Empirical Investigation of Resource Mechanisms that enable Psychological Safety as Potential Determinant of Dual Pathway Consequences: Evidence from Software Houses in Pakistan

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Ameen

Mehwish Batool

ABSTRACT

The dynamic and highly growing work demands in Software Houses of Pakistan requires the employees to devote lots of their personal resources to cope with challenging realities, which further, necessitates conducive work settings where psychological safety of employees should be prioritized. Therefore, this research aims at empirically investigates the resources that can develop the most potential determinant of work outcomes i.e. psychological safety, which further prevents employees' resources to deplete associated with negative work outcomes or enhances employees' ability to invest their resources associated with positive work outcomes. Moreover, the study aims at fulfilling the theoretical gap in the literature of psychological safety processes by utilization the theoretical viewpoints of Conservation of Resource theory. Through purposive sampling, data from 350 software engineers working in the selected Software Houses, has been collected with the help of structured questionnaire. Regression Analysis and Confirmatory Factor Analysis validates the hypothesized model as best fit. The results indicated that job resources are likely to engender resource investment or resource depletion to influence dual outcomes through the development of psychological safety. Psychological safety and resource investment mediated the impact of job resources on positive work outcomes, whereas, psychological safety and resource depletion mediated the impact of job resources on negative work outcomes. The research reported here extends the theoretical and empirical body of evidence regarding the holistic view how psychological safety develops and influence positive or negative work outcomes through underlying resource constructs. The findings cater the human resource managers of software houses with policies and procedures to create conducive work settings that can reduce unwanted work outcomes and promote beneficial ones. The research based on the limited sample size and research area (Rawalpindi and Islamabad), therefore, future research can be conducted with larger sample size and broader area for further validation.

Key Words: Job Resource, Psychological Safety, Resource Investment, Resource Depletion, Positive Work Outcomes, Negative Work Outcomes.

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List of Acronyms

P@SHA	Pakistan Software Houses Association
SH's	Software Houses
JR	Job Resources
PS	Psychological Safety
RI	Resource Investment
PWO	Positive Work Outcomes
RD	Resource Depletion
NWO	Negative Work Outcomes
IT	Information Technology
GDP	Gross Domestic Product
COR	Conservation of Resources
WEF	World Economic Forum
ITES	Information technology enabled service
ICT	Information and communication technology
I-P-O	Input process output
STP	Software Technology Park
PSEB	Pakistan Software Houses Export Board
AMOS	Analysis of a Moment Structures
SPSS	Statistical Package for Social Scientists
Std. Error	Standard Error
Min.	Minimum
Max.	Maximum
SEM	Structural Equation Modeling
VIF	Variance Inflation Factor
EFA	Exploratory Factor Analysis
GFI	Goodness-of-Fit Index
CMIN/DF	Minimum discrepancy, divided by its degrees of freedom
RMSEA	Root Mean Square Error of Approximation
TLI	Tucker-Lewis Index
CFI	Comparative Fit Index
CR	Composite Reliability
AVE	Average Variance Extracted
MSV	Maximum Shared Variance
CMV	Common Method Variance

CHAPTER 1
INTRODUCTION

Traditionally, for organizational success it is necessary to maximize the positive work consequences and minimize the situations which can lead to negative work outcomes. Positive outcomes determine whether an organization is headed in the right direction (Gillet, Fouquereau, Huyghebaert, & Colombat, 2015). On the other hand, challenging and increasing demands in contemporary work settings are depleting the physical, emotional and cognitive energies due to over assigned duties (Whitman, Halbesleben, & Holmes IV, 2014; LeNoble, 2016). Many organizations must confront with rigor measures that impact the psychological health so that employees can use their personal resources in order to adjust with such demanding situations (Bakker & Demerouti, 2017). However, organizations must encounter factors that may weaken or put out employee motivation and reduce positive work performance. Every business is trying to identify those downgrading factors in order to suppress them. In this situation, Human Resource practitioners need to play a very significant role in order to prevent such sort of deleterious outcomes and at the same time to promote beneficial practices (Huyghebaert, Gillet, Lahiani, Dubois-Fleury, & Fouquereau, 2018).

In the technological advancement of World, software engineers or developers working in IT industry need a permitted or an open environment to translate their creativity in developing software and to attain competitive edge (Ortmann & Sydow, 2018). This type of unrestricted work setting for creativity to be enabled could only be established through managing the organizational environment. Psychological safety has attained eminence among software practitioners and its prevalent consideration can be credited to the account of research result drawn by Google's study of its own organization in press articles and publications (Duhigg, 2016). Due to the escalation of collaborations and interdependencies in workplace settings, psychological safety (a collective certainty between individuals as to whether it is safe to participate in interpersonal risk-taking) is likely to persist as a significant aspect for employees to invest their competencies and future good performance Managing interpersonal intimidations (e.g. admit unawareness, voicing concerns and suggestions or simply being different) inbuilt in employees is one of the most essential challenge faced by the organizations That's why Psychological safety is becoming increasingly important to make people contented and to realize them that voicing their ideas or queries for attaining shared goals will not make them embarrass or punishable (Edmondson & Lei, 2014).

The focus of existing study is the Software Industry operating in Pakistan, which is facing fastest growth and high global competition (Shahzad & Shahbaz, 2017). Software houses has been associated with the features like prolonged exposure to work load, consistent knowledge sharing and creative processes based on high technologies. The IT industry has been regarded as a successful sector of economy of Pakistan even during fiscal crises. Pakistani IT industry is booming and it has accomplished milestones in recent years. According to Pakistan Software Houses Association (P@SHA), 1800 IT firms are presently registered in Pakistan and serving the nation with their highly competent experts. With more than $ 2.6 billion sales including $ 1.4 billion exports of software and IT services, this industry contributes 1.4% to GDP of Pakistan. Pakistan has been ranked 110th in 139 countries in the Global Information Technology report by the World Economic Forum (WEF) whose core mission is to assess the development of ICT (Information and Communication Technology) in the particular country (Desk, 2016). P@SHA stated that the industry of IT and ITES is facing fast growth and it is most probable that its revenue will exceed the US$11 by 2020. The growth rate of IT industry is 30% per annum and almost 120,000 individuals are employed by IT sector of Pakistan. For Information Technology and Telecommunication industry the Government of Pakistan has set the budget of Rs. 3046 million for the financial year 2018-19. Potential start-up ecosystem of the Pakistan's IT industry is owning 25 technological incubators, accelerators and coworking spaces. Many IT experts holding Microsoft certifications can be counted as worthy to the success of Pakistani IT industry and development of economy like a famous software engineer "Mir Zafar Ali" from Pakistan won three OSCAR awards due to incredible involvement in the visual effects of famous movies like Frozen, Life of Pi and The Golden Compass (Techjuice, 2015).

1.1. Background of the Research

According to a recent study conducted by the People Analytics Unit of Google, psychological safety has identified as a key to success for teams and topmost indicator of their high performance (Newman, Donohue, & Eva, 2017; Bergmann & Schaeppi, 2016; Rozovsky, 2015). Psychological Safety as a psychological concept has attained eminence among software practitioners (Frazier, Fainshmidt, Klinger, Pezeshkan, & Vracheva, 2017), which is a belief exists in individual that he/she is safe to take any risk (Edmondson, 1999). The prevalent consideration of psychological safety can be credited to the account of research result drawn by Google's study of its own organization in press articles and publications (Delizonna, 2017; Mendoza, 2015). Such reports acknowledged that the Google tested 180 teams with more than

250 various concepts by conducting over 200 interviews of employees, which resulted in five vital factors in which psychological safety is at top and remaining are dependably, structure & clarity, meaning and impact of work for creation of effective teams. Among these five concepts, Psychological safety is considered as the most vital aspect that can improve positive work outcomes.

Results from numerous empirical studies conducted worldwide show that psychological safety has key contribution in enhancing workplace effectiveness and efficiency (Edmondson & Lei, 2014). The term Psychological safety was first introduced by (Maslow, 1943) in his hierarchy of need theory, which refers to the perception of employees for the outcomes of getting themselves in risky behaviors (Edmondson, 1999). The existing literature on the antecedents of psychological safety lists several factors including supportive leadership role, supportive organizational practices, relationship networks and coworkers relationship (Schaubroeck, Lam, & Peng, 2011; Carmeli, Brueller, & Dutton, 2009; Carmeli & Zisu, 2009; May, Gilson, & Harton, 2004) that foster workplace outcomes. Research has also inspected the relationship among psychological safety and outcomes such as innovation, creativity, employee attitudes, communication, knowledge-sharing, and voice behaviors (Carmeli, 2009; Chen, Liao, & Wen, 2014; Liu, Wang, Chang, Shi, Zhou, & Shao, 2014; Singh, Winkel, & Selvarajan, 2013). Existing researches also describe the negative association of psychological safety with different outcomes like turnover, work-family conflict, team conflict, fear of failure, emotional exhaustion and burnout (Huyghebaert et al., 2018; Deng Leung, Lam, & Huang, 2017; Wilkens & London, 2006; O'Neill & McLarnon, 2018; Zadow Dollard, Mclinton, Lawrence, & Tuckey, 2017). However, the research available to date is deficient in proposing an integrated and holistic model of psychological safety describing its mechanism to influence both positive and negative outcomes especially in the context of software industry in developing economies such as Pakistan.

1.2. Research Gap

Lenberg & Feldt (2018) explored the concept of psychological safety with work outcomes in the software industry, which primarily conduct their work in teams. They identified the need to determine more factors and their association to get a more in-depth understanding of the influence of psychological safety. It has been further identified that there is need to increase empirical evidences and study the impacts of psychological safety specifically in the context of software industry. From Another recent, a gap is identified that

most of the research on the processes that explain the link between the work environment and individual outcomes has focused on work-related mechanisms, and less is known about the psychological mechanisms involved. Therefore, this study gave attention to highlight the underlying processes that help the psychosocial safety climate to influence the individual outcomes and suggested that human resource practitioners want to further examine that whether employee's psychological needs to feel safe can act as the mediator between organizational aspects and objective determinants of employees' positive and negative work behaviors e.g. performance and absenteeism etc. (Huyghebaert et al., 2018).

A recent meta-analytic study conducted a systematic review of psychological safety and highlighted that the aspect of psychological safety with its antecedents/outcomes has been described in literature by utilizing the viewpoints of social identity, social learning and social exchange theories. Therefore, a gap has been identified to completely describe the both mechanisms under which psychological safety develops and affects positive and negative work outcomes can by integrated by utilizing the theoretical viewpoints of Conservation of Resource theory (COR) of Hobfoll (1989). Because Conservation of Resource theory can provide a thorough understanding of factors that may develop psychological safety and helps to describe its relationship with work outcomes by the mediating mechanism of resource investment and resource depletion (Newman et al., 2017).

In addition, some important but under-studied components of risky behaviors like creativity and knowledge sharing could be examined that may develop by the psychological safety and influences the dual pathway consequences (Deng et al., 2017). Sharing knowledge with others is considered as risky (Srivasta, Bartol & Locke, 2006) as it may decrease the attractiveness of for shared knowledge, if the shared content proves to be incorrect or impractical and can put the person's reputation at stake (Cabrera & Cabrera, 2002). Another recent study highlighted the most obvious direction for psychological safety is its application in team performance (Roussin, MacLean, & Rudolph, 2016).

The procedures fundamental to the influences of psychological safety may be more complex than they were presumed before, and negative consequences may run in parallel to its positive impact on risky behaviors as the researchers have informed the non-significant impacts of psychological safety on learning behaviors (Choo, Kevin & Roger, 2007). So, there exists always a chance that psychological safety may not provide benefits wholly and that a connected negative impact may counteract its positive impacts. This captivating possibility as a gap in

research delimits the development and effective implementation of psychological safety which has not been systematically investigated before.

However, previous studies linked the psychologically safety with antecedents and dual outcomes have insufficient values in scope. To overcome these limitations, existing study played a vital role in literature by analyzing the mediating role of resource mechanism between psychological safety and its dual outcomes. In order to fill research gap and based on above stated future recommendation by different recent researches, this study inspect structural relationship between psychological safety with its antecedents and its mediating effect on resource phenomenon and their shared effect on dual work outcomes in the software houses of Pakistan. Therefore, current study tends to link positive procedures to positive consequences (e.g., knowledge sharing to employee creativity) and negative procedures to negative consequences (e.g. resource depletion to conflict). Yet existing studies have mainly investigated either positive or, more repeatedly, negative experiences, not often examined both negative and positive experiences together as they happen and co-happen at work (Miner, Glomb, & Hulin, 2005).

1.3. Problem Identification

1.3.1. Problem Statement

"Determine the factors that can foster the process of developing psychological safety among employees or within team members and investigating how psychological safety act as predictor of both positive and negative outcomes at individual and group level through the mediation of resource investment and resource depletion."

1.3.2. Context of the Problem

Since last two decades, Software industry has been facing revolution due to the application of novel methods and procedures. These agile methods have also changed the organizational culture from individualistic to teamwork. The organizations, whether small or large, whose central business is to create or develop software is called software house and these organization are highly in need of employees with rich technical skills to develop any software. Moreover, they must provide enterprise solutions including inventory management, human resource management and customer relationship management etc. Due to such demanding job nature, work is beginning to shift from an individual orientation to a more team-based orientation where individuals work with one another to complete projects. Workload also embodies a challenge stressor, that is, it is possibly associated with both gains and losses for

employees. Prolonged exposure to high workload, however, is strongly associated with physical and emotional depletion (Avanzi et al., 2018).

In the software industry, the system is becoming highly sophisticated that requires more collaborative activities among team members like information sharing or exchange of novel ideas (Edmondson & Lie, 2014; Newman et al., 2017). Information sharing in software houses has become vital to success (Oshri, Pan, & Newell, 2005) as they mostly work under the complex circumstances of project management with higher uncertainties and complex problem solving (Ahern, Leavy, & Byrne, 2013). These situations can foster the need for psychological safety consists of the perception of risk is high and when employees believe that they would not get any chance to justify them. This situation can often be realized in such circumstances where employees gradually feel the need to manage the perceptions of others and feel low psychological safety to take personal risks (Netzley & Rath, 2012). Low psychological safety among employees make them to hold valuable ideas, avoid providing feedback, will not speak up and dis-engage them from learning opportunities (Edmondson & Lei, 2014). Moreover, lack of psychological safety among employees make them to not involve in the activities to grow and learn (Hamilton, Hamilton, & Pittman, 2004). Psychological safety is the antecedent of team conflicts as well. In the event of low psychological safety, team members may be at risk to engage in accusing, pomposity, and isolation behaviors (Edmondson & Smith, 2006). Members of such teams may then become more competitive, defensive, and shielded. This may then increase the possibility that the team will transition into an unhealthy conflict (O'Neill & McLarnon, 2018).

Google's internal research credits its unprecedented success to adoption of teamwork and justifies the role of psychological safety as their top success factor for team performance and creativity (Delizonna, 2017; Mendoza & Liedtk, 2015). Creativity is the essential component of software houses because at the conceptual level, when certain software's functionality is first conceived, creativity is certainly required to design and link all the requisite components and functions into one cohesive unit i.e. the software (Kroll, 2014). Organizations in software industry establish teams to manage their work and always focus to identify the factors that can impact the team performance to increase productivity. Recently, researchers and practitioners of software industry have increasingly started to consider human factors in improving of team performance (Kosti, Feldt, & Angelis, 2014). Hence, employees in software houses require psychological safety so they can be more creative to improve team performance (Duhigg, 2016).

Considering the need to manage above mentioned factors, a burning issue for human resource experts is to promote and encourage such job resources at individual, group and organizational level that can develop psychological safety within team members to influence the work outcomes. The existing study focused on the software industry of Pakistan which is a developing country and technology is evolving day by day. Pakistan is a developing country so labor rates are low as compared to other developed countries. Organization must achieve economies of scale, manage employees downsizing, individual must work efficiently and effectively with high workload. To survive in this un-stable environment of Pakistan, organization took such steps and applied changes that have made the organizations confronted with increasing work demands. Such organizational changes have become eminent in Pakistan, being a country that has been exposed to extreme financial crisis. The measures taken to overcome the financial crisis in organizations have enlarged work demands for both employees and organizations (Payne, 2017).

According to Pakistan Software Houses Association (P@SHA), the industry of IT and ITES is facing fast growth i.e. 30% per annum. Due to such fastest growth and high global competition Software Houses of Pakistan are facing high work-load. In the era of globalization and technological advancement companies in Pakistan are trying their best to attain competitive edge in market through outsourcing the development of software as a best solution. High workload has also changed the organizational culture from individualistic to teamwork that has increased the collaboration (Information Sharing) and interdependencies (Feedback Provision) among employees (Shahzad & Shahbaz, 2017). The software industry of Pakistan is facing various chronic and inadequate knowledge issues to create new things that bent the organization's concern for controlling poor performance by creating resources for employees (Ali, Musawir, & Ali, 2018). Job nature at software houses is highly complex and technical where team members had to communicate and interact intensively with each other and invest their conceptual skills. Consequently, it has become crucial for teams to seek out new job resources, exploit their knowledge to invest and survive with low psychological safety (Safdar, Badir, & Afsar, 2017).

In the dynamic and highly growing nature of software industry in Pakistan, it is almost impossible to survive with low psychological safety among employees. Therefore, a substantial challenge for human resource managers within the software industry is to understand the drivers of psychological safety and the mechanisms under which this factor determines the workplace outcomes. Prior researches on the influence of Psychological Safety were conducted in

western cultures (Edmondson & Lie, 2014). So, Pakistan and Software Houses remain untouched to examine the holistic view of Psychological Safety with its antecedents, underlying mechanisms and work outcomes.

1.4. Purpose of Study

In the situation of Pakistan, psychological safety in software sector is studied rarely that has inspired the researcher to explore the factors that can develop psychological safety in employees to enhance the positive outcomes while minimizing the negative consequences. In the current study, the basic aim was to identify job resources that can develop the most potential determinant of work outcomes that may prevent employees' resources to deplete associated with negative consequences or enhance employees' ability to invest their resources associated with positive outcomes. Based on Conservation of Resource theory (Hobfoll, Halbesleben, Neveu, & Westman, 2018), the two basic principles (i.e. resource investment and resource depletion) are treated as mechanisms and investigated, which may explain the impact of job resources and psychological safety on both negative and positive work consequences.

1.4.1. Research Objectives

The fundamental objective of existing research is to empirically test the dual pathway model which explores the connection between psychological safety with its antecedents and its impact on negative and positive working consequences through resource mechanisms. The brief description of this study's' objectives is;

1. To explore the Job Resources that develop Psychological Safety which further describes the positive relation with Resource Investment and negative relation with Resource Depletion of employees working in Software Houses (SH's) of Pakistan.
2. To determine the positive connection of Resource Investment with Positive Work Outcomes and Resource Depletion with Negative Work Outcomes in SH's of Pakistan.
3. To determine the Mediating Factors which facilitate the positive impact of Job Resources on Positive work outcomes or negative impact of Job Resources on Negative work outcomes in SH's of Pakistan.

1.4.2. Research Questions

This study taken to find out answers of some important questions, briefly these questions are as follows:

1. What are the Job Resources that develop Psychological Safety to create either positive or negative impact on employees' resources and work-related outcomes.

2. Does Psychological safety have propensity to cause resource investment (i.e. knowledge sharing and feedback provisions) and resource depletion among employees?

3. Do Psychological safety and Resource investment combinedly mediate the positive relation of Job resources with Positive work outcomes?

4. Do Psychological Safety and Resource depletion combinedly mediate the negative relation of Job resources with Negative work outcomes?

1.5. Significance of Study

Most of research studies investigated the impact of psychological safety at workplace have been conducted at the western cultures having low level of collectivism, uncertainty avoidance and power distance where individuals have enough confidence and exposure to raise their concerns openly and indulge themselves in experimenting new things without any fear of being mocked. Greater work may be assumed to determine whether psychological safety has a more robust impact on the teams and individual consequences of organizations working in different culture i.e. eastern culture (Edmondson & Lei 2014). According to Hofstede insights, Pakistan having eastern culture has a very low score of 14 (Figure-1 in Annexure) in the individualism cultural dimension, is considered a collectivistic society. Cultures characterized by collectivism give more importance to relationships among people. Determining psychological safety in this eastern context will let stronger assessment of psychological safety's predictive validity as the differences between individual's perceptions may be more than that of western cultures where individuals must bear fewer social costs for voicing out.

The newness of the study is that it explains the holistic mechanism of psychological safety with its antecedent to influence dual pathway consequences. This study will be the first to demonstrate Psychological safety's associations with resource investment and resource depletion, positive work outcomes and negative work outcomes. The study thus aims at describing the Psychological safety as very important determinant of employee's creativity and team performance, thus demand us to identify factors that can ensure high psychological safety in the organizations to bring positive consequences. This study will also propose viable and pragmatic strategy to overcome negative work outcomes in individuals or within teams result from resource depletion among employees due to low Psychological Safety.

1.6. Scope of the Study

Based on COR theory, the existing study generates a dual pathway model of psychological safety in which a negative procedure prevails side-by-side with the distinguished positive procedure. However, it is proposed that a comfortable group context enriched with job resources is likely to generate two opposite underlying procedures to influence work outcomes. In the first mechanism, development of psychological safety from job resources enhances the employees' potential to invest resources like knowledge sharing and feedback provision, associated with, possible positive outcomes like team performance and employee creativity. In second mechanism, psychological safety depletes the potential of employees' resources associated with possible negative consequences among group member like stress and conflict.

This study stressed HR professionals on the importance of developing conducive work settings where psychological well-being and safety of employees should be prioritized and all levels of organization should participate in outlining the vital practices to protect the psychological health of employees (Dollard & Bakker, 2010). Application of such policies and procedures will cater the organizations with means to reduce unwanted work outcomes (like stress or conflicts within team members) and promote beneficial ones (i.e., creativity, team performance).

1.7. Design for Further Chapters

The whole research work is compiled in following five chapters:

Chapter 1: Brief introduction about the complete research work is mentioned in this chapter, including, background of study, context of problem, research objectives and questions.

Chapter 2: Literature work and supporting theories related to variables and their dimensions ae discussed in this chapter. Conceptual framework along with definition of constructs are also mentioned here.

Chapter 3: The context of research design is quantitative followed by deductive approach, hence, the sample size, data collection methods, instrument, statistical data techniques and approaches are discussed in this chapter in detail.

Chapter 4: This Chapter includes statistical results of data analysis and results interpretation.

Chapter 5: Complete research work is concluded in this chapter. Moreover, discussion on the results, implication of study and limitation are also mentioned in this chapter.

CHAPTER 2
LITERATURE REVIEW

2.1. Job Resources

According to many analysts "Job Resources" are considered as facets of job that leads the employees to meet and complete their task targets while focusing on individual development and to minimize the job demands with its physiological and psychological costs and may involve social support and feedback etc. (Crawford, LePine & Rich, 2010; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The major function of Job Resources is not only to enhance employee's motivation to cop up with job demands but also act as the internal motivator (Bakker & Demerouti, 2007; Hakanen, Perhoniemi, & Toppinen-Tanner, 2008).

A recent research claim that job resources are termed as social support having three dimensions. These dimensions include supervisor support and mentoring, co-worker assistance and support and organizational support (Singh, Shaffer & Selvarajan, 2018; Singh, 2017). For instant, Hobfoll (2001), argue that social support is an important asset that involve factual and emotional assistance. It may develop within work, family and community for the fulfillment of the personal aims within each one of these elements (Selvarajan, Singh, & Cloninger, 2016; Thoits, 2011). The support originating from the supervisors, coworkers and the organization is a key job resource that an employee would always like to retain (Kiazad, Holtom, Hom, & Newman, 2015).

2.1.1. Supervisor Support

Supervisor support refers to the extent to which employees consider the supervisor as caring for their interests, providing them assistance and complement their contribution (Robert Eisenberger, 2002).

2.1.2. Coworker Support

Coworker support refers to employee's feelings about their colleagues and the extent to which coworkers are concerned, auspicious and helping towards another (Beehr, Jex, Stacy, & Murray, 2000; Chiaburu & Harrison, 2008; Rhoades & Eisenberger, 2002).

2.1.3. Organizational Support

Organizational support is considered as an extent up to which the company admire the employees' efforts as well as caring their interests (Rhoades, Eisenberger & Armeli, 2001).

2.2. Psychological Safety

In various organizational researches, psychological safety has been identified as vital for employee collaborations to attain shared goals (Edmondson, 1999; Mogelof & Edmondson, 2006). Today's workplace environments demand cohesions among employees and trying new procedures that may be risky for an employee because these behaviors can put an employee's reputation at stake if found to be misappropriate. The psychological safety is defined as perception of an individual about the level of comfort in expressing himself without fear of negative consequences to his image, career or status (Kahn, 1990). Ensuring the presence of the psychologically safe environment in a company is a way to overcome all the risks that may trigger negative performance and to make employees feel safe in communicating their ideas, receiving and giving honest feedback and in generating new procedures and ideas (Edmondson & Roloff, 2009; Edmondson & Lei, 2014).

At first Schein and Bennis (1965) explored the concept of Psychological Safety, as needed for organizational change and defined it as individual's confidence on his ability to manage change while feeling safe. After twenty-five years this concept has gained attention through William Kahn's and seminal research and investigation on the impact of psychological safety on involvement in work. He described it as person's interest to express his emotions, feelings, mental and physical conditions without fear of negative outcomes. Research conducted by Edmondson in 1999 declared psychological safety as a group level construct that helps as well as play an important role in determining team environment. Since Edmondson's study, this concept has become crucial and number of studies on this topic increased dramatically (Frazier et al., 2017).

According to Newman et al. (2017) most of recent studies uses Edmondson's definition and there were over 80 studies related to this concept, till the end of 2015, most of which were empirical. Several researchers have identified the antecedents and outcomes of psychological safety by determining it on individual level, group level and organizational level. Out of 80 studies, 29 studies have measured psychological safety at individual level, 42 were measured at team level and only two were measure organizational level. For example, there is growing evidence that support the relationship between leader's behavior and psychologically safety including leadership support (Madjar & Ortiz-Walters, 2009) and leader's trustworthiness (May et al., 2004). Several organizational concepts are considered as important antecedents of psychological safety likewise overall perception of the employees and workers about organizational support (Carmeli & Zisu, 2009), access of employee's to mentoring (Chen et al., 2014) and practicing diversity (Singh et al., 2018). In return, psychological safety affects many organizational outcomes like learning behavior (Sanner & Bunderson, 2013), innovation

and creativity (Choo, Linderman, & Schroeder, 2007; Carmeli, 2011; Kark & Carmeli, 2009), organizational commitment and work engagement (Gu, Wang, & Wang, 2013).

In some recent studies, researchers determine the impact of psychological safety on dual outcomes and results that psychological safety can only partially influence the risk-taking behaviors. Moreover, they also believe that a negative impact may operate in parallel to the positive outcomes. For example, previously it was considered that psychologic safe environment has positive impact on group learning behavior as it reduces the fear of failure. However, they also believe that the concept may have negative impact on employee's overall performance by eliminating work motivation (Deng et al., 2017). A recent study described the influence of psychological safety on both positive and negative outcomes. Researchers concluded that psychosocial safety climate enhance the work engagement and commitment through need satisfaction, while in the same way can influence the negative outcomes like burnout and work family conflicts through need thwarting (Huyghebaert et al., 2018).

Even with the various number of studies regarding impact of Psychological Safety, only very few have figure out its effect on teams and groups working on software development industry (Lenberg & Feldt, 2018). For example, Faraj and Yan (2009) indicated that boundary conditions have positive impact on overall team performance and psychological safety. Whereas, in comparison to that resource scarcity and task uncertainty have moderating impact in software development. In one of the studies, Safdar, Badir, & Afsar, (2017) administered survey from 1345 software engineers and generated the result that individuals that have high level of Psychological Safety always take guidance with coworkers in order to opt source of knowledge. Moreover, Diegmann and Rosenkranz (2017) proposed a research model design and develop to investigate the impact of team diverse nature, psychological safety, and social agile procedures and practices on team resilience and team performance in different software development.

2.3. Job Resources as antecedent of Psychological Safety

Job Resources is the emergent phenomenon in contemporary world that reflects an environment where autonomy of expression is regarded as a key ingredient (Frese, 2003). Psychological safety is explained based on three levels named as individual, group and organization (Tajammal, 2017). Whereas, Edmondson (1999) defined psychological safety as an important inner personal resource that evolve due to the presence of supportive context (Edmondson, 1999; Singh, Winkel & Selvarajan, 2013).

Various factors including job resources are identified, that ensure high psychological safety in an organization (Singh, Shaffer & Selvarajan, 2018; Singh, 2017; Ling, Duan & Zhu, 2010). Within the organizational context, three job resources are identified that may facilitative to develop psychological safety: organizational supportive practices, coworker support and supervisory support. Organizational supportive practices are defined by the writers as general beliefs regarding how much the organization value their contribution and show care about their well-being (Robert Eisenberger, 2002). In the same manner, extent to which employee' supervisors cares for their well-being and value their contributions are known as Supervisor Support (Anders Dysvik, 2010). When Coworker are supportive and concerned about fellow well-being feelings then this is regarded as Coworker Support (Ariani, 2002).

In researches various leadership constructs have been examined as predecessors of psychological safety like ethical, transformational and servant leadership (Walumbwa & Shaubroeck, 2009; Detert & Burris, 2007; Schaubroeck e al., 2011), trust on supervisors (Madjar & Ortiz-Walters, 2009), leader-member exchange (Coombe, 2010). In the same way, many variables related to interpersonal relationships with coworkers or peers have been associated with psychological safety like peer's support (Schepers et al., 2008), trust in coworkers (Zhang et al., 2010) and team caring (Bstieler & Hemmert, 2010). Some researchers also considered co-worker support as social support to individuals like feeling psychological safety helped the employees to get assistance from their peers and their good relations with peers will enhance the degree of psychological safety among team (Schulte, Cohen, & Klein, 2012). Similarly, some organizational level variables like trust in organization (Carmeli & Zisu, 2009) and organizational support (Tucker, 2007) have been positively associated to psychological safety.

Psychological safety literature shows the relationship between supportive job resources and psychological safety among employees in various countries and in various industries having individualistic culture (Edmondson & Lei, 2014), but being a collectivistic society, no literature has been present on Pakistani software industry. However, in Pakistan's software industry not much work has been done to elaborate the role of Psychological safety and supportive practices. The purpose of this study is to divulge the influence of supportive job resources on psychological safety in software houses of Pakistan.

H1: Job resources are positively related to psychological safety.

2.4. Resource Investment

Resource investment is one of the principles of Conservation of Resource theory which states that people invest job resources whether in physical or non-physical form to shield themselves and their work activities against loss, or to recuperate from losses and lastly to gain further resources (Hobfoll, 2001a). In other words, people having resources mostly invest those resources. It is a multidimensional process that is driven by many psychological factors and may be treated as method to obtain and spend resources (Halbesleben, Neveu, Paustian-Underdahl & Westman, 2014).

2.4.1. Knowledge Sharing

For instance, Knowledge sharing is valuable resource invested by employees and an interactive communication process (Kessel, Kratzer & Schultz, 2012) with intent to contribute in application of knowledge, creativity and in turn for gaining competitive edge for the company (Jackson, Chuang, Harden, Jiang, & Joseph, 2006), which in turn is also a vital resource that can equip the organization to sustain in dynamic economy by achieving competitive edge (Foss & Pedersen, 2002). Organizations must consider the ways to which knowledge can be transfer to new job incumbents from expert employees (Hinds, Patterson, & Pfeffer, 2001) and emphasize to exploit knowledge- based resources within the organization between employees, in a team or across teams. (Damodaran & Olphert, 2000; Cabrera & Cabrera, 2005).

2.4.2. Feedback Provision

Employees can also invest their resources by providing honest feedback to their colleagues and through feedback provision employees can derive their own learning and development to improve outcomes (Levy, 2018). Feedback consists of information related to how well an employee is meeting the performance and non-performance aims and goals and how others assessed these goals (Geister, Konradt, & Hertel, 2006). Moreover, Feedback is regarded as an information that is made available to employees in their work environment, whereas feedback provisions enable the employees to indicate that whether their behavior is reflected as suitable by others and meeting the performance standards (Ashford, De Stobbeleir, & Nujella, 2016). Feedback provision in team members depends on the intensity of individual's interactions and other team-level variables like communication and individual perceptions (Barr & Conlon, 1994). Feedback provision in teams is a multifaceted process for which feedback should be considered as a tool that depends on other variables for its context and execution (Gabelica, Van den Bossche, Segers, 2012). According to expectancy-value theories of behavior, the target of feedback should be the modification of behavior as it is a valuable resource about one's behavior seeking for positive outcome (Carrico, 2009). Sometimes

feedback provision behaves as an interface between individuals and the social environment to enhance their working (Harrison & Dossinger, 2017).

2.5. Psychological Safety and Resource investment

Various researches have also examined the relationship among Psychological Safety and outcomes such as knowledge sharing and feedback provisions (Carmeli, 2007). In another research, Siemsen, Roth**,** Balasubramanian & Anand (2009) found after examining the impact of Psychological Safety on knowledge sharing among coworkers in both service operations and manufacturing that it can be regarded that Psychological Safety is a key antecedent of knowledge sharing. Moreover, literature has also established the fact that it is Psychological Safety that reduces interpersonal fear and promotes risk-taking behaviors, such as knowledge sharing, giving feedback, brining innovation and raising voice (Edmondson, 2004). Further, various other studies regard that Psychological Safety is linked to greater knowledge sharing at individual and team level among various team members (Mu & Gnyawali, 2003; Xu & Yang, 2010; Zhang, et al., 2010). Researches also suggest that when you provide Psychologically Safe environment, it enables teams and organizations to perform and helps to explain why employees share knowledge (Edmondson & Lei, 2014).

In a psychologically safe environment, employees can effectively and efficiently engage in task-related behavior and have more confidence about their abilities and skills (Singh et al., 2013). Psychological safety enhances members' willingness to share their knowledge and skills, thus low Psychological Safety results in employees holding back unique ideas, information and point of views and do not indicate the deficiencies, admit their mistakes or bring up their doubts (Edmondson, 1999). The feedback provision is exchange of information involves both performances expected, and performance exhibited among employees. Research indicated that giving feedback is one of the best ways to help employees so that they can thrive. Certainly, more studies highlight likewise Tynan (2005) Individuals who are working in high psychologically Safe environment were more likely to raise civilized disagreement, give honest feedback and indicate loopholes to their peers and supervisors. People who perform high give more positive feedback to their fellow employees. Moreover, near six times more positive feedback has been provided by high performing teams than any average team. While low performing teams normally shares negative feedback. If we compare them with average team. High psychological safe environment allows employees to make errors, as for solution and get continues feedback to correct them and this allows them to learn more (Soares, 2015). In conclusion, it can be regarded that psychological safety is a prominent personal resource that

strengthens the phenomena's like Knowledge Sharing, Feedback Provision, Creativity and better Team Performance. Hence, literature found on resource investments by employees in the form of knowledge sharing and feedback provision indicated that in software industry these factors are insufficient. Based on above assumption, analyst found there is still less literary evidence exist in Pakistan to find relationship between psychological safety and individual resource investment. Thus, this study aims at figuring out the impact psychological safety on employees' practices of resource investment like feedback provision and knowledge sharing in software houses.

H2: Psychological Safety is positively related to resource investment.

2.6. Resource Depletion

There is a well-established and renowned concept in cognitive psychology, whose precedent can also be finding organizational psychology is resource depletion (Cacioppo & Gardner, 1999; Stein & Cropanzano, 2011). In progressively demanding environment of workplace, it has become vital for workers to spend personal resources to fulfil the job demands (Hobfoll, 1989). Employees must face the risk of physical and psychological strains in absence of enough chance to recover their depleted resources (Meijman & Mulder, 1998). Work place settings are constantly laden with emotions (Weiss & Cropanzano, 1996), therefore, employees must be able to regulate their emotions towards co-workers, subordinates, supervisors or even customers (Grandey, 2000). In the theory, the risk of resource loss, definite loss or incapable to gain resources after investment are considered as demands (Alarcon, 2011). These job demands can deplete and put one's resources into risk, and exposure to it for long time can cause emotional exhaustion, reduced personal accomplishments, cynicism (Hobfoll & Freedy, 1993) and increased strain by becoming as a vital component of burnout process (Hobfoll, 1989; Bakker & Demerouti, 2007).

Due to challenging and demanding environments of organizations, employees must be able to bring changes, engaged and highly productive (Griffin, Neal, & Parker, 2007). Need to adapt roles, physical/emotional demands and social structures highly induce the employees to put continuous efforts in jobs, think judgmentally and maintain their level of caution and energy (Whiteside & Barclay 2016). The increasing demands in contemporary work settings draw the attention towards worker's health by measuring destructive workplace behaviors (Whitman, et al., 2014) or the dark side existing in organizational behaviors (Griffin & O'Leary Kelly, 2004). Individuals must sustain an acceptable level of personal energetic resources for constant work involvement in order to in order to chase health-related goals (Schwarzer, 2008). Physical,

emotional and cognitive energies are depleted due to assigned duties and other work demands. In this situation, employees must activate their inadequate personal energies and assign them to work tasks by consuming self-control (LeNoble, 2016).

COR theory based on certain principles, first one state that Resource Depletion is more dangerous than gaining a missing resource (Vinokur & Schul, 2002). It can be exemplified in this manner that if an employee's loose certain perks and privileges than it is more harmful than getting an annual increment. Resource depletion has mostly been studied in organization behavior to theorized strain & stress (Halbeslenben & Buckely, 2004; Hobfoll, 2001a). Many researchers have found that resource depletion in employees can lead to strain in form of stress and depression (Kessler, Turner, & House, 1988), burnout (Shirom, 1989) and physiological outcomes (Devente, Van Amsterdam, Kamphuis, & Emmelkamp, 2003; Melamed, Shirom, Toker, Berliner, & Shapira, 2006). However, resource depletion also serves as a motivational component. For example, sometimes initial resource depletion saves a person from depicting such attitude that results in further resource depletion and that eventually have negative impact on well-being performance. For instance, an employee who is facing abusive supervision and feeling strain due to such behavior likely to avoid in giving any feedback, so that he may save himself from further abusive supervision (Whitman et al., 2014).

Typically, in the work settings, continued exhaustion leads to a psychological phenomenon called burnout and regarded as an important element of organizational research and employee betterment. Burnout is described as a pattern having three dimensions: emotional exhaustion, cynicism, and inefficacy (Maslach et al., 2001). Researchers have mostly focused on the dimension of emotional exhaustion due to the reliability in its association with organizational outcomes (Halbesleben & Bowler, 2007). Organizational demands and resources are important facets of COR theory (Hobfoll, 2001) and have been proved to be vital in the development of burnout.

A recent strategy to measure the resource depletion is to measure its outcome like emotional exhaustion as an indicator of variation in resources (Halbesleben et al., 2014). Constant wok stress and complex job demands cause the emotional exhaustion among employees in the form of resource depletion (Shirom, 2003), as a result, employees assume self- protective position to conserve the outstanding resources and to prevent future loss (Janssen et al., 2010). Some researchers have shown direct evidence for resource loss and depletion in the form of emotional fatigue (Hagger et al., 2010; Webb & Sheeran, 2003). Resource depletion can be regarded as emotional fatigue: an ongoing state of emotional and

physical depletion due to certain jobs requirements and constant disturbances (Wright & Cropanzano, 1998). Further, constant emotional stress can be regarded as feelings of an individual when they are not being able to add more potential in their job (Maslach & Goldberg, 1998; Maslach et al., 2001; Alarcon, 2011). Emotional exhaustion normally depletes work relevant motivational and emotional resources (Halbesleben et al., 2013). Therefore, it is suggested that employees who perceive emotional exhaustion experiences resource depletion.

2.7. Psychological Safety and Resource Depletion

Resource depletion is regarded as state of energy depletion which triggers physical, emotional and cognitive exhaustion due to acute exposure to organizational demands (Shirom, 2006). Resource depletion as the state of emotional exhaustion occurs when the resources, we need to control our behavior have been drained and this can have several consequences for individual, organization, and the people around (Bakker & Demerouti, 2007). Shirom (1989) maintained that psychological depletion characterizes emotional exhaustion.

A study found that psychological safety climate and emotional exhaustion are negatively related (Zadow et al., 2017). As workers face various sort of complex demand and work load, they likely to get support of such mentors who guide them in coping with such demands (Gillet et al., 2015). However, this situation may negatively affect employee psychological health and increase burnout as employees must spend much of their personal resources to cop up with these demanding realities (Demerouti et al., 2017). Traditionally, very few studies test the impact of low Psychological Safety on depletion of resources. Thus, present study also aims at investigating the negative impact of psychological safety on resource depletion in Pakistan's Software houses and hypothesize;

H3: Psychological Safety is negatively related to resource depletion.

2.8. Positive Work Outcomes

In literature, creativity and team performance are widely used as dimensions of positive work outcomes caused by the phenomenon of psychological safety (Kessel et al., 2012; Ortega et al., 2014).

2.8.1. Creativity

Organizations are thriving to create a mark that helps them sustain and create their competitive advantage in today's dynamic global economy. Thus organizations, are primarily investing in establishing mechanisms to involve employees at every level that can lead to generation of newer and novel ideas (Palanski & Vogelgesang, 2011). This has triggered

researchers and practitioners to investigate factors that enhance team performance and strengthen creativity. Creativity is an important tool for the success and survival of business enterprise that conduct its operational activities in highly dynamic and demanding setting (Shalley et al., 2004; Zhou & Shalley, 2008). Creativity is frequently considered as the positive outcome of a process and may defined as the invention of unique ideas related to products or processes (Shalley & Gilson, 2004). Creativity is also vital for the firm's performance and its endurance (Nystrom, 1990).

According to Amabile (1988), creativity may be treated as the set of individual actions that not only enhance the individual aptitude but also the social interactions. Many innovation and creativity literatures (May et al., 2004) highlighted the vital role of psychological safe environment (Kahn, 1990) for boosting the creativity and team performance. Zhang & Bartol (2010) found that creative process can be enhanced through psychological empowerment which is a set of elements known as task assessments including competence, self-determination and meaning (Spreitzer, 1995). Similary, Kark and Carmeli (2009) found the positive relation between employee's creative work environment and psychological safety. An organizational study conducted in 47 midsize German companies indicate that psychological safety is associated with innovativeness (Baer & Frese, 2013).

2.8.2. Team Performance

Psychological safety as an emerging state play a significant in enhancing team performance, although its results are manifested through its sub factors and processes (Ilgen et al., 2005; Marks et al., 2001). Certain research also sheds light on how the interactions between team members also influence the performance of the team (Lopes, 2014). A study by Mu & Gnyawali (2003) regards task conflicts, social interaction, and psychological safety as predecessors of perceived group performance and synergistic knowledge development. Increased team performance of an organizations is the result of divergent thinking, risk taking and creativity. These factors are triggered when psychologically safe environment is ensured in an organization (Choo et al., 2007).

2.9. Impact of Resource Investment on Positive Work Outcomes

Individual investment of resources is important for positive outcomes like performance and creativity because such outcomes demands controlled dealing of emotion and thoughts and entail conscious efforts (Binnewies et al., 2009). Many research studies have shown that

knowledge sharing leads to positive outcomes like decreasing production cost, faster processing for new product, team performance (Cummings, 2004; Mesmer-Magnus & DeChurch, 2009), creativity (Lin, 2007d) and firm performance (Arthur & Huntley, 2005; Collins & Smith, 2006; Hansen, 2002). More precisely, team learning innovative things is the result of knowledge sharing (Wilson, Goodman & Cronin, 2007; van Woerkom & Sanders, 2010). McCall (2013) argues that feedback-driven processes encourages creativity. Evidence in the literary work shows a great link and correlation between organizational knowledge transfer and innovation. Pakistan's software industry success is mainly due to knowledge sharing and transfer.

Resource investment i.e. knowledge sharing & feedback provision and positive work outcomes increase creativity and employee efficiency and effectiveness in developing country like Pakistan. Therefore, we can hypothesize that;

H4: Resource investment is positively associated with positive work outcomes.

2.10. Negative Work Outcomes

2.10.1. Stress

Regaining lost resources are more harmful for an individual (Halbesleban et al., 2014). Resource loss provides an understanding about stress and strain (Halbesleben & Buckley, 2004; Hobfoll, 2001a). Major theme of CRO theory present three basic assumptions and reasons for the occurrence of stress, firstly it is based on the idea that when key resources are threatened with loss stress occur. Secondly, it also occurs when key resources are lost. Lastly when you fail to gain central or key resources despite our efforts then it also breeds stress (Hobfoll et al., 2018). COR theory further put an emphasis that chronic resource loss is damaging thing leading towards the lower employee well-being (Barling & Frone, 2017). Results of large number of empirical studies indicate that resource loss or depletion of an employee results in strain in the form of burnout. Many empirical studies have found that when individuals lose resources at work, they are more likely to experience strain in the form of burnout, and physiological outcomes (DeVente et al., 2003; Melamed et al., 2006). Researches have also investigated that diminished resources have positive impact on employee's burnout (Halbesleben, 2006) are employees become less likely to involve in raising voice (Ng & Feldman, 2012).

2.10.2. Conflict

Workgroup conflicts also occurred in organizations and are referred as disagreements and interpersonal tensions among workers (Jehn, 1995; Jehn & Mannix, 2001) A research study has found the negative association between psychological safety and relationship conflict and proved that members of project teams having psychological safety feel easy to share information and open to one another without risk to being ridiculed that can ultimately reduce the relationship conflict (Bradley et al., 2011). The lack of psychological safety discourages the constructive conflict and increase the counterproductive team situations because teams have low psychological safety are less confident to express them and feel more fear of negative interpersonal outcomes (Wilkens & London, 2006). In this study Conflict will be measured by two dimensions i.e. task conflict and relation conflict (Jehn, 1995). Further, evaluation of conflicts occurs in an organization throw light on task conflicts, which results because of disagreement regarding conduct of operational activities. Task conflicts can also disrupt effectiveness and efficiency in groups that usually follow standard routines. Along with task conflict another important conflict that occurs in an organization is the relationship conflicts

generated because of psychological distress in group members which eventually increase the of member leaving the group.

2.11. Impact of Resource Depletion on Negative Work Outcomes

Positive work outcomes demand-controlled dealing of emotion and thoughts and entail conscious efforts (Binnewies et al., 2009). However, the personal energetic resources needed for such processes are limited and can be drained throughout the day (Muraven & Baumeister, 2000). Each day, individuals engage in activities at work that require the investment of these personal resources. There are limited physical, emotional, and cognitive resources that can be invested (Baumeister, Vohs, & Tice, 2007), and individuals experience strains when these resources are threatened (Sonnentag & Frese, 2003).

A research has demonstrated that effortful control of emotions, thoughts, and behavior leads to exhaustion and negative job-related outcomes (Trougakos et al., 2015). It is also more obvious that to cope up with highly cognitive work demands, employees have limited energy, so their mental resources can deplete causing burnout (Nahrgang et al., 2011).

A research study has been found to be positively relate the work load and role ambiguity with job strain (Hansez & Chmiel, 2010). Stress occurs due to resource depletion (Hobfoll, 1989; Hobfoll, 2011). Many Empirical studies have found the outcomes of resource depletion (Baumeister et al., 2007) and its significant impact on interpersonal outcomes like work-family conflicts (Karatepe & Tekinkus, 2006), aggression (Finkel et al., 2009), prosocial behaviors (Fennis, 2011), turnover intensions (Karatepe, 2015) and workplace deviance (Christian & Ellis, 2011). Considering the outcomes of previous studies, the current study hypothesized that:
H5: Resource Depletion is positively associated with Negative Work Outcomes.

2.12. Mediating role of Psychological Safety between Job Resources and Resource Investment

Research studies also indicate that there is a mediating relationship of psychological safety between supportive job resources and employee's resource mechanisms. For instance, it is psychologically safe environment that is considered as key cognitive sate that allows learning processes occurs and contribute improved and better work outcomes at various level of analysis (Edmondson, 1999). Moreover, it was Edmondson, who initially figure out the mediating relationship between psychological safety, supportive leadership and learning outcomes. He considered psychological safety as a mediator between supportive leadership and learning outcomes. Regarding this it is claimed that co-worker support, supervisor support, and

organizational support plays an important role to influence any outcome. However, these factors in between need an intervening mechanism in the form of psychological safety to influence any outcome (Singh, 2017). Likewise, Madjara & Ortiz-Walters (2009) argue that if employees having a trust in supervisor than this create a psychologically safe environment, which in turn stimulate hardworking and creative.

Normally it is regarded through well establish researches that when at individual level we reward co-worker relationships, its influence and create an impact on individual learning and engagement through the mediating mechanism of Psychological Safety (Carmeli et al., 2009; May et al., 2004). Similarly, researches also indicate that at team level interactions among team members is the sole key driver of psychological safety and its outcomes (Roberto, 2002). Lastly, at organizational level, Carmeli (2007) found that the strength of social networks between members of the organization was positively related to their capacity to learn and get knowledge from failure through the establishment of psychological safety. Research has also figure out that employee perception of access to mentoring, support provided by organization and supportive climate fosters or enhance work outcomes with the help of mediating mechanism of psychological safety. Based on prior studies investigation, modern investigation also finds the impact of job resource on resource investment the current study focuses on to determine the impact of job resources on resource investment through the mediation of psychological safety among employees working in the software houses of Pakistan, therefore, it is hypothesized that;

H6: Psychological Safety acts as a mediator between the positive relation of Job Resources and Resource Investment.

2.13. Mediating role of Psychological Safety between Job Resources and Resource Depletion

In the literature (in 2.3), the positive relation between job resources and psychological safety has been widely accepted which means that in case of inadequate job resources provided in the organization, psychological safety couldn't develop among employees which ultimately leads to deplete the employees' resources (Newman et al., 2017). The continuing exposure to low resources and high demands erodes other resources like which involve perceived efficacy and energy identification, this also regraded as burnout process (Hobfoll & Freedy, 1993). Emotional Exhaustion can be best described as the dimension of burnout (Maslach et al., 2001). Due to having inadequate resources, workers face many complex demands (Gillet et al., 2015) which can affect workers' psychological health. Considering the consequences of previous

studies, it is expected that absence of psychological safety can raise the psychological work demands for employee and can also have negative relation with resource depletion. Hence, it is hypothesized that;

H7: Psychological Safety acts as a mediator between the negative relation of job resources and resource depletion.

2.14. Mediating role of Resource Investment between Psychological Safety and Positive Work Outcomes

In 2013, a study conducted by Gong, Kim, Lee and Zhu develop the relationship between knowledge exchange creativity and psychological safety. They claim that employees seek to exchange information and knowledge with their fellow co-workers when psychological safe environment is provided. This in turn allow them to perform their task creatively. It can also be thus concluded that creative team performance occurred when psychological safe environment is provided. However, here certain mediating factors that mediate this process including information and know-how which are also considered as type of knowledge plays an equally important role (Kessel, Kratzer & Schultz 2012). Another theory, known as team adoption theory suggests that a crucial behavior resource investment is enable by psychological safety that in result enhance creativity in performance, encourage team members to have their say in the teams, increase communication between team members, promote learning by encouraging them to discuss errors and motivate them to seek knowledge (Burke et al., 2006). In the literature, not any other study has declared that resource investment plays a role of mediator between psychological safety and positive work outcomes at induvial and team level in the software houses of Pakistan. Therefore, current thesis intends to study the effect of feedback provision, knowledge sharing or the indirect relation of psychological safety with team performance and creativity in software houses of Pakistan.

H8: Resource investment as a mediator between the positive relation of psychological safety and positive work outcomes.

2.15. Mediating role of Resource Depletion between Psychological Safety and Negative Work Outcomes

Huyghebaert et al. (2018) studied the psychological mechanism that explain the effects of psychosocial work environment on positive work outcomes (work engagement and affective commitment to organization) and negative work outcomes (burnout & work-family conflict), further, indicated that psychosocial safe climate has negative association with burnout

(exhaustion) and work-family conflict through an underlying mechanism of need thwarting (resource depletion). Idris, Dollard, Coward & Dormann (2012) also studied the effects of psychological safety climate on burnout. Although the association between psychological safety and negative work outcomes (stress and conflict) through resource depletion has not been investigated, but through above mentioned literature, it appears that these variables could be related. In certain cases, according to (Hagger, Wood, Stiff & Chatzisarantis, 2010) depletion play the role of mediator between psychological safety and negative work outcomes and behavior. For example, even if it consists psychologically safe environment and with that if resources are depleting then it results in negative work outcome. Moreover, depletion of psychological capital adds to team members' distress exposure when confronted with abusive supervision (Li et al., 2016). Disruption of cognitive resources mediate poor performance and interpersonal conflict (Porath and Erez, 2007). Workgroup conflict is detrimental to the employees as it regulates negative emotions but can be tackled through sustainable emotional and cognitive exertion that reduces an employee's stock of cognitive control resources (Liu et al., 2015; Sliter, Pui, Sliter & Jex, 2012). Opposite to that there are lack of empirical studies that investigate the role of resource reduction as mediator between the absence of psychological safety and negative work outcomes. Therefore, current study proposed that whether low or no psychological safety can cause individual stress and conflict in teams due to the resource depletion or not in the employees working in software houses of Pakistan.

H9: Resource depletion act as a mediator between the negative relation of psychological safety and negative work outcomes.

2.16. Mediating Role of Psychological Safety and Resource Investment between Job Resources and Positive Work Outcomes

To date, scholars have inclined to undertake that the effect of psychological safety on team performance is indirect, articulated through innovation and learning impacts. A study clearly indicate that team performance is indirectly depends on job resources, however, the mediating factor in this regard is resource investment in the form of learning behavior and through the provision of psychologically safe environment (Ortega, Sánchez-Manzanares, Gil & Rico, 2010). Thus, research indicate that two elements i.e. resource investment and psychological safety play crucial role in determining the team performance (Van der Vegt, Bunderson & Kuipers, 2010; Wong, Tjosvold & Lu, 2010). A recent study conducted on teams revealed the

significant relationship between un supportive job resource (leader humility) and Work outcome (team creativity), while regarding team psychological safety and team information sharing as mediators (Hu, Erdogan, Jiang, Bauer & Liu, 2018).

Empirically, not any study has found to investigate the indirect impact of supportive job resources on positive work outcomes through the double mediation role of psychological safety and resource investment. Therefore, current study intends to explore the positive indirect impact of job resources on creativity & team performance as positive work outcomes through the presence of psychological safety, knowledge sharing and feedback provision of employees working in the software houses of Pakistan.

H10: Psychological Safety and Resource investment mediates the positive relation between job resources and positive work outcomes.

2.17. Mediating Role of Psychological Safety and Resource Depletion between Job Resources and Negative Work Outcomes

Many Meta-analytical studies support the negative impact of job resources on resource depletion through diminishing psychological safety and ultimately lead to stress and strain. These studies believe that social support is negative correlated to stress, exhaustion, burnout, and anxiety (Halbesleben, 2006). Especially, job resources and burnout are negatively correlated as many job resources are helpful for employees to cope up with work demand and protect them against resource depletion in the form of strain (Bakker and Demerouti, 2007; Crawford et al., 2010; Nahrgang et al., 2011). Thus, hardly there is any study that has found outcomes through the double mediation role of psychological safety and resource depletion. Therefore, current study intends to explore the negative indirect impact of job resources on stress and team conflict as negative work outcomes through the absence of psychological safety and existence of resource depletion among employees working in the software houses of Pakistan.

H11: Psychological Safety and Resource Depletion mediates the negative relation between job resources and negative work outcomes.

2.18. Supporting Theory

2.18.1 Conservation of Resource Theory

Since last thirty years, Conservation of Resource theory has become most well-known and widely accepted theory in the field of organization behavior. The major advantage of this theory is its capacity to build a variety of precise hypotheses that are much wider in scope than

those presented by other theories that emphasis on only dominant resource, such as control, or that express about generic resources (Hobfoll et al., 2018).

According to this theory there are numerous types of resources including, objects, energies or conditions, and personal characteristics (Hobfoll, 1998). These resources also varied from individual to individual, which means every employee have certain unique set of characteristics. Theory put emphasis that that employees or individuals try to gain, sustain and protect the valuable resources. These valuable resources have wide variety of range including energies in form of time and knowledge, objects likewise housing and clothing, self-esteem, self-efficacy, and conditions such as (job security, and social support). Employees retain these resources in order to avoid negative happenings, situations and suffering (Hobfoll, 2001).

Resources are regarded as objects, condition and personal characteristic (Hobfoll, 1998). These valuables resources vary from individual to individual and depends on their personal experiences and situations. Furthermore, first principle of COR theory is "Resource Depletion" which put emphasis that resource loss is more dangerous and harmful than gain. Loss is more powerful in terms of magnitude and time. Second principle of COR theory is "Resource Investment" which asserts that people must invest their resources with intent to save them from resource depletion and to obtain further resources. In other words, this involves the direct exchange of resources, such as developing and employees' aptitude of employees through training in order to cope up high work demands and to get leverage.

Like the principles of COR theory, it also recommends several key corollaries for complex predictions and strategies to offset the stressful conditions at individual or organization level (Hobfoll et al., 2018). 1st Corollary states that owning and deficiency of resources are vital to susceptibility and flexibility. Individuals or organizations possessing greater resources are more able to gain resources and less exposed to resource depletion. 2nd Corollary states that resource loss has an escalation nature which means every time the stress occurs resources become more less. No other stress theory offers such thorough predictions that are both testable and valued in their application. 3rd Corollary asserts that resource gain also has an escalation nature but sluggish than resource loss. Individuals and organizations must build engagement to offset loss. One caution to this principle is that motivation to obtain resource gain spiral will enhance when more losses occur and under higher stress conditions.

Few examples of work demands include workload level, role conflict, role ambiguity and stressful events. Employees normally try to gather those resources necessary to meet

current work demands and protect themselves from any further depletion (Wright & Cropanzano, 1998). Employees only feel stress, emotional exhaustion and prolonged strain when individuals no longer have enough emotional resources to handle such stressful situations (Hobfoll, 1989; Lee & Ashforth, 1996). Thus, COR theory concludes that workers who lack these said resources will feel stress which results in further resource depletion.

2.19. Integration of Theory and Existing Conceptual Framework

2.19.1. Conservation of Resource Theory and Conceptual framework

The basic principle of COR theory is that individuals try to gather resources so that they can save further resource depletion. It further elaborates the development of psychological safety and how team or individual investment and depletion of resources may theorize psychological safety and work outcome relation (Newman et al., 2017).

While taking in consideration two principles and assumptions of COR theory i.e. resource investment and resource depletion, existing study assumes dual psychological processes (i.e. motivational process and health impairment process) due to which psychological safety evolved and determine work outcomes. The motivational process is expected to connect job resources with organizational outcomes through resource investment and high psychological safety while health impairment processes posits that job designs with inadequate job resources can exhaust the individual's psychological safety and leading towards depletion of resources and hence to stress and team conflict.

The present study mostly correlates with first and third corollary of Conservation of Resource Theory (Hobfoll, 2011), individuals having opportunity to approach the greater resources (supportive job resources found in work setting laden with psychological safety) are less susceptible to the loss or depletion of resources and more able to arrange their resources for investment through utilizing their currently available resources. By gaining extra resources, individual get themselves in better position to cope up with work demands and achieve their work targets (Halbesleben et al., 2014) e.g. if employees are provided with adequate job resources, they will not feel psychologically safe to openly communicate their knowledge or share their creative thoughts with others and will perceive that their resource investment at work will not help them to obtain more resources (like appreciation/suggestions in form of feedback from peers) at workplace. This, in turn, deplete their personal resources causing exhaustion and likely to engender an environment where employees and team members will

experience negativities like conflicts and stress. Negative work outcomes like stress, emotional exhaustion and prolonged strain between members occurs, when individuals no longer have enough emotional resources to handle such stressful situations. Thus, COR theory concludes that workers who lack these said resources will feel stress which results as a consequence of resource depletion.

2.20. Conceptual Framework

A pictorial or descriptive form of fundamental parts of research to be conducted is known as conceptual framework that clearly specifies the relation among core elements/variables of the research (Miles & Huberman, 1994). This is created to sightsee all the variables with its dimensions including dependent, independent and mediator variables, furthermore, to develop the hypotheses for empirical investigation through statistical analysis (Sekaran, 2003).

Based on COR theory, the existing research study created a model of psychological safety having dual paths in which a well-known positive mechanism run side by side with a negative mechanism. According to first principle of COR theory (i.e. Resource Investment), individuals having opportunity to approach the greater resources (supportive job resources found in work setting laden with psychological safety) are more able to arrange their resources for investment for achieving positive work outcomes. According to second principle of COR theory (i.e. Resource Depletion), employees having no access to resources (inadequate job resources and deprived psychological safety) are susceptible to the loss or depletion of resources that in results in negative work outcomes like exhaustion, stress and conflicts. Further 2nd Corollary of COR theory suggests that Negative work outcomes like stress and prolonged strain between members occurs, when individuals no longer have enough emotional resource (i.e. psychological safety) to handle such stressful situations. Thus, COR theory concludes that workers who lack these said resources will feel stress which results as a consequence of resource depletion.

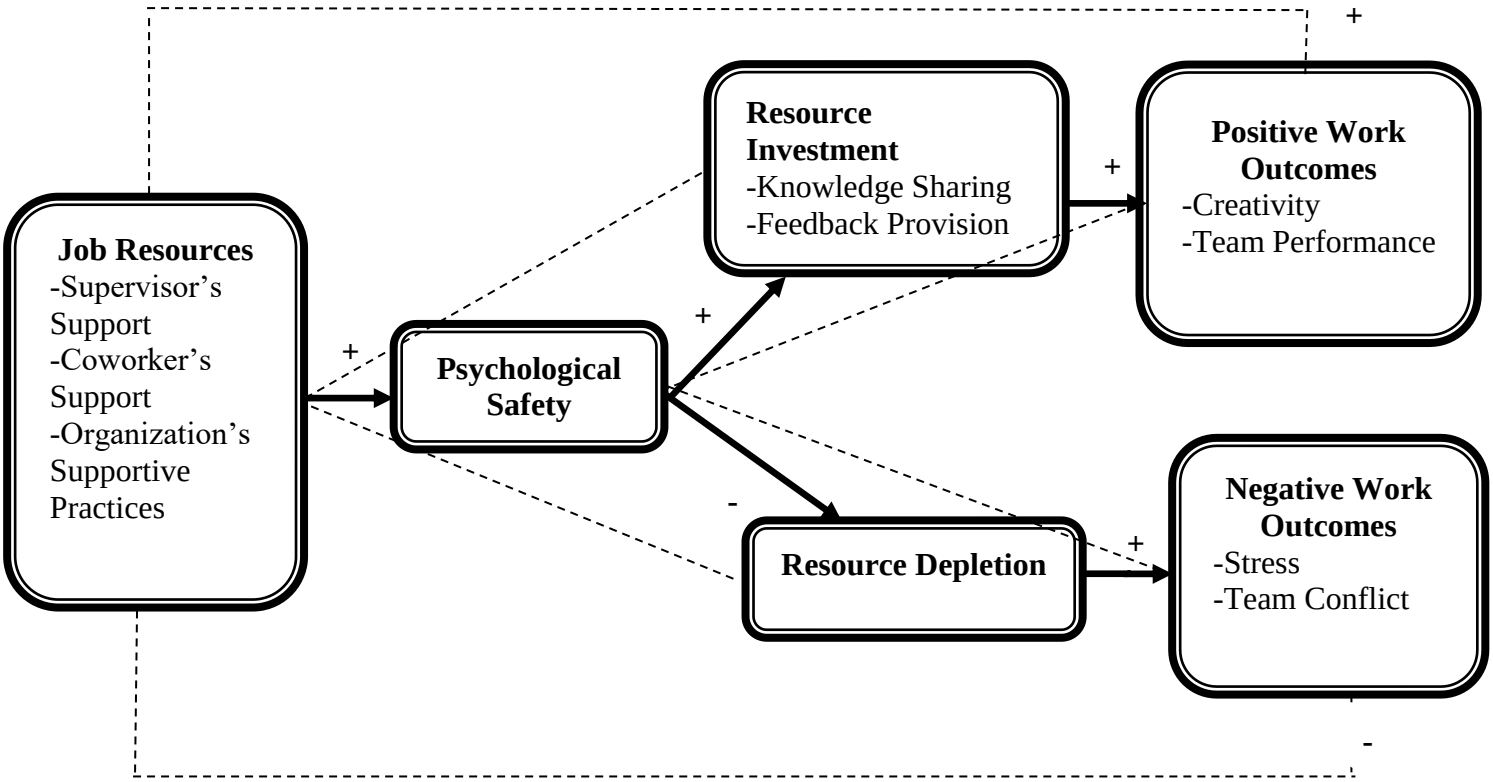
However, it is proposed that a comfortable group context with job resources is likely to develop two different mechanisms (i.e. motivational and health impairment mechanisms) to influence the work outcomes. The framework highlights the process through which psychological safety is developed and create impact on positive and negative work outcomes through resource investment and depletion. Supportive job resources (Independent Variable) including supervisor support, coworkers support and organizational supportive practices are the factors that foster and develop psychological safety which is mediator (M1) to further cause resource investment or resource depletion. Resource investment is another mediator (M2) which links the job resources to positive work outcome through psychological safety. Similarly, Resource depletion is also another mediator (M3) that links job resources to negative work outcome through psychological safety. Combination of two mediators on dual paths (M1+M2 & M1+M3) links job resources to their respective work outcomes. It means

psychological safety (mediator) requires another mediator (resource investment) to influence positive work outcomes and to influence negative work outcomes psychological safety (mediator) requires another mediator of resource depletion.

More specifically, Psychological safety enables the employees to invest resources (through knowledge sharing and feedback provisions), which results in positive work outcomes (Dependent Variable/DV1) i.e. creativity and performance at team-level. Psychological safety also causes the employees' resources to deplete which leads to Negative work outcomes (Dependent Variable/DV2) like job stress and conflict.

FIGURE 2: Conceptual Framework: *Model used to examine psychological safety with its antecedents and dual pathway outcomes*

Note: Line shows direct relations while dotted line shows mediating or indirect relations



2.21. Hypotheses

Based on literature support, the study developed following hypotheses for the purpose of analysis.

H1: Job resources are positively related to psychological safety.

H2: Psychological Safety is positively related to resource investment.

H3: Psychological Safety is negatively related to resource depletion.

H4: Resource investments is positively associated with positive work outcomes.

H5: Resource Depletion is positively associated with negative work outcomes.

H6: Psychological Safety acts as a mediator between the positive relation of job resources and resource investment.

H7: Psychological Safety acts as a mediator between the negative relation of job resources and resource depletion.

H8: Resource investment as a mediator between the positive relation of psychological safety and positive work outcomes.

H9: Resource depletion act as a mediator between the negative relation of psychological safety and negative work outcomes.

H10: Psychological Safety and Resource investment mediates the positive relation between job resources and positive work outcomes.

H11: Psychological Safety and Resource Depletion mediates the negative relation between job resources and negative work outcomes.

2.22. Operational Definitions of Constructs

Job Resources: The resources provided at the workplace to its employees by peers, supervisor and organization are called as job resources and it may include:

- Supervisor support: This is defined as the employee's opinion about the extent to which their supervisor is helpful in getting the job done, protect their well-being and admire their contribution at work (Anders Dysvik, 2010).
- Co-worker support: This is defined as the extent to which individual feel their peers as concerned with their well-being, encouraging and supporting (Ariani, 2002).
- Organizational supportive practices: These are defined as the individuals' generic believes about the organization in admiring their performance and value their well-being (Robert Eisenberg, 2002).

Psychological Safety: A cognitive state of individuals when they consider their work environment enough free and open to voice ideas and raise their concerns without any threat of being mocked or ashamed.

Resource Investment: Resource investment is a process through which employees invest their personal resources to their jobs e.g. knowledge sharing & feedback provision.

- Knowledge sharing is a process in which employees discuss their explicit and tacit knowledge with each other to generate novel knowledge (van den Hoof et al., 2004).
- Feedback provision is defined as the exchange of information involves both ideas or contribution expected and exhibited contribution of each employee to one another.

Resource Depletion: A general condition of employees in which his energy depleted causing feelings of physical, mental and emotional exhaustion due to facing continuous work demands in organization or when they are not being able to add more potential in their job (Alarcon, 2011).

Positive Work Outcomes: It is an umbrella term used in this study to summarize a range of work outcomes including creativity and performance (Braybrook et al., 2015).

- Creativity: In words of Carl Rodgers, it is the appearance of individual's uniqueness in creation of novel ideas or inventions.
- Team Performance: This is defined as how well a team meet its work goals timely in efficient and effective manners as per the expectation of its own members (Ancona & Caldwell, 1992).

Negative Work Outcomes: Refers to the factors that caused due to exhaustion of employee's resources e.g. stress and conflict among team members.

- Stress: A condition of physiological and psychological disparity caused by the discrepancies in work demands and individual's motivations or abilities to fulfill those demands.
- Conflict: This refers to interpersonal tensions and incompatibilities regarding interests, beliefs, views held by any team member (Bradley et al., 2011; Jehn, 1995).

CHAPTER 3

REASEARCH DESIGN AND METHODOLOGY

3.1. Overview

Developing a pertinent and suitable research methodology is vital for the implementation of data analysis. Methodology of research is the systematic way by which researchers describe, explain and predict their study to conduct (Rajasekar et al., 2015). This part of study is composed to disclose the awareness about the approaches and methodologies related to the research design of study. This will provide necessary evaluations to test the antecedents of psychological safety and its effects on multiple outcomes. The theoretical model is reasoned with hypotheses in this review. Besides this, software engineers from software houses of Pakistan (enlisted in Pakistan Software Export Board) were assessed to empirically test the model through a quantitative study. This chapter will discuss research design, population, sampling techniques, data collection methods used for statistical investigation.

3.2. Research Design

The process of research design helps the researcher to meet the research objectives and answer the research questions. Research design reveals data about sample size, data collection approaches, framework and sampling methods for research analysis (Saunders, 2011; Sreejesh, 2014). The current study follows the deductive approach to test the hypotheses generally explaining theory that starts with topic and end with supporting arguments relevant to theory. If the study in non-contrived and non-experimental then it would be explanatory in nature (Sekaran & Bougie, 2010). This study is also quantitative and used questionnaire as tool to analyze data and test the hypotheses. Seven-point Likert scale was used ranging from strongly disagree to strongly agree where 1=Strongly disagree (SDA), 2=Disagree (DA), 3=Partially Disagree (PDA) 4=Neutral(N), 5=Partially Agree (PA), 6=Agree (A) 7=Strongly Agree (SA).

The items of questionnaire were adapted through several studies and for survey purpose such instrument was floated to software houses located in IT parks of twin cities i.e. Rawalpindi and Islamabad. The study was cross-sectional as the data for this research was collected throughout the study period at one point of time. After collecting the data, the reliability and validity of the study questionnaire were checked to support our proposed hypotheses. The detail of the study instrument is given in the findings and results in detail.

3.3. Population of the Study

Software houses in Pakistan are listed on PSEB (Pakistan Software House Export Board) based on yearly sales volume. P@SHA (Pakistan Software Houses Association) ranks all registered software houses. Today P@SHA have more than 350 active members. The basic aim of these organizations is to smooth IT industry growth to increase foreign direct investments, technology distribution, human resource development, increased exports and employment. PSEB has established twelve (12) Software Technology Parks where about 80 public and private Information Technology/Information Technology Enabled Services companies are involved in software development and export services. Geographically, 8 Software Technology Parks are in Lahore, 5 in Islamabad/Rawalpindi and 1 in Karachi.

The population of the study comprised of employees in the Software Houses of Pakistan. According to P@SHA, 1800 IT firms employing 120,000 employees are working in different cities of Pakistan. Software houses of twin cities i.e. Islamabad and Rawalpindi were mainly the target of the study, because it was easy to access and time saving.

3.4. Sampling Technique

Purposive sampling was used as sampling technique, because all the employees working in the software houses may not be directly involved in software developing projects. Purposive sampling is useful for the random selection of units of study to be studied based on the judgement of researcher (Guarte & Barrios, 2006). Purposive sampling is used for data collection, which is a type of non-probability sampling, this sampling technique provided the relevant and most appropriate representatives of the population. Moreover, it is inexpensive, time saving, and subjects are readily available.

Based on the nature of study variables, the employee's involvement is necessary in software development teams. This criterion clearly depicts that selected employees should directly involved in the knowledge sharing and feedback practices for creative implementation of their knowledge and expertise. For this purpose, these particular employees need to feel safe for such risk taking behaviors. Therefore, employees involves in software development with minimum graduation degree and one-year experience in the related field have been selected.

3.5. Sample Size

In order to achieve the objective of the study of investigating psychological safety at individual and team level, distinct criteria will be used to identify the work teams for the sample. Therefore, 375 sample size was selected for conducting current research sample. According to the company directory of PSEB, out of 4877 registered software houses from the whole country, 251 are registered from Islamabad and 78 are registered from Rawalpindi. Total 329 software houses from Rawalpindi and Islamabad are registered with PSEB. According to a recent study, 500 software houses are registered in Islamabad and province of Punjab, employing 2500 employees (Iqbal & Asrar-ul-Haq, 2017). Almost 90 registered software houses with PSEB are operating in the designated five technology parks of twin cities and employing almost 3500 employees. On the basis of convenience, random 25 Software houses (5 from each Technology Park) were opted as sampling frame (Table 3.1 in Annexure).

According to Krejcie & Morgan (1970), for the population size of 3500, 346 should be the required sample size at 5.0% margin error. Sekran and Bougi (2010), suggested that research consisting of multiple variables must have sample ten times greater than the acceptable sample size of the sample. According to another criteria, sample size should be > 30 and < 500 can be acceptable (Field, 2005). Therefore, 375 sample size was selected for conducting current research sample. Three hundred and seventy-five (375) employees from 25 software firms (5 software houses form each technology park) were opted as sample size to respond the survey in order to get accurate responses.

3.6. Unit of Analysis

This study is focusing on middle level employees, because they are responsible for dictating the level of creativity to be exercised within the organization, therefore the analysis is done through employees doing jobs as software engineers/designers/developers/programmers in software houses of Islamabad/Rawalpindi.

3.7. Method of Data Collection

Quantitative data collection method by using structured questionnaire was used having closed ended questions. Through the literature review, questionnaire was adapted from various studies. Most of the items including in the questionnaire are aimed to measure respondent's attitude and perception, hence, Likert seven-point scale is considered as more reliable and suitable (Alreck and Settle, 1995; Miller, 1991). Before floating the questionnaire, the draft was primarily submitted to some research professionals and typical respondent to check its face and content validity. The instrument is meant to measure the key variables of the research using

a seven-point Likert-type rating scale, ranging from strongly disagree (SDA) to strongly agree (SA).

3.8. Instrument Design

The questionnaire included sixty-four items related to the six variables in focused model presented in Figure 2. Previously verified concepts were utilized to adapt items rather than develop new items (Table 3.2). The structure of questionnaire also had the demographics characteristics of respondents i.e. gender, age, education and experience. Find the questionnaire attached in Appendix. All items are presented in Table 3.3 in Appendix. The answers to all these items were measured using a seven-point Likert scale i.e. 1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘partially disagree’ 4 ‘neither agree nor disagree’, 5 ‘partially agree’, 6 ‘agree’ 7 ‘strongly agree’. Seven-point scale is selected based on its more reliability and optimality for measuring bipolar constructs (Krosnick & Fabrigar, 1997). According to these researchers, scale with more points enables the respondents to express their stance in comfortable and precise manner, which in turn, enables the researcher to make more understated discrepancies among the responses of various individuals on a topic or object.

Job resources (JR) was measured by using its three dimension’s scale i.e. Supervisor support (4-items), Co-worker support (3-items) and Organizational support (7-items). To estimate Psychological safety (PS), Edmondson’s seven items scale was used. This scale has been found to be reliable in different contextual settings and diverse samples (Newman et al., 2017). Resource Investment (RI) was measured by using its two dimension’s scale i.e. Feedback provision (8-items) and Knowledge Sharing (4-items). Positive work outcomes (PWO) were measured by using its two dimension’s scale i.e. Creativity (8-items) and Team performance (4-items). Resource Depletion (RD) was measured by using the scale of emotional exhaustion (5-items). Negative work outcomes (NWO) were measured by using its two dimension’s scale i.e. Stress (6-items) and Team conflict (8-items).

Table 3.2 *Instrument adaptation*

Variables	Dimensions	Items	Total Items	Sources
Job Resources	Supervisor Support	4		Smith et al. 2013
	Co-worker Support	3	14	Smith et al. 2013
	Organization Support	7		Keenan & Mostert 2013
Psychological Safety			7	Edmondson 1999
	Feedback Provision	8		Morrison 1993;
Resource			12	VandeWalle et al. 2000
Investment	Knowledge Sharing	4		Faraj and Sproull's 2000
Positive Work	Creativity	8		Carmeli &
Outcomes			12	Schaubroeck, 2007;
				Tierney et al. 1999
	Team Performance	4		Edmondson, 1999
Resource Depletion			5	Wharton, 1993;
				Schaufeli et al., 1996
Negative Work	Stress	6	14	Smith et al., 2013
Outcome	Team Conflict	8		Jehn 1995
Instrument overall items			64	

3.9. Instrument administration

To investigate the relationships of theoretical framework, employees in software houses particularly in Islamabad and Rawalpindi were contacted using paper questionnaire. Paper questionnaires were distributed at various software houses through personal visits as it is the effective method of instrument distribution (Craig & Douglas, 2000). To reduce the biasness of self- assessment, the anonymity of respondents was ensured and a brief description of study variables were added in cover page to enhance their level of understanding. With the consent of team lead, employees were approached and assured about the confidentiality of their response. The target area of this study was Islamabad and Rawalpindi. Therefore, data was collected from the 5 Software Technology Parks located in Rawalpindi and Islamabad. Among

five STPs 3 are in Islamabad and 2 are in Rawalpindi. Through personal visits, it is known that almost 15-20 software houses are working in each technology park.

In order to get accurate result or minimum margin error, minimum filled questionnaire will be approximately 170-200, as according to Levine & Stephan (2009), 375 questionnaires floated during active survey campaign. Depending upon the number of employees, 20 questionnaires were distributed to each target software house located in the 3 technology parks of Islamabad and 15 questionnaires were distributed to each software house located in the 2 technology parks of Rawalpindi. 358 out of 375 floated questionnaires were received (approx. 93% response rate). Eight responses were discarded because of missing values, so total 350 responses were used for data analysis resulting in a 90.90% response rate which is considered as highly acceptable by experts in data collection methodology (Hsieh, Pan, & Setiono, 2004; Roth & Bevier, 1998). It is characterized as a cross-sectional study as data will be collected from software houses at single point of time.

Table 3.4: *Break down of Questionnaires' Statistics*

Questionnaire Composition		
Description	Number	Percentage
Total Floated	375	100%
Returned	358	93.81%
Rejected	8	2.9%
Valid	350	90.90%

3.10. Statistical approach for data analysis and interpretation

Quantitative data has analyzed using the AMOS (Analysis of a Moment Structures) and Statistical Package for Social Scientists (SPSS) software to test the hypotheses. SPSS is chosen because it is very useful for performing the statistical tests which will be conducted in the study, such as regression and correlation. Regression analysis will be used because it shows the relationship between dependent and independent variables and correlation analysis shows the association between variables. AMOS is chosen because it is specially used for structural equation modeling, path analysis and confirmatory factor analysis.

Reliability and validity of instrument are analyzed for the accuracy of results. The Cronbach's alpha coefficient is used to determine consistency between the items of variable. Therefore, Cronbach alpha test was run by using SPSS version 21. The content validity of instruments is checked through research professionals and typical respondent, according to which, there is no problem of common variance. Convergent validity has been assessed by obtaining the value of average variance extracted (AVE) and for Divergent validity, the value of Maximum Share variance (MSV) has been assessed. For demographics descriptive Gender, age, qualification and experience of sample are used as demographic variables.

Before empirical investigation of hypotheses, all assumptions of regression analysis were checked to enquire the possibility of multicollinearity, auto-correlation, normal distribution, reliability and validity of data. For descriptive statistics, mean, median, standard deviation, minimum and maximum values along with frequency distribution are estimated. To examine the normality of data skewness and kurtosis has been tested. Simple and multiple regression analysis are used as inferential instruments to examine the hypotheses of research study (Sekaran & Bougie, 2013).

The research study consists of three types of hypotheses; direct, mediating and double mediating. Therefore, multiple mediation analysis (serial) was checked by using the method of bootstrapping in AMOS .

CHAPTER 4

ANALYSIS AND FINDINGS OF RESEARCH

4.1. Overview

This Chapter is divided into three stages i.e. descriptive analysis is explained in first stage, Confirmatory Factor Analysis (CFA) is explained in second stage and hypotheses are tested in third stage.

4.2. Missing Value Identification and Entry of Data

Data was analyzed to overcome the possibility of data entry error and for handling the missing values in data set. Data screening is done through SPSS for missing value analysis with respect to each item of each variable. Total 375 questionnaires were floated in the software houses at software technology parks of Islamabad and Rawalpindi, out of which 358 were received back. Eight responses were discarded because of missing values in some items, so total 350 responses were used for data analysis as final sample. The response rate was approximately 94 % because of self-administration. During survey, some targeted respondents refused to fill the questionnaire due to time constraints. Missing values in data were assessed and removed through direct observation of the questionnaires. No questionnaire containing missing values was entered in the SPSS data sheet. Therefore, data in the current study is free of missing values.

4.3. Demographic Analysis

Demographic analysis of respondents is also done in stage one with the help of filled questionnaires from software houses of Rawalpindi/Islamabad. Descriptive statistics has been conducted to measure the demographics of the respondents. Gender, age, qualification and experience of sample are used as demographic variables with the help of descriptive analysis.

Below mentioned tables show the analysis of demographics of study. Table 4.1, Table 4.2, Table 4.3 and Table 4.4 show an excessive compact of difference in respondents by means of gender, age, qualification and their experience.

Table 4.1: Demographic Descriptive with Respect to Gender

Demographic Descriptive					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	225	64.3	64.3	64.3
	Female	125	35.7	35.7	100.0
	Total	350	100.0	100.0	

In the above table, 64.3 % respondents are male while only 35.7 % respondents are females. The female ratio in the sample is much lower that the male representatives due to obstacles in data collection from females in Pakistan's male dominant society. However, the ratio is identical to the gender distribution in Pakistani software industry. This shows that software engineers, programmers, developing, designers are mostly male in the software houses of Pakistan.

Table 4.2: Demographic Descriptive with Respect to Age

Demographic Descriptive					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	81	23.1	23.1	29.2
	26-33	227	64.9	64.9	88.0
	34-41	42	12.0	12.0	100.0
	Total	350	100.0	100.0	

Table 4.2 shows that slightly over 10% of the respondents were above the age of 34 years, followed by the 64.9% in the age bracket of 26-33 years and 23.1% in the 18-25-year age group. The sample was skewed towards respondents having age over 25 years because this group holds middle level positions in most of the organizations. The dominance of this age group also reflects that engineers working in the software houses of Pakistan are mostly young and have fresh talent to keep pace with advanced information technologies.

Table 4.3: Demographic Descriptive with Respect to Qualification

Demographic Descriptive					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Intermediate	4	1.1	1.1	1.1
	Graduation	242	69.1	69.1	70.3
	Masters and above	104	29.7	29.7	100.0
	Total	350	100.0	100.0	

Table 4.3 shows the demographic distribution with respect to respondent's education level. Only 1.1% i.e. 4 out of 350 were intermediate. 69.1% of respondents were graduated and this figure shows the largest contribution of fresh graduated students towards software industry of Pakistan. 29.7% of respondents are master or above. Hence literature also support that educational qualification is vital to attain the decent profession in a society in order to develop individuals in their career.

Table 4.4: Demographic Descriptive with Respect to Experience

Demographic Descriptive					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	206	58.9	58.9	58.9
	6-10	125	35.7	35.7	94.6
	11-15	19	5.4	5.4	100.0
	Total	350	100.0	100.0	

The above table provides information regarding job tenure of respondents. 58.9% of respondents have less than five years' experience. 35.7% have 6 to 10 years' experience. and only 5.4% have 10-15 years' experience. Therefore, it can be said that majority have 1-5 years' experience.

4.4. Reliability Analysis

Reliability of instrument is analyzed for the accuracy of results. Most common method of reliability test is the internal consistency test (Litwin & Fink, 1995). Reliability is defined as the extent to which items are correlated to measure the same concept. The Cronbach's alpha coefficient is the most effective way of determining consistency between the items of variable (Sekaran & Bougie, 2010). Therefore, Cronbach alpha test was run by using SPSS version 21 for windows. Co-efficient of reliability varies from 0 to 1, the higher the coefficient higher will be the reliability while the acceptable value is 0.5 or more (i.e. $\alpha \geq 0.5$). After running the data, it has been found that all items possess high reliability values ranging from 0.7 to 0.9. This coincides with the standard set by Hair et al. (2006), Nunally (1967) and Sekeran & Bougie (2010) i.e. measures with coefficient value of 0.60 is considered to have average reliability and 0.7 or higher values depicts that measurement is highly reliable. The Cronbach's alpha value for all variables came out above 0.7 that is more than acceptable standard so it can be stated that the variables and scale used in this study is much reliable to generate consistent result. Reliability values for individual value also lies within the acceptable range as shown in the table.

Table 4.5: *Cronbach's Alpha Values for JR, PS, RI, PWO, RD, NWO*

Variable	Cronbach's Alpha	No of items
Job Resources	.835	14
Psychological Safety	.847	7
Resource Investment	.814	12
Positive Work Outcomes	.920	12
Resource Depletion	.851	5
Negative Work Outcomes	.782	14

4.5. Validity Analysis

Validation is considered as the significant test for the study, providing a vigorous evidence about the research process and theory caused from its application practically. In the case of survey instrument, content and construct validity remain areas of concern to be focused. Construct validity is significant to ensure that set of items are truly representative of the latent constructs for which were considered (Hair et al., 2010).

The content validity of instruments was checked through research professionals and typical respondent, according to which, there is no problem of common variance. Then the focus was to elaborate the divergent and convergent validities of constructs because their coefficients provide the basis of acceptance and rejection of construct validity. Divergent validity helps to determine the extent to which a noteworthy variance exist between different constructs or variables while convergent validity helps to determine the level of correlation between multiple items of same construct (Hair et al., 2006). A research study has proved that in order to observe the measurement conjunction, convergent validity has been assessed by obtaining the value of Composite Reliability (CR) and Average Variance Extracted (AVE) (Hair et al., 2014). The value of CR bust lie between 0 to 1 and value of AVE must be greater than 0.5, which shows the presence of convergent validity among variables (Bagozzi, 1995). While in case of divergent validity, the value of Maximum Shared Variance (MSV) must be less than the value of AVE which depicts that this is no major issue with data (Hair et al., 2006).

Table 4.6: *Construct Validities*

	CR	**AVE**	**MSV**
Job Resources	0.840	0.596	0.491
Psychological Safety	0.835	0.529	0.326
Resource Investment	0.871	0.591	0.126
Resource Depletion	0.788	0.638	0.277
Positive Work Outcomes	0.922	0.749	0.184
Negative Work Outcomes	0.778	0.764	0.491

4.6. Descriptive Analysis

Descriptive analysis was performed for finding any possibility of presence of outliers. Further any abnormal type of variances was also checked in the data by descriptive analysis.. Possible occurrence of outliers and abnormal variance in the data was assessed through descriptive analysis. Fortuitously, no cases of outliers were found in the study. Frequency distribution, MEAN, and Standard deviation (Table 4.7) verified the accuracy of data entry.

Mean value in the table indicates the average response of targeted subjects i.e. software engineers/designers etc. This value indicated the opinion of most of the respondents regarding the study variables. For example Mean value for Job Resources is 4.6 or 5, which shows that most of the software engineers are partially agree with the availability of job resources at work to boost their psychological safety. Therefore team lead at software houses should be more supportive towards software engineers/designers. Further, Management should enhance the environment of cooperation and support in the organization. So that the average response can be move towards the strongly agree. Mean values for psychological safety, resource investment, resource depletion and positive work outcomes varies from 4.3 to 4.4 depicting that average number of software engineers are slightly agree or neutral with the presence of these factors. The most important mean value for negative work outcomes i.e. 4.7 clearly indicated that most of the software practitioners are partially agree for facing the negative work outcomes like stress and conflicts among members. This value validated the existence of problem of low psychological safety among software practitioners in the software houses of Pakistan. Therefore, Management of software houses should seriously take rigorous measures to minimize the negative outcomes and veer the respondents' views towards disagreement for having negative work outcomes.

Standard Deviation is the measure of central tendency which describes that how much data spread out from the value of mean. Standard Deviation value of 1 or less than 1 exhibits that responses collected from software engineers are reliable for further analysis. In Table 4.7, the value of standard deviation for all variables varies from 0.9 to 1.4. It shows the deviation from mean for all variables is 1 or <1.

***Table 4.7**: Descriptive Statistics*

	N	Min.	Max.	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
Mean JR	350	1	7	4.6321	.97239
Mean PS	350	1	7	4.37996	1.11160
Mean RI	350	1	7	4.4803	1.06764
Mean PWO	350	1	7	4.4793	1.47972
Mean RD	350	1	7	4.4474	1.39624
Mean NWO	350	1	7	4.7443	.94636

4.7. Correlation Analysis

To measure the collinearity among variables, significance level of bivariate correlation is tested. Correlation is a statistical method to measure the degree of association among two or more variables. The significant value of correlation lies within the range of -1 and +1 where negative value predicts negative association among variables, positive value predicts positive association among variables and zero value predicts no association among variables. In existing study, Correlation among suggested dependent variable, mediators and independent variable show that all variables have significant level of correlation with one another and posits positive or negative relation among them.

Table 4.8 displays the correlation matrix of dependent, independent and mediator variables. The correlation matrix shows the connection between independent variables, dependent variable and mediators. According to Sekran (2013), independent variables must have the value of correlation less than 0.8. Therefore, the values of independent variable i.e. job resources will be noted that whether they are less or more than 0.8. If the association between two independent variables is equal to or greater than 0.8, than there is issue of multi-Collinearity, if the values of the independent variables is less than 0.8 than there will be no issue of multi-Collinearity (Sekran & Bougie, 2013). In the table, all values are less than 0.8 and considered as significant. Moreover, positive value shows positive relation e.g., job resources are positively related to psychological safety and negative value show negative

relation e.g. job resources are negatively related to negative work outcomes. These correlation between all variable clearly support the relations established in hypotheses.

Table 4.8: *Correlation Coefficients between variables of Model*

	JR	**PS**	**RI**	**PWO**	**RD**	**NWO**
JR	1					
PS	.546**	1				
RI	.528**	.476**	1			
PWO	.344**	.344**	.488**	1		
RD	-.346**	-.335**	-.414**	-.245**	1	
NWO	-.553**	-.583	-.543*	-.329**	.313**	1

**. Correlation is significant at the 0.01 level (2-tailed)

4.8. Regression Analysis

Linear regression model is a method for demonstrating the relationship between dependent variable Y and independent variable X. It measures the impact of independent variable on dependent variable. Every best linear regression equation must meet the criteria of BLUE which stands for best, linear, unbiased equation.

4.8.1. Assumptions of Regression Equation

Simple and multiple regression models are based on certain assumption to be fulfilled. Before directing towards any analysis, it is very essential to check the data for some fundamental assumptions i.e. normal distribution of data, no multi-collinearity in data, data should be free from missing values and outliers. Multi-collinearity of data can be determined through variance inflation factor (VIF) and by drawing the correlation matrix. Therefore, the calculated values Kurtosis, Skewness and VIF mentioned in this chapter verifies that the data meets the criteria of normality and multi-collinearity.

For the purpose of further analysis of structural equation modeling (SEM), it is essential to determine the assumptions of normality. Therefore, a linear model must justify the following fundamental assumptions:

4.8.1.1. Assumption 1

Predictors and the predicted variables are essential to be measured at interval or ratio level. Questionnaire was developed by assuming a seven-point Likert scale also treated as interval scale. According to research, seven-point Likert scale is not only an interval scale, but it can be treated as ordinal scale. Seven-point scale enables the researcher to make more understated discrepancies among the responses of various individuals on a topic or object (Krosnick & Fabrigar, 1997). Most of the studies have consensus to consider the seven-point Likert scale as an interval scale (Baggaley & Hull, 1983). Therefore, the seven-point Likert scale being used in this study clearly meets the criteria of first assumption of regression.

4.8.1.2. Assumption 2

Measurement of Kurtosis and Skewness are reliable tests to determine the normality of data. If tests of kurtosis and skewness show high values, then data could not be considered as normally distributed. Histogram also describes the normality of data (Tabchnick & Fidell, 2007). Some studies have also shown that non-normality of data does not cause problems if data size is large. For example, if sample size is large enough, more than 200 or 300, then deviation from normality assumption of data should not cause major issues (Ghasemi, 2012). This specifies that parametric procedures can be applied even when data is not normally distributed among all the points. Further, if a study consists of sample size of hundreds of observations, the distribution of data can be ignored. Central limit theorem also posits that, (a) if sample data is normal, then sampling distribution will also be normal, (b) in large sample (more than 200 or 300), the sampling distribution tends to be normal even if the data is not distributed normally.

Regardless of the above discussion, existing data is reliable and normally distributed because the values in Table 4.9 lies within the acceptable range. The requisite value for kurtosis and skewness ranges from +2 to -2 (Field, 2005). Table 4.9 shows the normality of data used in the existing study. When statistic value is divided by standard error, then all values lies within the requisite range of kurtosis and skewness i.e. +2 to -2, it means data is normal at all levels.

Table 4.9: *Normality statistics for all variables*

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Mean JR	-.322	.130	.014	.260
Mean PS	-.393	.130	-.385	.260
Mean RI	-.143	.130	-.340	.260
Mean PWO	-.436	.130	-.497	.260
Mean RD	.570	.130	-.225	.260
Mean NWO	-.406	.130	.036	.260

4.8.1.3. Assumption 3

Figure 4.7 indicated normal P-P plots for viable performance of multiple regression. The normal P-P plots are drawn to testify that either the residuals or error terms are normally distributed or not. It was observed that the actual and expected values are finely distributed along 45^{o}. Therefore, figure 4.7, 4.8, 4.9, 4.10, 4.11, 4.12 is drawn to meet the assumption of normality of all variables for regression analysis.

Figure 3: *Normal P-P Plot of Regression Standardized Residuals of Job Resources*

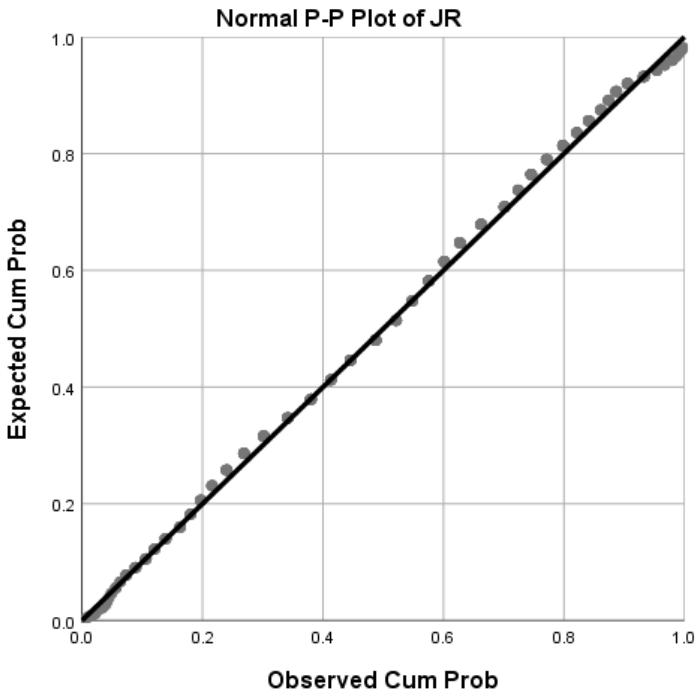


Figure 4: *Normal P-P Plot of Regression Standardized Residuals of Psychological Safety*

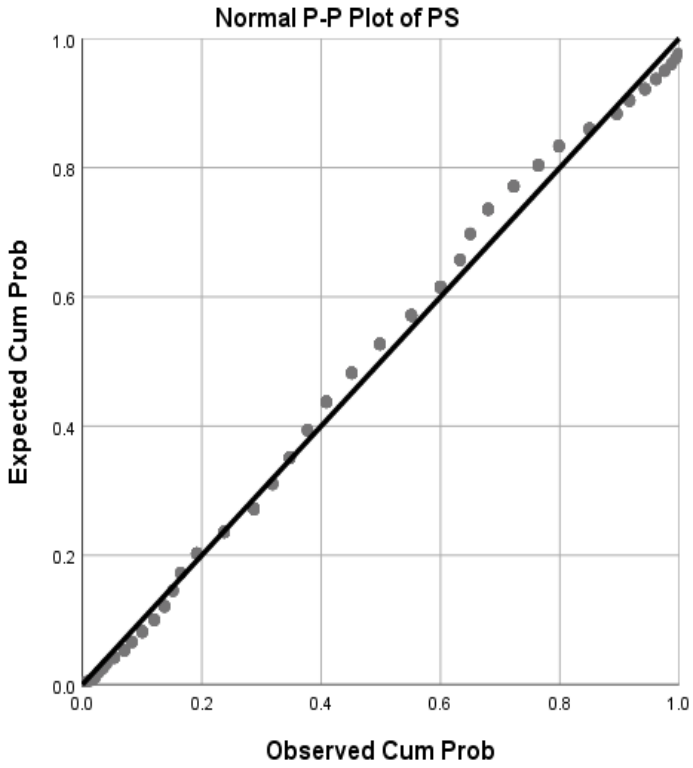


Figure 5: *Normal P-P Plot of Regression Standardized Residuals of Resource Investment*

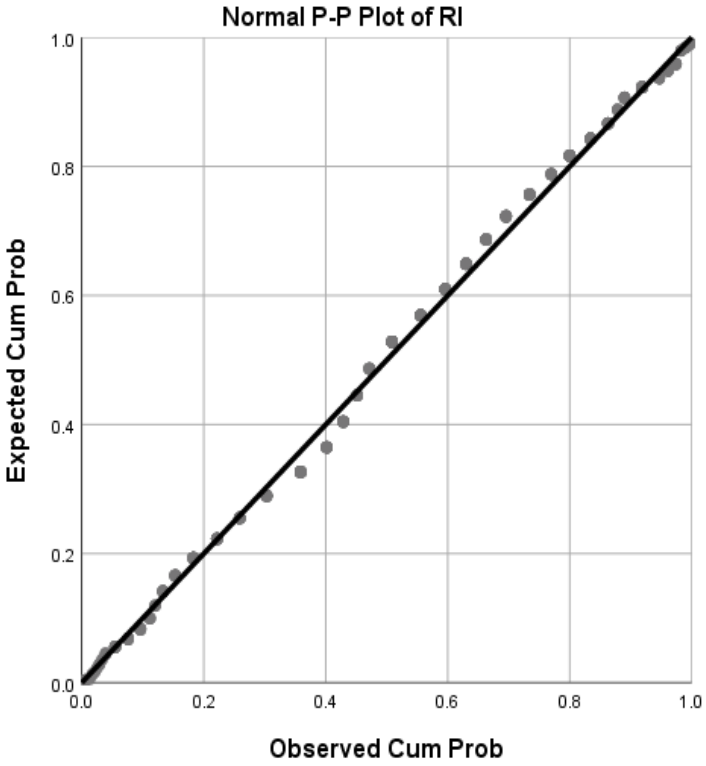


Figure 6: *Normal P-P Plot of Regression Standardized Residuals of Resource Depletion*

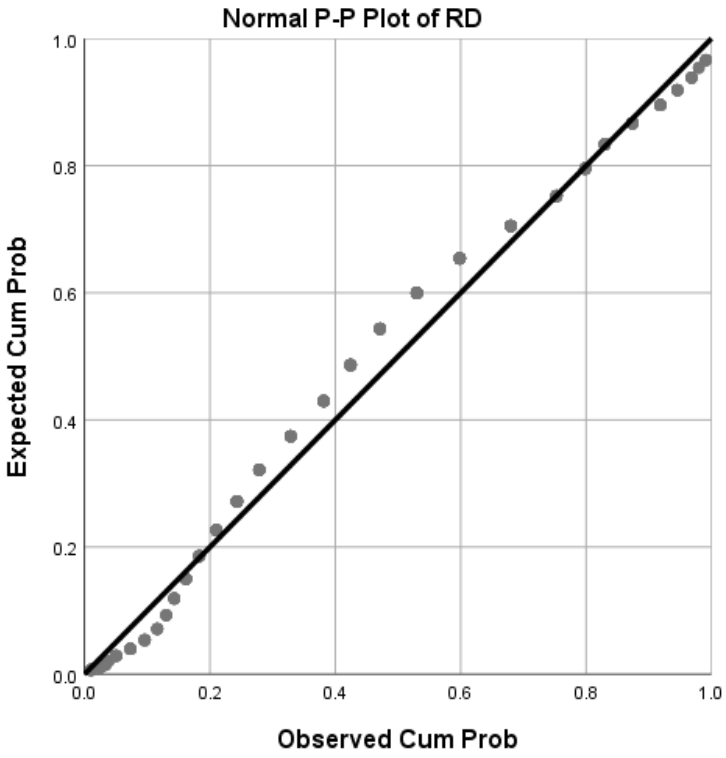


Figure 7: *Normal P-P Plot of Regression Standardized Residuals of Positive Work Outcomes*

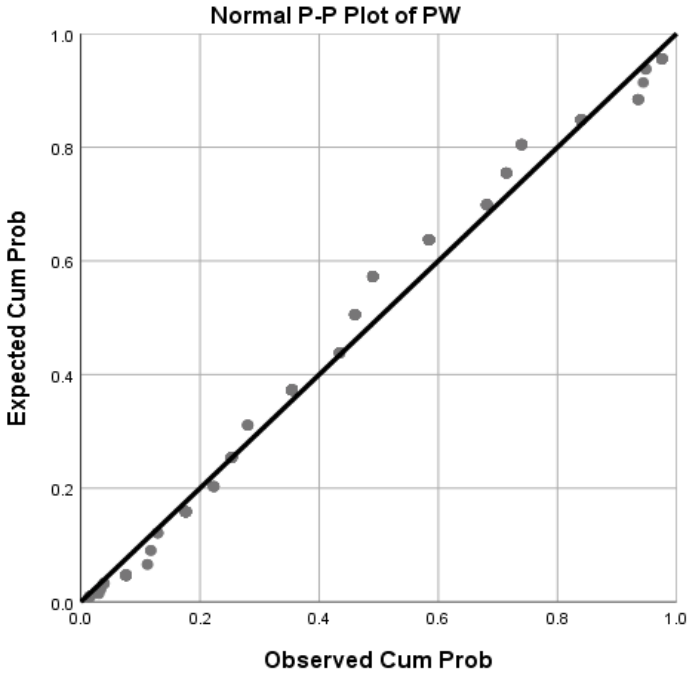
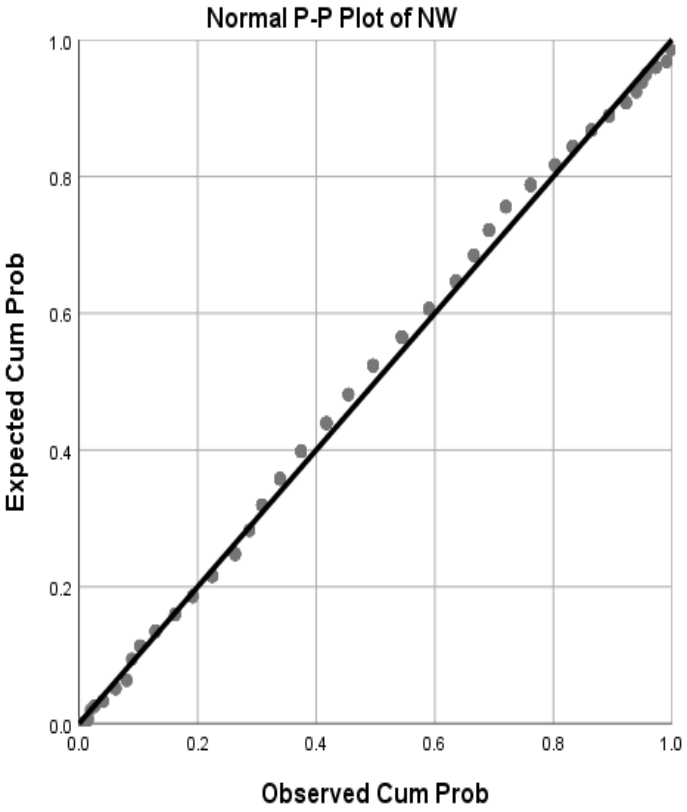


Figure 8: *Normal P-P Plot of Regression Standardized Residuals of Negative Work Outcomes*



4.8.1.4. Assumption 4

The model summary of auto-correlation is observed and analyzed through the values of Durbin Watson and R square with aim to determine the results of dependent variables i.e. positive work outcomes and negative work outcomes with independent variable i.e. job resources, mediators i.e. psychological safety, resource investment, resource depletion with independent and dependent variables. The best fitted model must have the value of Durbin-Watson test be less than +2 and the value of R square be lies within 0 to 1 (Sekran & Bougie, 2013). In the summary of auto correlation of existing model, there is no problem of auto-correlation because the value of Durbin-Watson is 1.843 which meets the criteria of <2. Moreover, the value of R-square is 0.298 which also meets the criteria of value lies between 0 to 1. Hence this model can be considered as best fitted and appropriate for the study.

Table 4.10: *Model Summary of JR with PS, RI, PWO, RD and NWO*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Durbin-Watson
1	.546[a]	.298	.296	.93296	1.84

a. Predictor: (constant), JR

b. Dependent Variable: PS

4.8.1.5. Assumption 5

The presence of multi-collinearity is a central issue to statics and inconsistencies related to presentation of model. Therefore, it is vital to eliminate such problem in case of simple and multiple regression analysis. This issue mostly arises when independent variables appears to have perfect linear relationships among them. The term collinearity indicates that two independent variables have perfect relationship with one another, hence, they can be used interchangeably. For this purpose, two most suitable collinearity measuring statistical tests i.e. Tolerance and Variance Inflation Factor (VIF) are used to determine the multi-collinearity (Hair et al., 2006). Small values of Tolerance indicate that variable involved in the model have perfect correlation with other independent variables, therefore, it should be eliminating from the linear regression equation. The requisite value for Tolerance test ranges from 0.1 to 1 and the value near to 0.1 is required to be inspected again. In a certain situation, when a low Tolerance value is combined with large standard error, then the multi-collinearity will be considered as really a big issue at that point. Variance Inflation Factor is a reciprocal of

Tolerance and is considerate to examine the influence of multi-collinearity on the model variables. The acceptable VIF value ranges from 1 to 10 where the values greater than 10 required to examined again. According to some researchers VIF value must be equal to or less than 5 (Saunders, 2011). Low value of Tolerance and high value of VIF clearly indicates the issue of multi-collinearity. Table 4.11 indicates the multi-collinearity of existing study model. Values exhibited in the table affirms that there is no existence of multi-collinearity in the data set because the Tolerance values for all study variables were > 0.1 and VIF values were < 10 meeting the standards of non-multicollinearity.

Table 4.11: *Multicollinearity Statistics for variables*

	Collinearity Statistics	
	Tolerance	VIF
Job Resources	0.603	1.660
Psychological Safety	0.644	1.553
Resource Investment	0.628	1.593
Resource Depletion	0.795	1.258
a. Dependent Variables: Positive Work Outcomes, Negative Work Outcomes		

4.9. Common Method Biasness (CMB)

Common method bias occurs due to variations in responses, caused by the instrument rather than the actual tendencies of the respondents about what the instrument attempts to uncover (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In simple words, it is the forged variance featured to the measurement method instead of measured constructs. Any research study in which only one method is utilized for data collection, the common method variance occurs because the subject knows the process and understands clearly what is being asked by him or her, so they may give manipulated or fake response which can affect the overall results. Usually, to abstain such issues researchers should use more than one method for data collection. One of the easiest way to assess this variance is to use Harman's single factor score, in which all items or latent variables are loaded into one common factor. It the total variance for a single factor is less than 50%, it suggests that CMB does not affect the data and ultimately the results (Podsakoff, MacKenzie, & Podsakoff, 2012). In current study, this biasness is checked through Harman's One Factor test which is defined as the method to run Exploratory Factor Analysis (EFA) on eigen value rule and checked that whether there is only one factor or more. It is

validated through detailed EFA that there are more than one factor and each latent variable is loaded on relevant construct only, so common method variance is not present (See Table 4.10.0 in Annexure). It has been proven that number of factors using Eigen value approach are more than one in all constructs, therefore, current study in free from common method variance issue.

4.10. Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) helps to discover the probable underlying factors under the structural set of measured variables without applying any predetermined structure on the outcomes. EFA launches the relationships between the items and the variables based on correlations between them. EFA determines whether items are loaded on the same latent variable or any other latent variable. Thus, the calculated correlations values must be load highly on the same latent variable where they are claimed to belong and these values must be low on other influential variables (Byrne, 2001). In EFA, there are certain basic cut-off values for various measures. Three matrixes are used to explore the constructs in EFA i.e. rotated matrix, structure matrix, component correlation matrix. The rotated matrix is useful to determine separable loadings of every single item on the appropriate dimension whereas the structure matrix is responsible to provide worthy information based on the correlation coefficients among various factors. The component correlation matrix specifically assists in the strengthening of relationships among various factors of constructs. Before untying a factor, the rule of eigen value must be applied (Kaiser, 1960), in which, it has been stated that elements with > 1 eigen values are not significant and pay few or negligible variation in the construct. For this reason, analysis should be free from such factors or dimensions. The current study mainly focused on the factor analysis through rotation matrix (attached in Annexure) because it is recommended that this technique is the most appropriate for EFA if data set is not normally significant (Fabrigar et al., 1999).

The construct of Job Resources (JR) initially took 14-items. The JR construct was regulated towards one factor loading, because over EFA, it was revealed that 12 items were sufficiently loaded on this construct. Therefore, JR was effectively correlated through 12 items as shown below in Table 4.12.

Table 4.12: Factor Analysis of Job Resources

Initial Items (14-Items)		**Final Items (12-Items)**	
Dimensions	Items	Dimensions	Items
Job Resources (JR)	JR1, JR2, JR3, JR4, JR5, JR6, JR7, JR8, JR9, JR10, JR11, JR12, JR13, JR14	Job Resources (JR)	JR1, JR2, JR3, JR4, JR5, JR6, JR7, JR8, JR9, JR10, JR11, JR12,

The construct of Psychological Safety (PS) initially have 7-items. The PS construct was regulated towards one factor loading, since over EFA, it was revealed that 4 items were sufficiently loaded on this construct. Therefore, PS was effectively correlated through 4 items as shown below in Table 4.13.

Table 4.13: Factor Analysis of Psychological Safety

Initial Items (7-Items)		**Final Items (4-Items)**	
Dimensions	Items	Dimensions	Items
Psychological Safety (PS)	PS1, PS2, PS3, PS4, PS5, PS6, PS7	Psychological Safety (PS)	PS1, PS2, PS3, PS4

The construct of Resource Investment (RI) having 12-items. The progress of this construct was limited to one factor loading in the light of fact that through EFA this dimension sufficiently took 7 items correlated. Hence, RI was effectively correlated through 7 items as shown below in Table 4.14.

Table 4.14: Factor Analysis of Resource Investment

Initial Items (12-Items)		**Final Items (7-Items)**	
Dimensions	Items	Dimensions	Items
Resource Investment (RI)	RI1, RI2, RI3, RI4, RI5, RI6, RI7, RI8. RI9, RI10, RI11, RI12	Resource Investment (RI)	RI1, RI2, RI3, RI4, RI5, RI6, RI7

The construct of Positive Work Outcomes (PWO) have 12 items initially. The development of this construct was restricted to one factor loading based on that through EFA this dimension took 4 items sufficiently correlated. Hence PWO remain effectively correlated through 4 items as shown below in table 4.15.

Table 4.15: Factor Analysis of Positive Work Outcomes

Initial Items (12-Items)		**Final Items (4-Items)**	
Dimensions	Items	Dimensions	Items
Positive Work Outcomes (PWO)	PWO1, PWO2, PWO3, PWO4, PWO5, PWO6, PWO7, PWO8, PWO9, PWO10, PWO11, PWO12,	Positive Work Outcomes (PWO)	PWO1, PWO2, PWO3, PWO4

The construct of Resource Depletion (RD) have 5 items initially. The development of this construct was restricted to one factor loading because of that through EFA this dimension took 4 items sufficiently correlated. Hence RD remain effectively correlated through 4 items as shown below in table 4.16.

Table 4.16: *Factor Analysis of Resource Depletion*

Initial Items (5-Items)		**Final Items (4-Items)**	
Dimensions	Items	Dimensions	Items
Resource Depletion (RD)	RD1, RD2, RD3, RD4, RD5	Resource Depletion (RD)	RD1, RD2, RD3, RD4

The construct of Negative Work Outcomes (NWO) initially took 14-items. The NWO construct was regulated towards one factor loading, because over EFA, it was revealed that 6 items were sufficiently loaded on this construct. Therefore, NWO was effectively correlated through 6 items as shown below in Table 4.17.

Table 4.17: *Factor Analysis of Negative Work Outcomes*

Initial Items (14-Items)		**Final Items (6-Items)**	
Dimensions	Items	Dimensions	Items
Negative Work Outcomes (NWO)	NWO1, NWO2, NWO3, NWO4, NWO5, NWO6, NWO7, NWO8, NWO9, NWO10, NWO11, NWO12,	Negative Work Outcomes (NWO)	NWO1, NWO2, NWO3, NWO4, NWO5, NWO6

4.11. KMO and Bartlett's Test of Sphericity

KMO and Bartlett's Test of Sphericity has been used to measure adequacy and aptness of sample in academic as well as business related studies. Although KMO value ranges from 0 to 1, the acceptable index is over 0.6 (Tavsancil, 2006). Whereas, the Bartlett's Test of Sphericity links with the significance of study analysis and determines the validity as well as suitability of data collected towards issue focused in the study. The significant value of Bartlett's Test of Sphericity should be < 0.7 but 0.6 can also be accepted. The findings of KMO and Bartlett's Test of Sphericity for the current study are described in Table 4.18.

Table 4.18: Kaiser-Meyer-Olkin Measure of sampling adequacy and Bartlett's Test

***KMO* & Bartlett's Test**	**JR**	**PS**	**RI**	**PWO**	**RD**	**NWO**	**Overall**
KMO	.842	.836	.778	.819	.804	.742	.864
Approx. Chi-Square	1369.566	1596.515	1543.601	1125.808	1046.421	1112.091	9717.749
Bartlett's Test of Sphericity df	78	28	36	6	10	45	1176
Sig.	.000	.000	.000	.000	.000	.000	.000

4.12. Structural Equation Modeling (SEM)

SEM is one of the most frequently used technique to conduct the confirmatory factor analysis. This modeling is useful to observe and examine the various models through statistical analysis and to evaluate the validity of basic theories with the help of empirical data. SEM is also considered as an appropriate technique to analyze the relationship between latent constructs usually measured through several items, while other techniques flop to do so (Lei & Wu, 2007). Further, this technique is also better over others in terms of that it allows the access to examine the imperfect nature of measures and tests for model fit (Suhr, 2006). SEM develops a causal relationship between numerous variables, therefore, works well on hypotheses testing also known as confirmatory analysis. The fundamental aim of SEM analysis is to validate the gathered set of data in the existing study imitates the per-defined arrangements as hypothesized by the researcher. Further, Model-fit analysis determines the consistency of causal patterns. In terms of sample size, SEM is relevant for large sample sizes i.e. N>200 and when sample sizes partially depend on the complexity of model, the utilized method of estimation and the

distributional properties of observed variables (Kline, 2005). The examination of SEM deals with analysis of measurement and structural model both.

Exploratory Factor Analysis (EFA) is a statistical method to uncover the underlying structure of a large set of variables and to identify the underlying relationships between measured variables. EFA assumes that any measured variable may be associated with any factor. EFA is the pre-requisite for moving on to Confirmatory Factor Analysis (CFA). CFA is used to validate the structure of constructs and to identify the latent or observed variables. The basic difference in EFA and CFA is that CFA is hypothesized at first in structure of factors and verified empirically rather than obtained from the data (Lei & Wu, 2007).

In this study, first of all EFA was conducted to validate the underlying factors for a set of measured variables and after that CFA was conducted to further test the hypotheses that a relationship between observed variables and underlying latent factors exist. CFA was used to examine the factor loadings of observed variables on respective constructs and formulated an apt model fit for probable rejection or acceptance of proposed hypotheses. Based on identified latent variables, model was finalized for further analysis. Therefore, postulating the model as "fit" for observed data set, conducting path analysis and examining the direct or indirect impact of various variable are important features of SEM (Lleras, 2004).

4.12.1. Fit Indices

Fit indices signify the degree of consistency among the patterns of fixed and definite parameter to that of variance and co-variance of the observed data set (Suhr, 2006). In simple words, fit indices help to determine that whether the data set signifies the model fit or not. Different estimates of determining model fit are being used by different researchers, however, Tucker-Lewis Index (TLI), Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) are usually used to determine model fit (Kenny, 2003).

RMSEA gives the information of by what means fit that model through unfamiliar but optimal selected parameter appraisals suited with population's covariance matrix (Byrne, 1998). For model fit, the value of RMSEA must be less than 1 or 0.8 (Browne & Cudeck, 1993) and the values above 0.10 can also be accepted to some extent (MacCallum, 1996).

Goodness-of-fit index (GFI) is utilized for computing the degree of divergence in model (Barrett, 2006). Value of GFI must be > 0.90 for super fit models (Wang, 1999). The values of

CFI, GFI and TLI significantly vary with the sample size opted for the current study. In large sample sizes, a model fit carries improved values of CFI and GFI (Wang, 1999). The value of GFI is used to compare the values of chi-square based on the assumption of null hypotheses i.e. all variables are uncorrelated in the current study model. The acceptable range for the value of Chi Square lies between 0.5 to 2 (Tabachnick & Fidell, 2007).

Comparative-fit-index (CFI) measures the degree of discrepancy related to the sample size (Suhr, 2006). The value of CFI should be > 0.90 for a fit model (Bentler & Bonett, 1980). Normed-fit-index (NFI) examines the model by comparing the $\chi 2$ value of the model to the $\chi 2$ of null model and its value must lie within the range of 0 to 1 (Hooper et al., 2008).

Tucker-Lewis Index (TLI) is used for non-normed data (Bentler & Bonett, 1980). The least acceptable value for TLI is 0.80 (Hooper et al., 2008), may be slightly > 0.90 (Hu & Bentler, 1999).

Another statistic used for the adequacy of sample size is the Hoelter effect (1983) for the model fit, wherein, the maximum suggested value is 200 (Hu & Bentler, 1995). Below Table represents the cutoff values for model fit.

Table 4.19*: Model Fit Indices with Accepted Value*

Level of Model Fit	**Overall Model Fit**				
	Model Fit		Model Comparison		
Fit Measures	CMIN/DF	RMSEA	IFI	TLI	CFI
Further analysis is Required	>2	> .1	< .90	< .90	< .90
Acceptable Scale for Good Model Fit	≤2 or 5	< .08 (Accepted up to .1)	≥ .90	≥ .90	≥ .90

4.13. Model fit measurement and modifications

Model fit is initially measured with the help of Confirmatory factor Analysis (CFA) which is widely known as a tool to find out the validity of the single factor model, determine the significance of the specific factor loading as well as to examine the correlation among the variables. CFA also offers a chance of correlation in error terms or residuals for the situation of common causes (Lei & Wu, 2007). CFA is fundamental to identify the model fit for acceptance or rejection. CFA is a theory driven confirmatory technique in which the analysis is planned on the bases of theoretical relationships among observed and unobserved variables. CFA give adequate aspects about the model requirement and estimation to encourage assurance in the results. (Hu & Bentler, 1999)

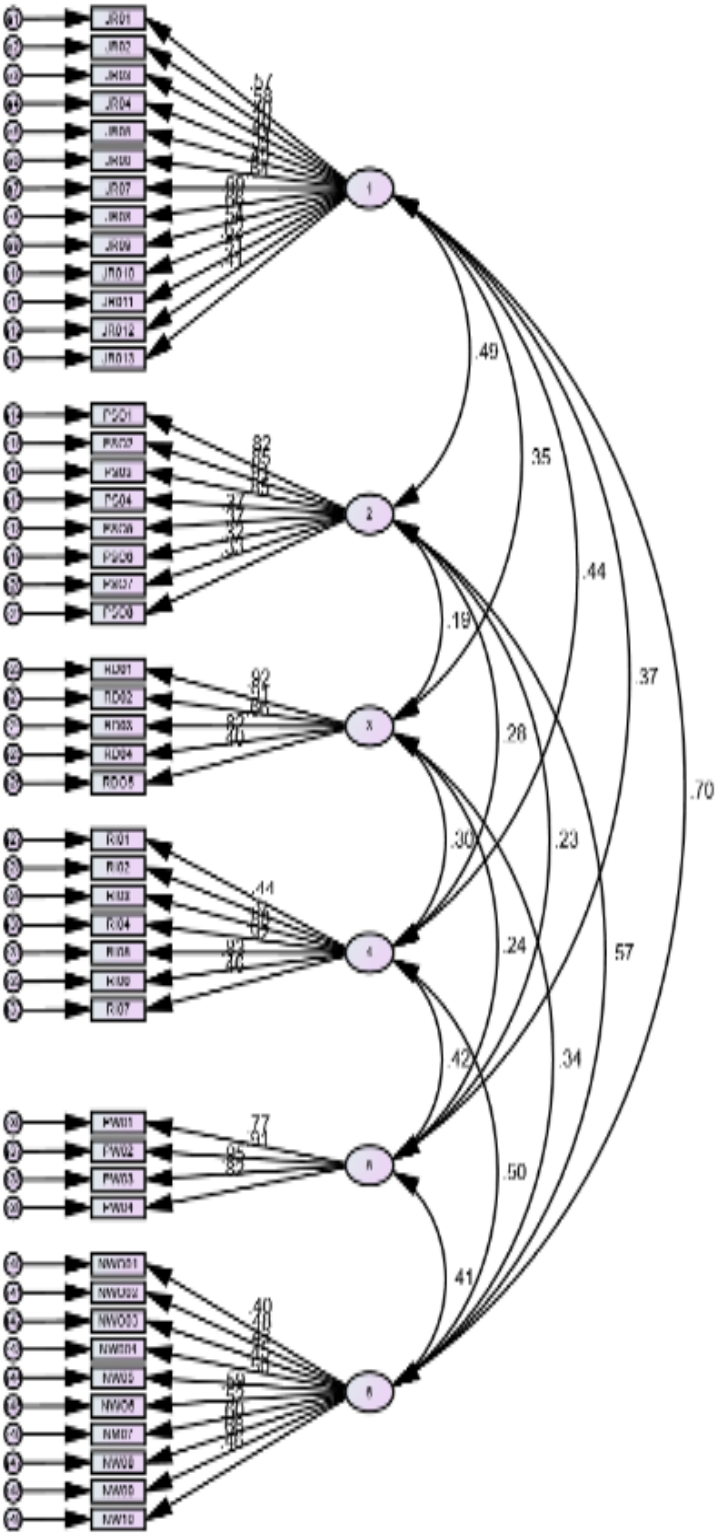
AMOS provides various choices to help in the validation of measurement of dimensions as well as examine the model fit. Modification index gives an effective way to get a model fit and have regression weights variances and co-variances. Modification is basically a decline in the degree of chi-square due to variation in the estimates of parameters with respect to specified estimates of parameter. After getting a model fit by modification index through fit indices, the standard loading was observed. Standardized loading represents items loaded on the latent variable in actual should have least loading value of 0.40 (Lewis & Byrd, 2003). Therefore, it is proposed that of loading fails to support the model, then items should be eliminated, and a new path should be added, or the residual terms should be related to achieve the model fit (Anderson & Gerbing, 1988).

4.13.1. Confirmatory Factor Analysis (CFA)

CFA is one of the best techniques for determining the validity of the structure of factors and for evaluating the measurement model to check whether the items loaded on their corresponding dimension or not (Byrne, 2001). CFA of measurement model is done with intent to test that how well all measured variables can be represented in a small construct because technically, the difference between the estimated and observed matrices should be minimized in researches (Hair et al., 1998). In the first order analysis of measurement model, Cronbach alpha was used to analyze the factors. Then, in the second order analysis of variables or factors, valid model fit of data along with theoretical supports of model was obtained. After taking proposals, set several neglected checks by their boundary standards and applied it as standard towards the further examination of fit lists, dependability and legitimacy of substantial number of measures (Byrne, 2010; Hair et al., 1998; Kline, 2005; Kline, 2011).

Figure II shows the CFA of final constructs give apt fit among data and measurement model. In figure factor loadings are above the value of cutoff i.e. 0.40, therefore, all measured variables are good representative of their respective constructs. Some items have less than 0.40, so they were removed for further analysis accordingly.

Figure 9: *CFA for Overall Model Fit*



4.13.2. Overall Measurement of Model Fit

AMOS was used to test the overall Models' acceptability in order to measure as well as verify dimensions. Model measurement discussion is related to independent variable, mediators and dependent variable. To determine the adequacy and worthiness of measurement model, it was progressed by exploratory covariance configuration of dependent, mediating and independent variables.

Table 4.20 shows the values of fit indices of overall model. As GFI, TLI and CFI values are greater than 0.9 it means data set signifies the model fit. The values of RMSEA is also less than 1 which means .086 is significant value for model fit. The value of CMIN/DF is 3.5 which also lies within the acceptable range i.e. 2<x<5 (Marsh & Hocevar, 1985). The value of HOELTER effect is also less than 200 which mean 108 is significant.

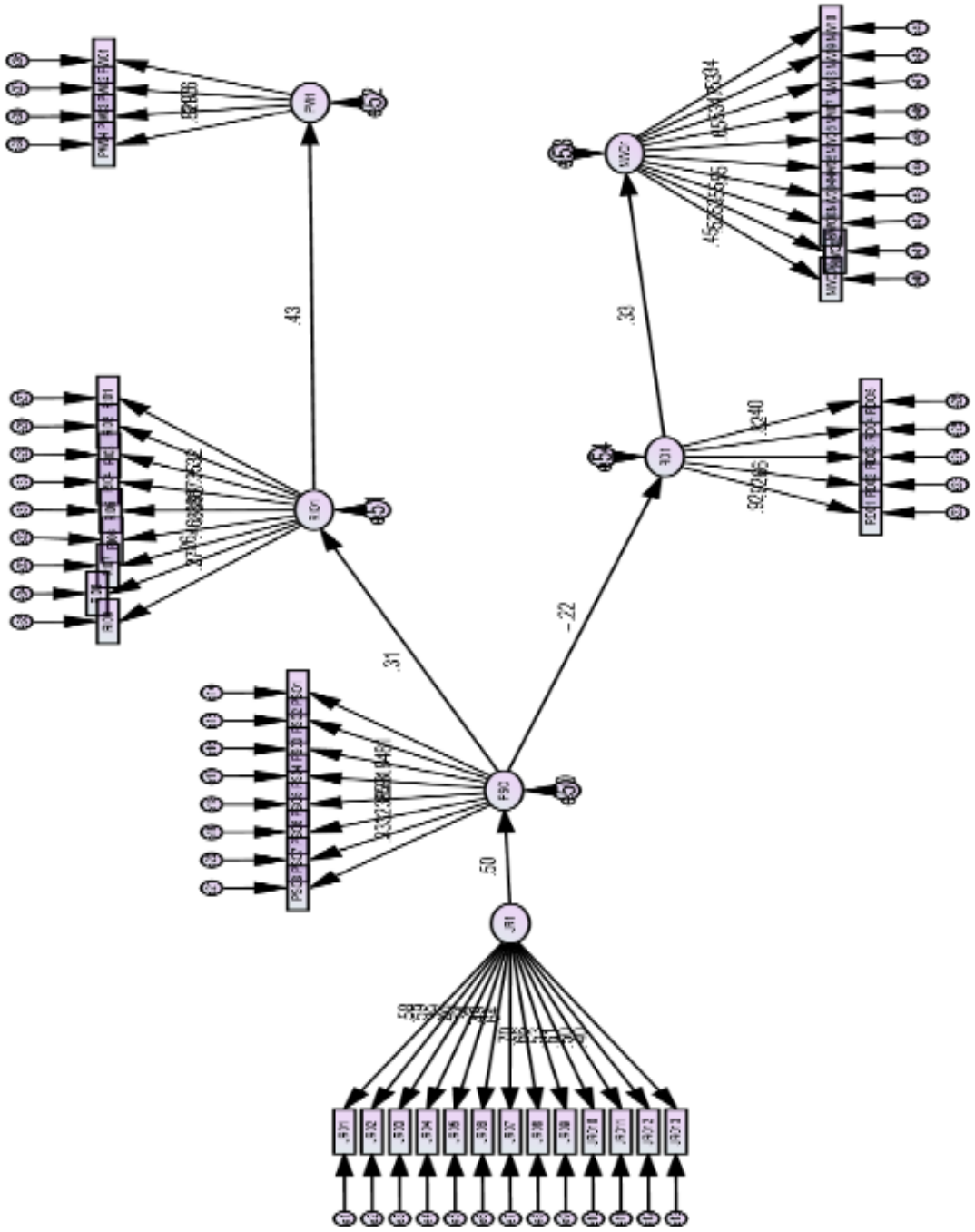
Table 4.20: Overall Measurement of Model Fit

	CMIN/DF (χ2/df)	**RMSEA**	**GFI**	**TLI**	**CFI**	**HOELTER**
Model Fit	3.580	.086	0.947	0.964	0.983	108

4.14. Analysis of Hypotheses

Overall path analysis of model is done in order to validate and confirm the proposed hypotheses of study. Hypotheses from H1 to H5 are of direct effect, while H6 to H9 are of indirect effect having single mediator. Further, H10 and H11 are also of indirect effect but through double mediators.

***Figure 10**: Path Analysis of Model*



4.14.1. Job Resources has significant positive impact on Psychological Safety

Beta value for the standardized estimates of the relationship of JR-PS is 0.50, p value is 0.000 and critical value of 7.26 represent the significant association among these two variables. This results clearly consistent with the results of many previous researches. More recently, Singh, Shaffer & Selvarajan (2018) found that social support in the form of job resources have positive impact on psychological safety. Frazier, Fainshmidt, Klinger, Pezeshkan, & Vracheva (2017) have shown in their meta analytical review of previous literatures that psychological safety is positively associated with the supportive work context enriched with job resources like supervisor support (Kahn, 1990), coworker support (Schepers, de jong, Wetzels, & de Ruyter, 2008) and organization support (Tucker, 2007). Guchait, Lee, Wang & Abbott (2016) argued that supportive job resources including supervisor support, coworker support and organizational support are most likely to make employees believe that they are psychologically safe and will not be blamed. Ling, Duan & Zhu (2010) showed that job resources with various factors ensure high psychological safety in an organization. Singh, Winkel & Selvarajan (2013) found psychological safety as an important inner personal resource that evolve due to the presence of supportive context. Therefore, this literature support affirms the H1 and asserts that the presence of job resources in the organizations are responsible for the emergence of psychological safety among employees.

4.14.2. Psychological Safety has significant positive impact on Resource Investment

Beta value for the standardized estimates of the relationship of PS-RI is 0.31, p value is 0.000 and critical value of 4.12 represent the significant association among these two variables. This results undoubtedly coincides with the results of many previous researches. Psychological safety results in minimizing the fear of negative consequences, which in return, decisive to encourage employees to invest their physical, cognitive and emotional resources into their work (Christian et al., 2011). Edmondson (2004) & Siemsen et al. (2009) found that psychological safety is a key antecedent to promote knowledge sharing. Further, various other studies including Mu & Gnyawali (2003), Siemsen et al (2009), Xu & Yang (2010), Zhang et al (2010) also regarded that psychological safety is linked to greater knowledge sharing at individual and team level among various team members. Moreover, Tynan (2005) showed that employees working in high psychologically safe environment are more likely to raise civilized disagreement, give honest feedback and indicate loopholes to their peers and supervisors. Soares (2015) found that high psychological safe environment allows employees to make errors, as for solution and get continues feedback to correct them and this allows them to learn

more. Therefore, this literature support upholds the H2 and proclaims that the presence of psychological safety in the employees is significant for them to invest their resources in order to share knowledge and give feedback.

4.14.3. Psychological Safety has negative impact on Resource Depletion

Beta value for the standardized estimates of the relationship of PS-RD is -.22, p value is 0.000 and critical value of 3.81 represent the negative association among these two variables. This results certainly accords with the results of a close prior research. Zadow et al. (2017) found that psychological safety climate and resource depletion in the form of emotional exhaustion are negatively related. Bakker & Demerouti (2007) found that resource depletion as the state of emotional exhaustion occurs when the resources, we need to control our behavior have been drained. Whitman et al. (2014) found that employee feel depleted when they must face abusive supervision, because, the level of psychological safety becomes low in them and they avoid giving feedback. Therefore, this literature support upholds the H3 and declares that the absence of psychological safety in the employees causes high resource depletion and vice versa.

4.14.4. Resource Investment has significant positive impact on Positive Work Outcomes

Beta value for the standardized estimates of the relationship of RI-PWO is 0.43, p value is 0.000 and critical value of 4.79 represent the significant association among these two variables. This results surely agrees with the results of close preceding researches. Binnewies et al. (2009) showed that individual investment of resources is important for positive outcomes like performance and creativity because such outcomes demands controlled dealing of emotion and thoughts. Liao, Chen, & Hu (2018) recently exhibited the impact of knowledge sharing on creativity. Abrantes, Passos, e Cunha, & Santos (2018) also showed that shared cognition in the form of knowledge sharing in teams foster the team performance. Hoever, Zhou, & van Knippenberg (2017) disclosed that feedback giving and seeking enhances the creativity in teams. Moreover, Konradt, Schippers, Garbers, & Steenfatt (2015) also found that the feedback provisions in teams is positively associated with team performance. This literature backing sustains the H4 and declares that the resource investment leads to positive work outcomes.

4.14.5. Resource Depletion has significant impact on Negative Work Outcomes

Beta value for the standardized estimates of the relationship of RD-NWO is 0.33, p value is 0.000 and critical value of 4.58 represent the significant association among these two variables. This results plainly concurs with the results of many previous researches. Freedy and Hobfoll (2017) represented in their extensive research on conservation of resources that resource depletion causes job stress. Further, Hobfoll et al. (2018) declares that failure to gain key resources means resource depletion breeds stress. Benitez, Medina, & Munduate (2018) stated in their research findings that emotional exhaustion and relationship conflict are positively related at team level. This literature support upholds the H5 and declares that the resource depletion leads to negative work outcomes.

Table 4.21: *Summary of Results Related to Hypotheses 1 to Hypotheses 5*

Link Between Variables	Value of Beta	Critical Value	Value of P	Conclusion / Comments
β_1 (PS ← JR)	.50	7.26	0.00	Supported
β_2 (RI← PS)	.31	4.12	0.00	Supported
β_3 (RD ← PS)	-.22	3.81	0.00	Supported
β_4 (PWO ← RI)	.43	4.79	0.00	Supported
β_5 (NWO ← RD)	.33	4.58	0.00	Supported

Note: JR= Job Resource, PS= Psychological Safety, RI= Resource Investment, RD= Resource Depletion, PWO= Positive Work Outcomes, NWO= Negative Wok Outcomes

Table 4.21 shows the results of direct hypotheses H1, H2, H3, H4 and H5. The beta values for all hypotheses are significant which describes that Independent variables have strong and direct impact on dependent variables.

4.14.6. Job Resources has significant positive impact on Resource Investment through mediation of Psychological safety

Beta value for the standardized estimates of the relationship of JR-PS-RI is 0.942, p value is 0.001 represent the significant mediation of PS among these variables. This result surely agrees with the results of preceding researches. Singh et al. (2017) also claimed that co-worker support, supervisor support, and organizational support plays an important role to influence any outcome and always needs an intervening mechanism in the form of psychological safety to influence any outcome. Guchait et al. (2016) represented that when individuals are confident about the coworker, supervisor and organizational support, they feel

psychological safe about their mistakes and in return more likely to share their knowledge and give feedback in discussing errors. Therefore, this literature support affirms the H6 and asserts that the job resources requires psychological safety as a mediator to influence the employees to invest their resources in the form of knowledge sharing and feedback provision.

4.14.7. Job Resources have negative impact on Resource Depletion through mediation of Psychological safety

Beta value for the standardized estimates of the relationship of JR-PS-RD is 0.922, p value is 0.025 represent the mediation among these variables. This results certainly accords with the results of prior research. Newman, Donohue, & Eva (2017) stated in their systematic meta-analytical review, if inadequate job resources are provided in the organization then psychological safety couldn't develop among employees which ultimately leads to deplete the employees' resources. Therefore, this literature support confirms the H7 and declares that the job resources requires psychological safety as a mediator to deplete the employees' resources.

4.14.8. Psychological Safety has significant positive impact on Positive Work Outcomes through mediation of Resource Investment

Beta value for the standardized estimates of the relationship of PS-RI-PWO is 0.855, p value is 0.12 and represent the significant mediation of RI among these variables. This results certainly accords with the results of close previous researches. Hu, Erdogan, Jiang, Bauer, & Liu (2018) showed in their research that psychological safety and information sharing both are significantly related to creativity in teams. Gong, Kim, Lee and Zhu (2012) found that employees seek to exchange information and knowledge with their fellow co-workers when psychological safe environment is provided. This in turn allow them to perform their tasks creatively. Kessel, Kratzer, & Schultz (2012) showed that high degree of psychological safety within team members is a significant determinant of team creativity and performance through the mediation of knowledge sharing. Therefore, this literature support confirms the H8 and declares that the psychological safety requires resource investment as a mediator to enhance creativity and performance of teams.

4.14.9. Psychological Safety has negative impact on Negative Work Outcomes through mediation of Resource Depletion

Beta value for the standardized estimates of the relationship of PS-RD-NWO is 0.962, p value is 0.001 represent the significant mediation among these variables. This results surely agrees with the results of close preceding researches. Hagger et al. (2010) showed that depletion play the role of mediator between psychological safety and negative work outcomes. Li et al., (2016) also found that depletion of psychological capital adds to team members' distress. Similarly, Porath and Erez (2007) found that disruption of cognitive resources mediates poor performance and interpersonal conflict. Therefore, this literature support confirms the H9 and declares that the psychological safety requires resource depletion as a mediator to cause the negative work outcomes.

4.14.10. Job Resources has significant positive impact on Positive Work Outcomes through the double mediation of Psychological Safety and Resource Investment

Beta value for the standardized estimates of the relationship of JR-PS-RI-PWO is 0.813, p value is 0.001 represent the significant double mediation of PS and RI among IV and DV. This results certainly accords with the results of prior research. Ortega et al. (2010) indicated that team performance depends on job resources, however, the mediating factor is resource investment in the form of learning behavior and through the provision of psychologically safe environment. Similarly, Van der Vegt et al. (2010) and Wong et al. (2010) found two factors i.e. resource investment and psychological safety play crucial role in determining the level of creativity and team performance. Therefore, this literature supports H10 and declares that the job resources requires psychological safety and resource investment as mediators to generate positive work outcomes.

4.14.11. Job Resources has negative impact on Negative Work Outcomes through the double mediation of Psychological Safety and Resource Depletion

Beta value for the standardized estimates of the relationship of JR-PS-RD-NWO is 0.784, p value is 0.002 represent the significant double mediation of PS and RD among IV and DV. Most of the previous studies examined the direct negative impact of job resources on negative outcomes, for example, Asad & Khan (2003) found that lack of organizational support causes the job stress in employees. This result accords with the results of partially relevant prior researches. According to Halbesleben (2006), many meta-analytical studies support the negative impact of job resources on resource depletion through diminishing psychological

safety and ultimately lead to stress and strain. These studies believe that social support is negative correlated to stress, exhaustion, burnout, and anxiety. Therefore, this literature supports H11 and declares that the job resources requires psychological safety and resource depletion as mediators to develop negative work outcomes.

Figure 11*: Mediation Model*

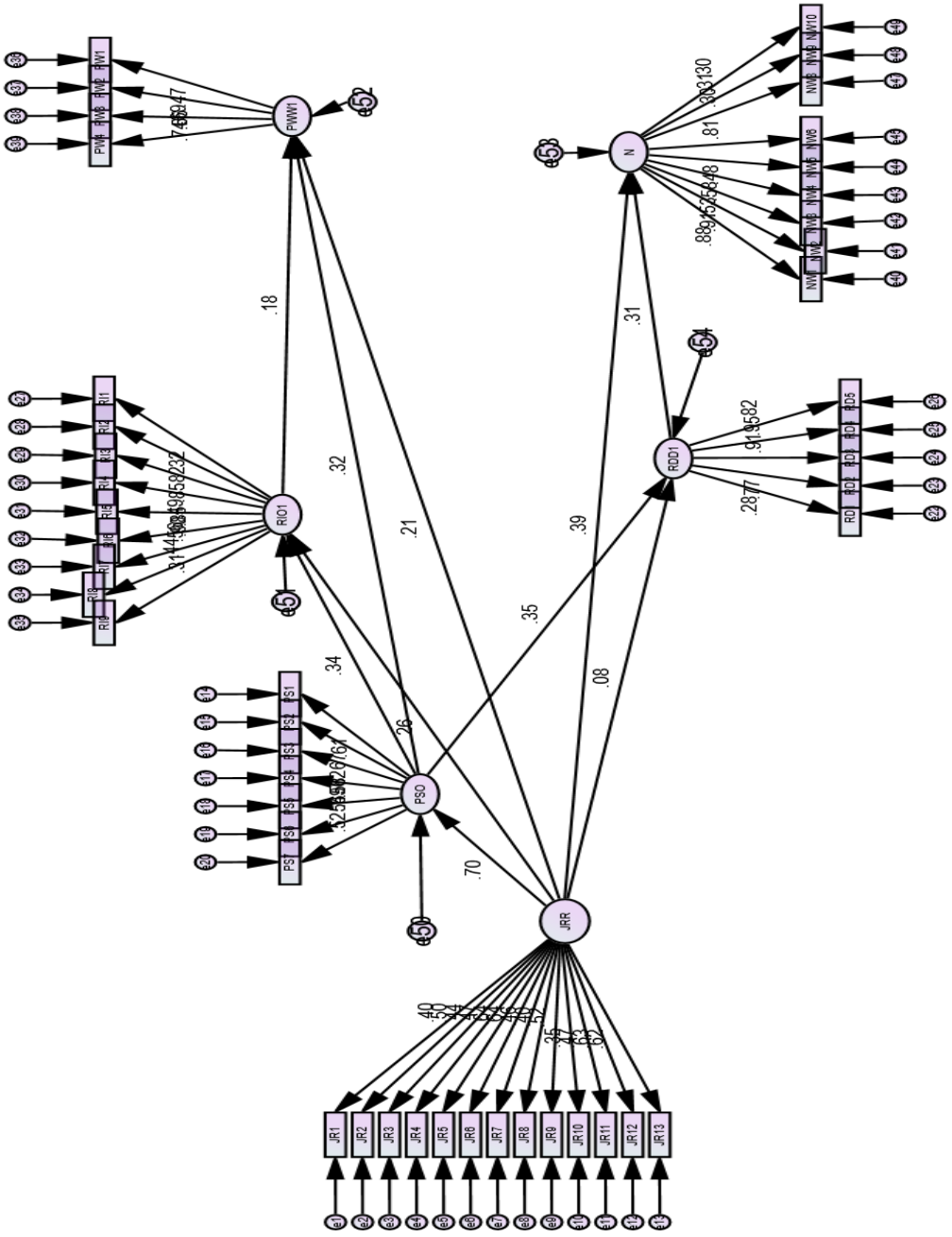


***Table 4.22*:** *Summary of Mediator Results Related to Hypotheses H6 to H11*

Link between Variables	Total Effects (C)	Direct Effects (C')	Indirect Effects (ab)	Results	Mediation Level
β_6 (RI←PS ← JR)	β= .942	β= .551	β= .391	Significant	Partial
	p = .001	p = .018	p = .007		
β_7 (RD←PS ← JR)	β= .922	β= - .421	β= -.501	Significant	Partial
	p = .025	p = .022	p = .021		
β_8 (PWO ←RI ← PS)	β= .855	β= .514	β= .341	Significant	Partial
	p = .012	p = .001	p = .002		
β_9 (NWO ←RD ← PS)	β= -.962	β= -.561	β= -.401	Significant	Partial
	p = .001	p = .01	p = .007		
β_{10} (PWO←RI←PS←JR)	β= .813	β= .371	β= .442	Significant	Partial
	p = .001	p = .018	p = .004		
β_{11} (NWO←RD←PS←JR)	β= -.784	β= -.321	β= -.463	Significant	Partial
	p = .002	p = .015	p = .004		

***$p \leq 0.05$

4.15. Result Analysis of Mediation Process

Table 4.22 shows the results of mediating hypotheses and serial mediation (double mediation) hypotheses. Beta value for indirect and direct effects of each hypotheses is significant, therefore mediation occurred but partial. Because when indirect effect of variables is significant with the direct effect as well, then mediation is called partial mediation. While in ideal situation for full mediation, the value of direct effect for each mediating hypotheses should be insignificant. But in the existing research, the results of mediating hypotheses revealed that in study's independent variable have direct impact on dependent variables as well as an indirect impact through mediators. Specifically results indicated that job resources have significant direct impact on positive work outcomes and negative work outcomes as well as significant indirect impact on positive work outcome and negative outcomes through the mediation of psychological safety and resource investment/resource depletion. Therefore, results indicated that in all the hypotheses partial mediation exists among study variable.

Significant beta value for the total effects also affirmed the partial mediation among variables. Another criteria to determine the level of mediation is to compare the beta values for direct and indirect effect. For example, in the results of H6 (Job resources have positive impact on resource investment through psychological safety) the beta value for direct effect is greater

than the indirect effect (i.e. 0.551>0.391), describes that job resources have more direct impact on resource investment. Similarly, beta values for direct impact of H7, H8 and H11 are more than indirect effect showing that IV (independent variable) have more strong relation with DV (dependent variable) even without the mediator. While beta values for direct effect of H9 and H10 are less than the values of indirect impact. It can be describes as psychological safety has more propensity to impact the negative work outcome through depleting the employees' resources. Similarly, job resources have more propensity to impact the positive work outcomes in the presence of psychological safety and resource investment both as mediating their relation.

4.16. Result Discussion of Hypothesis

The core objective of this research is to unveil the underlying mechanisms under which psychological safety determines the positive and negative work outcomes. This study is specially designed to disclose the influence of employee's resource investment and resource depletion on work outcomes. The uniqueness of research is to probe the impact of job resources provided to the employees at workplace on both positive and negative work outcomes through the well-known mechanism of psychological safety with resource processes.

Hence, results identified that relationships as significant among all proposed independent, mediators and dependent variables like JR-PS, PS-RI, PS-RD, RI-PWO, RD-NWO, JR-PS-RI, JR-PS-RD, PS-RI-PWO, PS-RD-NWO, JR-PS-RI-PWO, JR-PS-RD-NWO. Therefore, results of all proposed hypotheses are mentioned in the below Table 4.20.

***Table 4.23**: Results*

Hypotheses	Status
H1: Job resources are positively related to psychological safety.	Supported
H2: Psychological Safety is positively related to resource investment.	Supported
H3: Psychological Safety is negatively related to resource depletion.	Supported
H4: Resource investments lead towards positive work outcomes.	Supported
H5: Resource Depletion leads towards negative work outcomes.	Supported
H6: Psychological Safety acts as a mediator between job resources and resource investment.	Supported
H7: Psychological Safety acts as a mediator between job resources and resource depletion	Supported
H8: Resource investment as a mediator between psychological safety and positive work outcomes.	Supported
H9: Resource depletion act as a mediator between psychological safety and negative work outcomes	Supported
H10: Psychological Safety and Resource investment mediates the relation between job resources and positive work outcomes.	Supported
H11: Psychological Safety and Resource Depletion mediates the relation between job resources and negative work outcomes.	Supported

Kahn (1990) and Edmondson (1999) both recognized leaders support as having a vital impact on insights of psychological safety. Social exchanges between supervisor and employee have a vital influence on forming the expectations about suitable behaviors (Edmondson, 2004). Kahn (1990) stated having good relations with supervisor's signal crucial information to employees regarding flexibility, support, consistency, competence and trust.

Further, designed constructs to apprehend the supportive work context and recognized the role of coworker and organizational support more influential for psychological safety. Liu et al. (2015), Hirak et al. (2012) and Walumbwa & Schaubroek (2009) also explained the significant relationship among supportive supervisor's behavior and psychological safety based on key tenets of social learning theory (Bandura, 1977). This early research on psychological safety strongly support the H1 and affirms that job resources have significant impact on psychological safety. Leroy et al. (2012) linked psychological safety with interpersonal communication outcome such as greater feedback about errors at individual and

team level. Tynan (2005) and Bienefeld & Grote (2014) connect the high level of psychological safety with feedback provisions and more voice behaviors among employees.

Zhang, Fang, Wei, & Chen (2010) found the association of psychological safety with greater knowledge sharing. This literature supports the H2 and confirms that psychological safety has associated with resource investment (feedback provision and knowledge sharing). Increasing research at both individual and team level has disclosed the influence of leader's support on work outcomes through psychological safety. May et al. (2004) found that supervisor's support and social support as a result of co-worker relationships sturdily impact the employee's perception of psychological safety, which in turn, translate into many outcomes like voice behaviors, work engagement, job performance and creative work involvement. Roberto (2002) showed that employees' communal perception of leader's support and interaction among the members of team foster numerous team level outcomes like team performance, team learning, quality improvement through the development of psychological safety.

Carmeli & Zisu (2009) found that employee's insights about supportive organizational practices foster work outcomes through mediating mechanism of psychological safety. This literature supports H4 of the study and affirms that psychological safety mediates between job resources and resource investment. Palanski and Vogelgesang (2011) disclosed the positive link between psychological safety and creative thinking through employee's investment by adopting risky behaviors. Sanner and Bunderson (2013) in their meta-analysis showed the indirect influence of psychological safety on team performance through team learning. This literature supports the H8 and affirms that psychological safety leads to positive outcomes through the mediation of resource investment. Above mentioned literature strongly approves the motivational path of theoretical framework, further, results of this study also agreed with past literature supporting H10 and declares that job resources have indirect influence on positive work outcomes through the mediating role of employee's perception of psychological safety and resource investment by employees.

Huyghebaert et al. (2018) indicated that psychosocial safe climate has negative association with burnout (exhaustion) and work-family conflict through an underlying mechanism of need thwarting. Although the association between psychological safety and negative work outcomes through resource depletion has not been investigated, but through above mentioned literature, it appears that these variables could be related. Trougakos et al.

(2015) found that when employees become unable to control their emotions, thoughts and behavior (not psychologically safe), this depletion cause exhaustion, which in turn leads to negative work outcomes. This literature support confirms the H9 and asserts that resource depletion mediates the negative relation of psychological safety with negative work outcome.

Barling & Frone (2017) disclosed that chronic resource loss is damaging thing leading towards the negative outcome of lower employee well-being. Halbesleben (2006) also investigated that diminished resources have positive impact on employee's burnout. Hobfoll & Shirom (1993) showed the positive relation between stress and resource depletion. Karatepe & Tekinkus (2006) found the significant impact of resource depletion on work-family conflicts. Bradley et al. (2011) found the negative association between psychological safety and relationship conflict. This literature supports H5 and confirms that resource depletion leads to negative work outcomes.

Moreover, despite literature support for both mechanisms of study, theoretical support of conservation of resource theory (Hobfoll, 1989) is more pronounced. Results of this study also affirm the health impairment pathway of the theoretical framework, which describes a holistic view of underlying process through which psychological safety develops and influence negative work outcomes. COR theory provides the succinct explanation for the development of psychological safety and how individual resource depletion may determine the relationship of psychological safety with negative work outcomes (Newmann et al., 2017). Hobfoll (2011) stated that individual having no access to greater resources do not perceive work environment as psychologically safe and more susceptible to resource depletion. Conservation of resource theory strongly upholds the H10 and H11 and asserts that job resources have indirect negative impact on the negative work outcomes (stress and conflict) as well as positive impact on positive work outcomes through the mediation of psychological safety and resource mechanism.

CHAPTER 5

CONCLUSION, IMPLICATION, LIMITATION AND FUTURE RECOMMENDATION

5.1. Overview

The research objective of the study is to empirically examine the influence of antecedents on developing psychological safety and explore the underlying constructs which mediates its impact on dual work outcomes. Therefore, this study aims to analyze the proposed relations among all variables such as job resources, psychological safety, resource investment, resource depletion, positive work outcomes and negative work outcomes. The literature showed that many research works has been done on such proposed relationships.

Psychological safety, as perception of an individual about the level of comfort in expressing himself without fear of negative consequences to his image, career or status has been identified as vital in organizational researches for employee collaborations to attain shared goals (Edmondson 1999). In research, three major supportive factors, known as job resources have been recognized as the antecedents in the development of psychological safety (Singh, Shaffer & Selvarajan, 2018; Ling, Duan & Zhu, 2010).

Psychological safety can be used to describe and determine various organizational outcomes such as innovation, creativity, performance, employee attitudes, communication, voice behaviors, knowledge-sharing through investment of employees such as learning behaviors (Frazier et al., 2016). This predictor of outcomes may also lead to parallel negative outcomes by depleting employee's valuable resources (Deng et al., 2017). The relationship among all above mentioned constructs in just one context made the gap in existing research to be explored because not any research discussed the entire mechanism of how psychological safety develop and influence dual outcomes in the presence of some underlying variables. Moreover, researches conducted in the context of Pakistan, particularly, in Islamabad/Rawalpindi on psychological safety also lack holistic approach.

This chapter recapitulates the whole research along with theoretical and practical implications of the study. Research limitations of this study will also be discussed in this chapter and based on these limitations, future recommendations are suggested for future

investigators to conduct same study in some differing context or new research based on proposed variables.

5.2. Conclusion

In conclusion, this research highlights the important role of instrumental resources for developing psychological safety and personal resources to enhance influence of job resources and psychological safety on dual outcomes within organization. Job resources in the form of social support that employees receive from their organizations fosters the individual perception of psychological safety, which in turn helps employees to invest their personal resources in order to achieve positive work outcomes and avoid from negative work outcomes. In addition, the relationship between job resources and positive or negative work outcomes varies because of high or low psychological safety and resource investment or resource depletion. For example, when employees on perceiving safety invest their resources through knowledge sharing and feedback provision, this investment of resources will help the organization to obtain resources by acquiring positive work outcome like team performance and creative work. Contrary to this, when employees' resources deplete due to having no access to job resources and no psychological safety, the employees exhaust from their jobs and ultimately conflicts arise among member and they feel stress.

These findings contribute to the literature of psychological safety by extending the scope of research to multiple domains and by expanding the nomological network of inputs and mediators for psychological safety and dual work outcomes beyond the influential indicators of fit, associations and detriments. Findings of this research also validate COR theory as an explanation for well-being and ill-being outcomes and its tenets regarding resource investment and depletion. It is expected that this research will encourage others to further expand the nomological network of individual psychological safety by testing other antecedents and mediators by considering diverse individual, team and organizational outcomes.

5.3. Research implications

5.3.1. Theoretical Implications

Findings of this research have varied implications for developing our understanding of psychological safety. Specifically, this research study contributed to the psychological safety literature by focusing on the antecedents at three distinct level: individual, team and organizational (Tajammal, 2017). In doing so, supervisor support is regarded as individual level antecedent, co-worker support is considered as team-level antecedent and organizational supportive practices is considered as organizational level antecedent. Altogether these antecedents are conceptualized as job resources or social support by Singh, and colleagues (Singh, 2017; Singh et al., 2018) but rarely assessed in empirical literature of psychological safety. This study also expands the nomological network of mediating constructs for psychological safety to influence dual outcomes, which as recognized by organizational scholars (e.g., Roussin & Webber, 2012; Kessel, Kratzer & Schultz 2012; Deng et al., 2017) has been uncommonly followed.

With respect to organizational dual outcomes, this study found that job resources are positively related to positive outcomes, whereas, negatively related to negative outcomes. Psychological safety and resource investment mediated the relationship between workplace job resources and positive work outcomes, whereas, psychological safety and resource depletion mediated the relationship between workplace job resources and negative work outcomes. Inclusively, the research findings are consistent with COR theory. Particularly, notable is that, job resources are directly related to psychological safety and indirectly related to dual work outcomes via psychological safety and resource investment/depletion. This suggests that all forms of job resources play a direct role in fostering psychological safety whereas indirect role to influence workplace outcomes.

For negative work outcome, this research found that job resources were negatively related to negative work outcomes (stress and conflict), further, that psychological safety and resource depletion mediated this relationship. This research is one of few studies that considers the role of resource variables as mediator in research on psychological safety to influence dual outcomes and imitate the original conceptualization of this construct to determine work outcomes (Edmondson, 1999). Because the study considers positive and negative work outcomes with two distinct sets of antecedents within different mechanisms, this research

extends the psychological safety literature by building dual approach to determine outcomes as suggested by Newmann et al. (2017).

This research also provide support for the role of psychological safety, resource investment and resource depletion as key mediating concepts that links job resources to its corresponding outcomes. In doing so, this study reveals underlying psychological mechanisms explaining how job resources influences dual work outcomes. This is also an important contribution because the presence of mediating variables can help to explain the relationship between supporting variable not directly related to positive or negative outcomes such as creativity, team performance, stress and team conflict. Results of our study are consistent with previous research on the mediating role of psychological safety and resource investment or depletion in relationships between organizational factors and contextual outcomes (May et al., 2004; Hagger et al., 2010). The findings provide support for the resource principles proposed by Hobfoll (2011), individuals having opportunity to approach the greater resources (supportive job resources found in work setting laden with psychological safety) are less susceptible to the loss or depletion of resources and more able to arrange their resources for investment through utilizing their currently available resources. By acquiring such extra resources, individual get themselves in better position to cope up with negative outcomes and achieve positive work outcomes. Future researchers can expand this research by taking other types of resources as mediators between contextual antecedents and dual outcomes. It seems that when employees work in a context with dearth of job resources, they will not psychological safe, then it can have harmful influence on employee well-being. The pattern of results is consistent with research of Ng & Feldman (2012), where they found that job resources have indirect and negative influence on work-family conflicts. However, supportive job resources were not directly related to dual outcomes because this study did not formally hypothesize the direct influence. Future researchers should consider examining these explicit or direct relationships.

This research also has implications for COR theory. Initially, this theory was developed as a stress-based theory, more current developments in this theory have argued the significance of resources as a driver for engendering well-being and for conferring preclusion of ill-being (Hobfoll, 2011; Hobfoll et al., 2017). This study contributed to COR literature exploring its principles as novel outcomes of psychological safety. To date, this is the first study to test how people resource pool may work to worsen the depleting behaviors or enhance the investing

behaviors. Thus, this gives us a more holistic view of the impact of employee's resources on their ability to invest or to cope with depletion.

5.3.2. Practical Implications

The study proposes numerous implications for organizational and human resource practitioners in the software houses of Pakistan. This implies a roadmap for managerial practices for the management of software practitioners to engender the climate of psychological safety for achieving creativity and team performance. It is argued and found empirical evidence for the idea that a software engineer's perception of psychological safety is affected by the job resources and his own personal resources to influence outcomes. Software houses can provide the necessary resources of support so that software engineers/designers etc. are more likely to invest in their knowledge and information in order to improve their performance and establish the level of creativity while overcoming exhaustion, stress and conflict.

The research has implications for the Training and Development (T&D) Managers of software houses. Because on the basis of this research they can train their peers, supervisors and software practitioners to be more supportive to each other that will foster psychological safe culture wherein team members can work in collaborative way. T&D managers can organize the interactive sessions of employees to enhance the coworker's support as one of the job resource. The research also indicates that perceptions of psychological safety is central, therefore, in presence of support, employees feel safe by their organization & colleagues and feel encouraged to share knowledge, speak up their mind without being repressed. Conclusions drawn from this research determine that an organizational focus of software houses on creating a supportive workplace is a major prerequisite for psychological safety, which in turn, persuade the employees to invest their resources or deplete them to obtain positive work outcomes in order to abstain negative work outcomes.

The research also offers the implications for human resource development (HRD) managers because on the basis of these findings HRD managers can redefine their performance evaluation criteria's. HRD managers can redesign the performance appraisal standards of software engineers where distinct objectives should be added to measure the performance. For example, employee's supportive attitude towards coworkers, his sense of understanding toward others' concerns, his conflict handling abilities, his stress level under pressure, his feedback provision could be assessed. So that software engineers can boost the level of resource

investment in order to obtain good grade in annual confidential reports or performance appraisal.

The research findings also highlight the importance for HR managers of being aware about the need to manage employee's exhaustion due to workload. Due to the growing number of employees suffering from stress and exhaustion, this study offers the importance of reducing this widespread from work environment and making efforts to minimize the resource depletion among employees. Based on findings, employees and organizations should find ways to overcome the effects of resource depletion by coping up with emotional exhaustion. One way to reduce depletion could be by enhancing the job resources as needed and ensuring that employees feel safe enough to perform their tasks without fear of being mocked or criticized.

In brief, the study emphasizes the importance for human resource professionals in software houses of Pakistan to create work environment where employees' psychological safety and well-being are a priority and where all levels of the organization contribute to formulate the practices and procedures for the fortification of software engineer's psychological health. By implementing such policies, software houses would be able to provide themselves with the means to reduce undesirable consequences (i.e., stress, conflicts within team members) and promote beneficial ones (i.e., creativity, team performance).

5.4. Limitations

The ultimate limitation of this research is the use of quantitative research design due to time and cost constraints, thus restraining its capacity to sightsee the greater details of complex interrelationships between the constructs of study. Second, the use of a self-reported questionnaire also offers many chances for biasness in data. To overcome this, distinct approaches were utilized like ensuring the anonymity of respondent, providing the details of fundamental concepts in the cover page of questionnaire and by using the standard data screening procedures to eliminate unusable responses. Third, due to limited resources, the sample used in this research consists of software houses in twin cities of Pakistan. Therefore, the results have limited generalizability in the other organizations and geographical contexts. Fourth, limitation is the cross-sectional nature due to time constraints, thus it is difficult to draw causal inferences. Fifth, this study only examines the resource concept, in the modeling of psychological safety and dual outcomes. Finally, this study considered a double mediation model with two different paths. It is recognized that indirect relationship between job resources and outcomes may indeed be more complex than originally conceptualized.

5.4. Future Recommendations

Future research may examine the other inputs to psychological safety, such as leadership styles and other mediating constructs to influence outcomes like individual personality traits by using the theoretical perspective of trait activation theory (Tett & Guterman, 2000). Thus, I urge future investigators to examine different possibilities regarding the boundary conditional direct and indirect influence of inputs on outcomes in the presence of psychological safety with other mediating variables.

Future researchers could use qualitative techniques like interviews and observational methods to determine to what extent employees feel comfortable and contribute at workplace. In future, researchers could also investigate the "dark side" or negative effects of high psychological safety by using the meta theoretical perspective of too much of a good thing effect (Pierce & Aguinis, 2013) e.g., too much psychological safety leads to unethical behavior (Pearsall & Ellis, 2011). Future researchers can collect data from multiple cities and may use longitudinal studies to explain the relationship between contextual support and all outcomes. Also, while this research investigated the role of psychological processes in the collectivistic culture of Pakistan, proponents may compare these findings with those from individualistic cultures to find that if similar conclusion can be drawn.

ANNEXURE

Questionnaire

Dear Respondent,

I am MS Scholar and conducting a research study on **'Empirical Investigation of Resource Mechanisms that enable Psychological Safety as Potential Determinant of Dual Pathway Consequences: Evidence from Software Houses in Pakistan Psychological'** under the supervision of Dr. Nisbat Malik**.** For gathering information, I am seeking your assistance and inviting you to participate in this research study by completing the attached questionnaire.

The following questionnaire will require approximately 5 minutes to complete. I assure you that data will be strictly kept confidential and will only be used for academic purpose. To ensure anonymity, you are not supposed to write your name or name of organization anywhere in the questionnaire.

Thank you for taking the time to assist me in my educational endeavors.

Sincerely,
Mehwish Batool
Mehwishbatool93@gmail.com

Gender

1	2
Male	Female

Age

1	2	3	4	5
18-25	26-33	34-41	42-49	50 and above

Qualification

1	2	3
Intermediate	Graduation	Masters or above

Experience

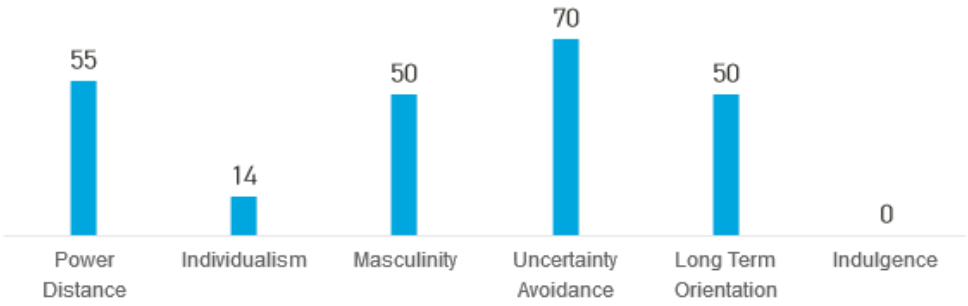
1	2	3	4	5
1-5 (years)	6-10	11-15	16-20	21 & above

Circle a number from 1 to 7 to indicate the extent to which you disagree or agree with the statements where **1=Strongly Disagree, 2=Disagree, 3=Partially disagree, 4=Neutral, 5=Partially Agree, 6=Agree, 7=Strongly Agree.**

ITEMS	SDA	DA	PDA	N	PA	A	SA
Job Resources (Supervisor, Co-worker and Organizational Support)							
@My supervisor is helpful to me in getting the job done.	1	2	3	4	5	6	7
My supervisor takes pride in my accomplishments at work.	1	2	3	4	5	6	7
My supervisor tries to make my job as interesting as possible	1	2	3	4	5	6	7
*My supervisor is willing to extend himself to help me in performing job.	1	2	3	4	5	6	7
My co-workers listen my work-related problems.	1	2	3	4	5	6	7
My co-workers help me while I do difficult tasks.	1	2	3	4	5	6	7
My co-workers help me in emergency situations at work.	1	2	3	4	5	6	7
My organization has developed the most of my talent.	1	2	3	4	5	6	7
@This organization gives me the opportunity to do what I am good at.	1	2	3	4	5	6	7
@This organization uses my strengths.	1	2	3	4	5	6	7
This organization allows me to use my talent.	1	2	3	4	5	6	7
This organization ensures that my strengths are aligned with my job tasks.	1	2	3	4	5	6	7
*This organization allows me to do job in a manner that best suits my strong points.	1	2	3	4	5	6	7
*This organization applies my strong points.	1	2	3	4	5	6	7
Psychological Safety							
I am able to raise problems and tough issues	1	2	3	4	5	6	7
My unique skills and talent are valued and utilized by team members.	1	2	3	4	5	6	7
If I make a mistake on this team, it is often held against you.	1	2	3	4	5	6	7
People in my organization sometimes reject others for being different.	1	2	3	4	5	6	7
It is safe to take a risk in this organization	1	2	3	4	5	6	7
It is easy for me to ask other members of this organization for help	1	2	3	4	5	6	7
No one would intentionally act in a way that undermines my efforts	1	2	3	4	5	6	7
Resource Investment (Feedback Provision & Knowledge Sharing)							
Team members ask each other about whether their ideas are understood.	1	2	3	4	5	6	7
Team members ask each other's expectations about one another.	1	2	3	4	5	6	7
Team members ask each other about the accuracy of their knowledge.	1	2	3	4	5	6	7
Team members ask each other about values and attitudes of the organization.	1	2	3	4	5	6	7
@Team members give each other feedback about their contributions.	1	2	3	4	5	6	7
@Team members let others know when their ideas are not useful.	1	2	3	4	5	6	7
*Team members let others know when their ideas are useful.	1	2	3	4	5	6	7

*Team members are open with others about their contribution to the team.	1	2	3	4	5	6	7
There is sharing of information, knowledge and skills among members.	1	2	3	4	5	6	7
More competent team members freely share specialized skills and knowledge with other members.	1	2	3	4	5	6	7
Members in my team share their knowledge & expertise with one another.	1	2	3	4	5	6	7
Team members know about who is most competent relevant to their work.	1	2	3	4	5	6	7
Positive Work Outcomes (Creativity & Team Performance)							
I established originality in my work	1	2	3	4	5	6	7
I generated novel ideas revolutionary to our field.	1	2	3	4	5	6	7
I found new uses for existing methods.	1	2	3	4	5	6	7
I solved problems that had caused difficulty for others	1	2	3	4	5	6	7
@I took risks for trying new ideas and approaches to problems.	1	2	3	4	5	6	7
I identified opportunities for developing new products/processes	1	2	3	4	5	6	7
I served as a good role model for creativity	1	2	3	4	5	6	7
*I took risks in terms of producing new ideas in doing my job.	1	2	3	4	5	6	7
My team successfully meets time deadlines.	1	2	3	4	5	6	7
My team achieves high quality performance.	1	2	3	4	5	6	7
My team accomplishes its work goals and overall performance targets.	1	2	3	4	5	6	7
Resource Depletion							
@I feel emotionally drained from my work.	1	2	3	4	5	6	7
I feel used up at the end of my work day.	1	2	3	4	5	6	7
I dread up getting up in the morning and having to face another day.	1	2	3	4	5	6	7
I feel I am working too hard on my job.	1	2	3	4	5	6	7
@I feel mentally exhausted	1	2	3	4	5	6	7
I feel burned out from my work.	1	2	3	4	5	6	7
Negative Work Outcomes (Stress & Team Conflict)							
I am under constant time pressure due to a heavy workload.	1	2	3	4	5	6	7
My job is physically demanding.	1	2	3	4	5	6	7
I have very little freedom to decide how I do my work.	1	2	3	4	5	6	7
I have to perform very fast.	1	2	3	4	5	6	7
I often feel irritated or upset from my work.	1	2	3	4	5	6	7
The demands of my job interfere with my personal life.	1	2	3	4	5	6	7
@Team members sometimes disagree	1	2	3	4	5	6	7
Personality con*fl*icts often appear in my team.	1	2	3	4	5	6	7
@There is sometimes tension among members of the team.	1	2	3	4	5	6	7
Team members sometimes express con*fl*icting ideas	1	2	3	4	5	6	7
There is a lot of conflict about how to do the task or ideas generated.	1	2	3	4	5	6	7
There is no conflict about the work I do in my work unit.	1	2	3	4	5	6	7
*Sometimes there is contradiction among members of team	1	2	3	4	5	6	7
*Team members often have different opinions.	1	2	3	4	5	6	7

Figure 1: Hofstede Cultural Dimension index of Pakistan



Source: https://www.hofstede-insights.com/country-comparison/pakistan/

TABLE 3.1: Five Software Technology Parks located at Islamabad/Rawalpindi.

Serial No.	Software Technology Park	Location	Target Software Houses
1	Awami Markaz Software Technology Park	F-5/1, Islamabad	Arkotech Coporation, Technologix (Pvt) Ltd, Croem Inc, Innnvente Software development Solution, Knowledge Plarform (pvt) Ltd.
2	Evacuee Trust Complex Software Technology Park	F-5/1, Islamabad	Ciklum, Phloc Solutions, Ovex Technologies, Bright Spyre, Net Sol Technologies
3	KSL Software Technology Park	I-9/3, Islamabad	Xflow research Inc., Zigron, Seven Technology, Datum Square IT services, Discrete Logix (pvt) Ltd
4	Rose Center Software Technology Park	Satellite Town, Rawalpindi	ARK Techno Solutions, MTBC, Smartex Solutions, Code Maze, Salville Technologies
5	Meridian Software Technology Park	Rehmanabad, Rawalpindi	Untangle Solutions, M3 Hive, Smart-IS, Spel Studio, Softifyme

TABLE 3.3: The table shows the items used to compile the six variables; Job Resources (JR), psychological safety (PS). Resource Investment (RI), Positive Work Outcomes (PWO), Resource Depletion (RD), Negative Work Outcomes (NWO). If a question ends with ®, the response is to be reversed when creating the index variable.

ID.	ITEMS
JR1	My supervisor is helpful to me in getting the job done.
JR2	My supervisor takes pride in my accomplishments at work.
JR3	My supervisor tries to make my job as interesting as possible
JR4	My supervisor is willing to extend himself to help me in performing job. ®
JR5	My co-workers listen my work-related problems.
JR6	My co-workers help me while I do difficult tasks.
JR7	My co-workers help me in emergency situations at work.
JR8	My organization has developed the most of my talent.
JR9	This organization gives me the opportunity to do what I am good at.
JR10	This organization uses my strengths. ®
JR11	This organization allows me to use my talent.
JR12	This organization ensures that my strengths are aligned with my job tasks.
JR13	This organization allows me to do job in a manner that best suits my strong points. ®
JR14	This organization applies my strong points.
PS1	I am able to raise problems and tough issues
PS2	My unique skills and talent are valued and utilized by team members.
PS3	If I make a mistake on this team, it is often held against you.
PS4	People in my organization sometimes reject others for being different.
PS5	It is safe to take a risk in this organization
PS6	It is easy for me to ask other members of this organization for help
PS7	No one would intentionally act in a way that undermines my efforts
RI1	Team members ask each other about whether their ideas are understood.
RI2	Team members ask each other's expectations about one another.
RI3	Team members ask each other about the accuracy of their knowledge.
RI4	Team members ask each other about values and attitudes of the organization.
RI5	Team members give each other feedback about their contributions. ®
RI6	Team members let others know when their ideas are not useful.
RI7	Team members let others know when their ideas are useful. ®
RI8	Team members are open with others about their contribution to the team.
RI9	There is sharing of information, knowledge and skills among members.
RI10	More competent team members freely share specialized skills and knowledge with other members.
RI11	Members in my team share their knowledge & expertise with one another.
RI12	Team members know about who is most competent relevant to their work.
PWO1	I established originality in my work
PWO2	I generated novel ideas revolutionary to our field.
PWO3	I found new uses for existing methods.
PWO4	I solved problems that had caused difficulty for others
PWO5	I took risks for trying new ideas and approaches to problems.
PWO6	I identified opportunities for developing new products/processes
PWO7	I served as a good role model for creativity
PWO8	I took risks in terms of producing new ideas in doing my job. ®

PWO9	My team successfully meets time deadlines.
PWO10	My team achieves high quality performance.
PWO11	My team accomplishes its work goals and overall performance targets.
RD1	I feel emotionally drained from my work.
RD2	I feel used up at the end of my work day.
RD3	I dread up getting up in the morning and having to face another day.
RD4	I feel I am working too hard on my job.
RD5	I feel mentally exhausted. ®
NWO1	I am under constant time pressure due to a heavy workload.
NWO2	My job is physically demanding.
NWO3	I have very little freedom to decide how I do my work.
NWO4	I have to perform very fast.
NWO5	I often feel irritated or upset from my work.
NWO6	The demands of my job interfere with my personal life.
NWO7	Team members sometimes disagree
NWO8	Personality con*fl*icts often appear in my team.
NWO9	There is sometimes tension among members of the team. ®
NWO10	Team members sometimes express con*fl*icting ideas
NWO11	There is a lot of conflict about how to do the task or ideas generated.
NWO12	There is no conflict about the work I do in my work unit.
NWO13	Sometimes there is contradiction among members of team
NWO14	Team members often have different opinions. ®

Table 4.10.0: Rotated Component Matrix for EFA

Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
NWO01						.589
NWO02						.662
NWO03						.721
NW004						.784
JR01	.571					
JR02	.548					
JR03	.426					
JR04	.577					
JR05	.460					
JR06	.579					
JR07	.579					
JR08	.632					
JR09	.654					
JR010	.509					
JR011	.558					
JR012	.428					
PS6						
PSO1		.839				
PSO2		.864				
PS03		.845				
PS04		.818				
RI10						
RI11						
RI12						
PW1						
NW05						.412
NWO6						.500
PW5						
PW7						
PW8						
PW10						
RI01				.678		
RI02				.678		
RI03				.715		
PW01					.774	
PW02					.851	
PW03					.887	
PW04					.798	
RI04				.582		
RI05				.620		
RI06				.703		
RI07				.475		
NW8						
NW9						
RD01			.873			
RD02			.873			
RD03			.732			
RD04			.827			
NW14						

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 7 iterations.

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