<p>Top Management Attitude</p> <p>1. Analytics makes my job more interesting</p> <p>2. Working with analytics is satisfying at our workplace</p> <p>3. I like working with analytics</p> <p>4. I enjoy while giving time to work with analytics</p> <p>5. People who influence my behavior think that I should use analytics</p> <p>6. People who are important to me think that I should use analytics</p>	1	2	3	4	5