THE EFFECT OF AUTHENTIC LEADERSHIP, PERSONAL MASTERY, AND JOB COMPLEXITY ON EMPLOYEE CREATIVITY: THE MEDIATING ROLE OF AUTONOMOUS MOTIVATION

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FACULTY OF BUSINESS AND ECONOMICS UNIVERSITI MALAYA KUALA LUMPUR

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THE EFFECT OF AUTHENTIC LEADERSHIP, PERSONAL MASTERY, AND JOB COMPLEXITY ON EMPLOYEE CREATIVITY: THE MEDIATING ROLE OF AUTONOMOUS MOTIVATION

ABSTRACT

Creativity is necessary for modern-day organizations to make sense of the everchanging environment and thrive in the face of intense competition. A significant amount of importance is assigned to creativity at the workplace, due to its part in enabling the organizations to gain and maintain a sustainable competitive advantage. Despite its importance for organizational success and performance, it remains an area of little empirical research. Though creativity is essential for all types of jobs and organizations, the study of creativity at software development firms is of particular importance because of its relevance to the activities of these organizations. Literature tells us that employee creativity results from the interaction of different factors present within the work environment and the individual, as skills and attitudes responsible for producing useful and novel innovations can be learned and honed over time. The factors facilitating creativity at the workplace can range from leadership to job characteristics to individual differences in motivation. The study aims to unravel the antecedents of workplace creativity by investigating the role of leadership, work environment, and personality orientation. For that purpose, the study sets out to examine the effect of two environmental factors, authentic leadership and job complexity and an individual-level factor of personal mastery orientation, on employee creativity at software development organizations in Pakistan, mediated through autonomous motivation. The paucity of research regarding the role of these factors in the software development organizations of Pakistan warrants this study. In pursuit of the study objectives, this study develops an integrated model of Self-determination theory (SDT) and componential theory of creativity to investigate the proposed relationship between the study's variables and how

they influence the dependent variable. The basic model of SDT was used to construct the theoretical framework of the study. Seven hypotheses were developed based on the developed theoretical model. Quantitative research approach was employed following a post-positivistic paradigm. Primary data was collected using a survey questionnaire. A total number of 341 usable self-reported responses were collected from the employees of software development organizations in Pakistan. The study uses a cross-sectional design. Partial least square (PLS) structural equation modeling (SEM) was used for data analysis and confirming the proposed hypothesized relationships. The study's findings provide empirical evidence of the relationship between authentic leadership, personal mastery, job complexity, and employee creativity through autonomous motivation. The results of the study suggest that authentic leadership has a significant positive relationship with autonomous motivation. Also, personal mastery and job complexity have a significant positive relationship with autonomous motivation. Additionally, autonomous motivation has a significant positive relationship with employee creativity. Furthermore, it was revealed that autonomous motivation mediates the relationship between authentic leadership, personal mastery, job complexity, and employee creativity. By integrating the theoretical models, the study contributes to the body of knowledge by providing understanding of leadership's role, individual differences, and job characteristics in fostering employee creativity. In practice, the study provides valuable inputs for the management of software development organizations faced with the challenge of low creative output and lays out recommendations for using factors present at the workplace appropriately to enhance creativity. Finally, study implications, limitations, and future research are highlighted.

Keywords: Autonomous motivation, creativity, job complexity, personal mastery, self-determination.

KESAN KEPIMPINAN AUTENTIK, PENGUASAAN PERIBADI DAN KOMPLEKSITI KERJA TERHADAP KREATIVITI PEKERJA: PERANAN PENGANTARA MOTIVASI AUTONOMI

ABSTRAK

Kreativiti penting bagi sesebuah organisasi untuk berada dalam persekitaran yang sentiasa berubah dan berkembang maju serta menghadapi persaingan yang sengit. Keutamaan diberikan kepada kreativiti di tempat kerja kerana ia membolehkan organisasi memperoleh dan mengekalkan kelebihan daya saing yang mampan. Walaupun kreativiti penting untuk kejayaan dan prestasi organisasi namun kajian empirikal terhadapnya masih kurang. Kreativiti adalah penting untuk semua jenis pekerjaan dan organisasi terutamanya dalam firma pembangunan perisian kerana ianya berkait dengan aktiviti organisasi ini. Kajian lepas mendapati kreativiti pekerja terhasil daripada interaksi faktor-faktor yang berbeza yang wujud dalam persekitaran kerja dan individu. Hal ini adalah kerana kemahiran dan sikap dapat menghasilkan inovasi yang baru dan berguna yang boleh dipelajari dan dipertingkatkan dari semasa ke semasa. Faktor-faktor yang menggalakkan kreativiti di tempat kerja terdiri daripada kepimpinan, ciri-ciri pekerjaan dan perbezaan individu dalam motivasi. Kajian ini bertujuan untuk merungkai faktor-faktor sedia ada berkaitan kreativiti di tempat kerja dengan mendalami peranan kepimpinan, persekitaran kerja, dan orientasi personaliti. Fokus kajian ini adalah untuk menilai kesan dua faktor persekitaran, kepimpinan autentik dan kompleksiti kerja dan orientasi penguasaan peribadi di peringkat individu terhadap kreativiti pekerja dalam organisasi pembangunan perisian di Pakistan, menggunakan motivasi autonomi sebagai pengantara. Kurangnya kajian terhadap peranan faktorfaktor ini dalam organisasi pembangunan perisian di Pakistan mendorong kajian ini dijalankan. Bagi mencapai objektif kajian, satu model bersepadu dibangunkan menggunakan Teori Penentuan Diri Sendiri (SDT) dan teori komponen kreativiti untuk menjelaskan hubungan di antara pembolehubah kajian yang dicadangkan dan bagaimana ia mempengaruhi pembolehubah bersandar. Model asas SDT digunakan untuk membina kerangka teori kajian. Model teori yang dibangunkan telah digunakan untuk membina tujuh hipotesis. Kajian ini menggunakan pendekatan kuantitatif sejajar dengan paradigma pasca-positivistik. Data primer dikumpulkan menggunakan instrumen soal selidik. Sebanyak 341 respons telah dikumpulkan daripada pekerja organisasi pembangunan perisian di Pakistan. Kajian ini menggunakan reka bentuk keratan rentas. Penganalisisan data kajian dan pengesahan hipotesis dijalankan menggunakan analisis Permodelan Persamaan Struktural (SEM) khususnya Partial Least Square (PLS). Dapatan kajian menghasilkan bukti empirikal berkaitan hubungan antara kepimpinan autentik, penguasaan peribadi, kompleksiti kerja, dan kreativiti pekerja melalui motivasi autonomi. Ini menunjukkan bahawa kepimpinan autentik, penguasaan peribadi dan kompleksiti kerja mempunyai hubungan positif yang signifikan dengan motivasi autonomi. Selain itu, motivasi autonomi turut mempunyai hubungan positif yang signifikan dengan kreativiti pekerja. Secara ringkasnya, motivasi autonomi merupakan pengantara dalam hubungan di antara kepimpinan autentik, penguasaan peribadi, kompleksiti kerja, dan kreativiti pekerja. Kajian ini menyumbang kepada memberi pemahaman inti pati tentang peranan kepimpinan, perbezaan individu, dan ciri pekerjaan dalam memupuk kreativiti pekerja melalui penyepaduan model teori. Secara praktikalnya, kajian ini memberikan maklumat yang bermanfaat dalam pengurusan organisasi pembangunan perisian yang berhadapan dengan cabaran output kreatif yang rendah, di samping mengemukakan faktor penambahbaikan yang sewajarnya bagi meningkatkan kreativiti di tempat kerja. Penekanan juga diberikan terhadap implikasi dan batasan kajian serta cadangan penyelidikan masa depan.

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LIST OF SYMBOLS AND ABBREVIATIONS

For examples:

AL	:	Authentic Leadership
AM	:	Autonomous Motivation
BP	:	Balanced Processing
CR	:	Creativity
DL	:	Desire to Learn
ICT	:	Information Communication Technology
IMP	:	Internal Moral Perspective
IT	:	Information Technology
JC	:	Job Complexity
LIT	:	Learned Industrous theory
MG	:	Mastery Goals
NBP	:	National Bank of Pakistan
PLS	:	Partial Least Square
PM	:	Personal Mastery
RT	:	Relational Transparency
SA	:	Self Awareness
SBP	:	State Bank of Pakistan
SDT	:	Self-Determination Theory
SEM	:	Structural Equation Modeling
SET	:	Social Exchange Theory
SPSS	:	Statistical Package for Social Science
WEF	:	World Economic Forum

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CHAPTER 1: INTRODUCTION

1.1 Introduction

This chapter is made up of nine sections. The first section contains the background and an overview of the study, and the second section starts with providing a brief introduction to the context of the study. The problem statement is laid down in the third section, followed by an overview of the significance of the study in the fourth section. Research questions are discussed in the fifth section, and the sixth section outlines the research objectives. The seventh section contains the theoretical underpinning of the study. Operational definitions are provided in the eighth section. The last section discussed the overall organization of the study and briefly touches upon the description of each chapter.

1.2 Background

"Creativity is one of the last remaining legal ways of gaining an unfair advantage over the competition" Ed McCabe (as Cited in Howkins, 2002)

Creativity is no longer a luxury but a necessity in every sphere of life; from teaching school children to research laboratories devising methods of habitation of other planets, creativity is needed. In the dynamic environment of the 21st century, organizations are facing rapid changes, global competition, and fast-paced technological advancements. In such an environment, creativity becomes a critical resource for basic survival and gaining long-term sustainable competitive advantage (Anderson, De Dreu, & Nijstad, 2004; McMahon & Ford, 2013). There is no doubt that individuals, businesses, and nations can gain and maintain competitive advantage with the help of creativity (Ford & Gioia, 2000) because the orientation of the new economy has changed from "mass production" to "ideas and creativity" (Carayannis & Sagi, 2001). It would not be wrong

to say that 21st organizations would need creativity for survival instead of monetary resources (Firestien, 1996).

But what is the source of creativity? Creativity is a product of an individual (Woodman, Sawyer, & Griffin, 1993), and individual employees are the only source of creativity for an organization (Oldham & Cummings, 1996). In today's competitive environment, creative employees can create extra value for organizations (George, 2007), generate ideas, use them, and then pass them on to co-workers for further development. That would ultimately lead to organizational development, adaptation, and survival (Shalley, Zhou, & Oldham, 2004). Creative employees effectively provide their organizations with more options to be used in diverse situations and put their organizations in a better position to compete.

Though creativity has been studied since the 1950s, research on "creativity is more important today than ever before" (p. 658) because of the ever-increasing complex world around us (Runco, 2004a). During the last decade discipline of management and organizational psychology has seen a surge in workplace creativity research (Anderson, Potočnik, & Zhou, 2014). In a survey by IBM in 60 countries from 1500 CEOs in 33 industries, creativity was regarded as an essential ingredient for organizational success, even more than discipline, integrity, rigor, and management (IBM, 2010). In another survey commissioned by Adobe, Inc, senior managers of 82% of the companies regarded creativity as a necessity for gaining business benefits, but 60% of these managers viewed their own companies as not creative (Forrester Research, 2014), indicating a substantial are of concern. In synergy with practitioners, academic researchers are also paying an increased amount of attention to workplace creativity. For example, keyword "creativity" fetched more than 6000 entries in a simple Web of Sciences search under business and management discipline. It would be safe to

conclude, as in the words of Zhou and Hoever (2014), that "This is an exciting time for the study of workplace creativity" (p. 334).

Though every job requires a certain degree of creativity, jobs in the information technology (IT) industry are very complex and knowledge-intensive (Gu & Tong, 2004) and require creativity as a precondition for successful performance (Firestien, 1996). The IT industry is a labor-intensive (Dhar & Mittal, 2015), and employees are the key determinants of competitive advantage (Griffeth, Hom, & Gaertner, 2000). This study explicitly uses the software industry to define its boundaries, which is one of the subsectors of the IT industry. The software industry is characterized by a short product and technology life-cycle, an extremely competitive environment, and complex problemsolving jobs that require continuous creativity and innovation (Edison, Bin Ali, & Torkar, 2013). Jobs in software industry are purely intellectual in nature, and software development requires considerable cognitive resources. Employees of the software industry are referred to as software developers or software engineers. Successful job performance for a software developer requires many skills to varying levels, from basic programming languages to productive methodologies for understanding more sophisticated software engineering topics (Hedin, Bendix, & Magnusson, 2008). Creativity is especially relevant in software development because software developers are creative individuals tasked with making sense of the previously unknown problems and problems requiring creative solutions (Dyba, 2000). The nature of the job in the software development industry makes creativity a basic requirement and a precondition without which it would be difficult to survive in such dynamic conditions. The performance metric for the effectiveness of software industry in any country can be the software related goods and services exports.

In Pakistan, software development companies export goods and services approximately worth 700 million USD annually (State Bank of Pakistan, 2020), which is less than one percent of the country's GDP. In comparison, India earned 67.4 Billion USD from software exports alone in 2020-21 (Reserve Bank of India, 2021), accounting for roughly four percent of the GDP. Software and IT industry can be the engine of growth for developing countries like Pakistan. As a matter of fact, IT industry was one of the major contributors to bringing the Indian economy to international attention (Dhar & Mittal, 2015), and the same can be said about the rise of the Chinese as a major global IT player (Arain, Qazi, Moinuddinabro, & Tunio, 2014). However, exports numbers show that Pakistan is below its true potential in this sphere. Pakistan's software industry is vibrant and evolving, but like many other developing countries, it is marred by a lack of investment in creativity and innovation, keeping it from realizing its full potential (Wadho & Chaudhry, 2018). Creativity is the feeding fuel for any software industry. In the case of developing countries like Pakistan, creativity is especially an essential commodity, given the lack of encouragement for new and creative ideas at all levels, from education to the workplace (Awan & Hassan, 2020). Furthermore, the lack of creativity is recognized as a major threat to Pakistan's software industry (National Bank of Pakistan, 2018).

An organization's total creative performance is the sum of its employees' creativity. Same is valid for organizations in the software developing industry. Software developers are intelligent individuals, and software development is an intricate process. Inducting creativity in the performance equation makes the management formula even more complicated. Amabile (1996) define creativity as the production of novel and useful ideas. A consensus exists among researchers about the novelty and usefulness part of the definition, but the preconditions and factors responsible for creativity are debated. Two major theories of creativity at the workplace, the componential theory of creativity (Amabile, 1988) and interactionist theory (Woodman et al., 1993), propose that creativity in the workplace is a product of interaction between personal and environmental factors. The study is built on the theoretical foundations of selfdetermination theory (SDT) (Deci & Ryan, 1985b) which states in its basic model (Deci, Olafsen, & Ryan, 2017) that environmental and personal factors have a central role in motivating an individual to exhibit behaviors like creativity. It states that every human being has three basic psychological needs; 1) need for affiliation, 2) need for autonomy, 3) need for competence. When all three basic needs are fulfilled, an individual becomes self-determined and indulges in behaviors like creativity. The study proposes that when basic psychological needs are fulfilled with the help of factors from environment and within an individual, he becomes self-determined thus exhibit creativity.

Previously, employee creativity antecedents have been studied in the sphere of personality, reward (both intrinsic and extrinsic), co-workers' role, organizational support, resources, and leadership support, effect of teams and groups composition, affect, and work characteristics (Anderson et al., 2014; Zhou & Hoever, 2014). But still, research about the environmental and contextual antecedents of employee creative behavior is underdeveloped and scarce (Gomes, Rodrigues, & Veloso, 2016). The study aims at exploring personal and environmental factors responsible for inducing employee creative behavior based on the assumption of SDT. Moreover, leadership is perhaps the most influential factor in an organization. Researchers have called for examining the role of leadership in inducing employee creative behavior (Shalley & Lemoine, 2018), and the mechanisms through which leaders affect their followers' creativity (Gerhart & Fang, 2015). Previously different leadership styles have been examined for their role in inducing creativity, for example, transformational leadership (Wang, Tsai, & Tsai, 2014), servant leadership (Yang, Liu, & Gu, 2017), ethical leadership (Chen & Hou,

2016), but authentic leadership style has received little attention despite its effectiveness in encouraging employee creative behavior in comparison to these leadership styles (Hughes, Lee, Tian, Newman, & Legood, 2018; Lee et al., 2020). This study sees authentic leadership as a major factor affecting employee creative behavior.

Oldham and Cummings (1996) combined personal and environmental factors (organizational context attributes) and found that creative performance was better when both types of factors were present in the picture. Among the factors within an individual, personality dispositions have been a topic of timeless interest. The study proposes motivational orientation of personal mastery as a factor responsible for inducing creative behavior. Personal mastery is a motivational orientation. People high on personal mastery strive for excellence, are hardworking, and keep trying to learn new things (Kanfer & Heggestad, 1997).

Moreover, work or job characteristics have shown a significant association with employee creativity (Gomes et al., 2016; Van den Broeck & Parker, 2017). The componential model of creativity (Amabile, 2012) has three components at the individual level: 1) domain-relevant skills, 2) creativity-relevant skills, and 3) task motivation. Though task motivation operates at the individual level and pertains to how the performer perceives work characteristics, it links the intrinsic state of the individual with extrinsic work attributes. It denotes that the arrangement and characteristics of work have motivational and performance consequences. Research shows that complex jobs are more motivating and have more creative potential than simple and routine tasks (Liu, Bracht, Zhang, Bradley, & van Dick, 2021; Reijnders & de Vries, 2018). Therefore, the role of job complexity was chosen as an environmental antecedent for employee creative behavior. Motivation defined under SDT is richer as compared to the traditional understanding of intrinsic and extrinsic motivation. SDT suggests that motivation is spread on a continuum of intrinsic and extrinsic motivation poles, and in between the extremes lie different types of motivation with various blends of control and autonomy and different degrees of internalization of extrinsic motivation. It further groups these motivations into two broader types of "autonomous motivation" and "control motivation." SDT uses autonomous motivation as a synonym of self-determination state. When all three basic psychological needs (need for affiliation, autonomy, and competence) are fulfilled, an individual becomes self-determined or autonomously motivated.

Based on the literature review, the study proposes that basic psychological needs are fulfilled with the presence of the above-discussed factors leading to autonomously motivating the employee. Previous studies show a positive association between autonomous motivation and creativity (Chen, Zhang, Li, & Fu, 2021; Manganelli, Thibault-Landry, Forest, & Carpentier, 2018; Ren, Li, & Zhang, 2017). Hence, autonomous motivation is proposed as a mediating mechanism between the abovediscussed antecedents of employee creative behavior. In order to make a contribution to the body of knowledge, contextual factors (authentic leadership and job complexity) and personal factors (motivational orientation of personal mastery) are combined in a unique theoretical model based on the basic model of SDT through the process variable of autonomous motivation to explain employee creative behavior.

1.2.1 Overview of Software development sector in Pakistan

Technology has had an enabling role in human progress throughout history. In the 21st-century, Information technology has a profound impact on laying the foundations for knowledge-based societies and economies. Software development industry is a component of the larger information technology industry. It accounts for twelve percent

of the global information technology industry (Comptia, 2020). The global software product market is expected to grow up to 968.25 billion USD by the end of 2021, with a compound average growth rate of four percent each year. With this compound average growth rate, the global software industry is estimated to swell up to 1.5 trillion USD by 2025 (Business Wire, 09 September 2021). It is estimated that the total number of software developers' population is standing at 23.9 million worldwide in 2021, which is forecasted to grow to 28.7 million by 2024 (Gupta, 2021). Major players in the global software development market are companies like HP Inc, Dell Technologies, HCL Technologies, Salesforce.com Inc, IBM, Oracle Corporation, and Fujitsu Ltd. Software companies carry their operations by designing, developing, and publishing software for their clients. Other than that, assistance in software installation and after-sale support is also the main activities of software companies' operations. Software development market segments are; operating systems, productivity software (databases, backup, and storage), software marketing and distribution, business and enterprise software, gaming, editing design, and rendering software. The software development industry is characterized by high competition in prices, products, and portfolios from existing and new entrants (Chugh, Chanderwal, Upadhyay, & Punia, 2019).

Pakistan's contribution to the global software industry is negligible, but it is making progress towards its due share in the international information technology industry. Pakistan has 16 software technology parks across its four provinces. More than three hundred international IT companies are operating in Pakistan. Pakistan is the 4th most popular country for freelancing (Gilchrist, 2019). IT companies in Pakistan are working on technologies like Blockchain, AI, Big Data, IoT, AR/VR, Cloud Computing, 5G, Quantum Computing. Pakistan's IT exports are in the low to medium value-added services such as enterprise planning, application, development, and integration. However, there is low activity in the product development segment of IT services. The number of new companies registered with the Security and Exchange Commission of Pakistan (SECP) each year has increased nearly six-fold during the last five years, with a total number standing around ten thousand companies. Approximately three thousand companies were registered with SECP in the year 2020 as compared to three hundred and ninety-five during 2014. Though software development companies are scattered throughout the country's length and breadth, the majority of the IT companies are concentrated in three major cities of Pakistan, Lahore, Karachi, and Islamabad.

Table 1.1 : Number of registered software exporting companies.

Lahore	Karachi	Islamabad	Faisalabad	Multan
689	672	393	29	20
		C	\mathbf{D}	D (D 1

Source: Pakistan Software Export Board

Around thirty percent of the companies registered with SECP were related to software development. (Pakistan Software Export Board, 2020). There are currently around three hundred thousand IT professionals in Pakistan, and twenty thousand are entering the workforce each year (Federal Board of Investment Pakistan, 2020). Pakistani IT companies indulge in various segments; however, the computer software segment is the largest contributor to Pakistani IT industry exports amounting to sixty percent of all IT exports.



Figure 1-1 : IT & ITes Exports Remittances

Source: State Bank of Pakistan, Export of goods and services year 2019-2020

The annual software exports of software services from Pakistan amount to 700 Million USD (State Bank of Pakistan, 2020). According to Awais and Hussain (2020), Pakistani software developers are aware of the rapid changes in the international market and strive to meet the challenges. However, the disconnect between industry and academia, where creative problem-solving skills are not part of the overall training, impedes progress. In the absence of such efforts, it is feared that the Pakistani software industry may not match the pace of international information technology. The progress



Figure 1-2: Size of the IT industry in Pakistan

Source: Pakistan Software houses association for IT & ITES

in the software industry will surely impact the overall development of the IT industry of Pakistan. The need of the hour is that the Pakistani information technology industry must be provided with a well-trained workforce with a skew towards innovation and creativity (Pakistan Software Export Board, 2020). Creativity serves as the fundamental element in the software development industry. Software developers or engineers are the most crucial assets and the source of creativity in the IT sector (Tan & Leewongcharoen, 2005). How well a software development organization will perform relies on the creative performance of the individual employees. Furthermore, the lack of creativity is a major challenge faced by Pakistan's software industry.



Figure 1-3: Comparison of Pakistan IT exports versus India IT exports

Source: Pakistan Software houses association for IT & ITES

1.3 Research problem

Creativity is defined as the ability to produce novel and useful ideas (Amabile, 1988). New ideas produce new products and services, and organizations remain competitive by adapting their resources to the changing environment. The rise of the creative class and knowledge economies have made the study of creativity of paramount importance (Florida, 2010). Even though creativity is invaluable in all domains of society but it has special relevance in the business sphere. Creativity helps solve problems that require novel solutions. A creative workforce can contribute to the sustainable competitive advantage of their organization. Given the importance of creativity, both practitioners and researchers have an interest in gaining an understanding of the factors responsible for fostering, especially job in the technology sector have an inherent need for creativity (Rozalia, Capatina, & Bleoju, 2013). Creativity is a resource of enormous value and importance to organizations and society. However, despite its noteworthy significance, creativity research needs more support and attention (Runco, Hyeon Paek, & Jaeger, 2015).

Creativity is cherished as a prized commodity for the software development industry (Aldave, Vara, Granada, & Marcos, 2019). According to an industry competitiveness assessment report, Pakistan's software industry is faced with the threat of lack of creativity (National Bank of Pakistan, 2018). In their current shape, software development companies in Pakistan lack investment in creativity, restricting firm-level performance (Wadho & Chaudhry, 2018). Unfortunately, technical factors are assigned much more value in the software development industry than human factors such as creativity (Mohanani, Ram, Lasisi, Ralph, & Turhan, 2017). Furthermore, creativity research in software development companies has been largely neglected despite its enormous importance (Graziotin, Wang, & Abrahamsson, 2014). Deliberate efforts are

done in western countries to promote and nurture creativity (e.g., De Bono program, Osborn Parnes creative problem solving, and Synectics), whereas such efforts are lacking in third world countries like Pakistan, making the creativity problem exorbitant. As discussed earlier, it is evident that software developers/engineers rely heavily on creativity. But only a handful of studies have tried to understand and unravel the creativity equation in the software developers/engineers population (Amin et al., 2020; Amjed & Tirmzi, 2016; Shahzad, 2014; Zubair & Kamal, 2015).

Literature tells us that personality variables, social and job environment, and motivational variables have remained the focus of creativity research at the workplace (Amabile, 1988; Eysenck, 1993; Woodman et al., 1993). In the present study, the problem of interest is focused on the interplay between environmental, personal and motivational factors and their relationship with employee creativity. Among many environmental factors, leadership is perhaps the most important determinant of any organizational and individual outcome. This notion holds ground in the case of creativity (Shalley & Lemoine, 2018). Creativity has been studied with different leadership styles; however, authentic leadership has received the least amount of attention from creativity researchers (Hughes et al., 2018). Authentic leadership is the type of positive leadership with a primary focus on authenticity or originality (Avolio & Gardner, 2005), making it a suitable candidate for exploring employee creativity. So far, only a few studies have investigated the role of authentic leadership in enhancing employee creativity (Imam, Naqvi, Naqvi, & Chambel, 2020; Rego, Sousa, Marques, & Cunha, 2012, 2014; Semedo, Coelho, & Ribeiro, 2017a; Semedo, Coelho, & Ribeiro, 2018; Semedo, Coelho, & Ribeiro, 2016; Zubair & Kamal, 2015; Zubair & Kamal, 2017) and even fewer in the software developers/engineers segment.

Personality variables have been an important area of research in creativity tradition since the mid 20th century. Be it creative personality (Gough, 1979) or divergent thinking (McCrae, 1987); personality attributes have remained a topic of timeless interest (da Costa, Páez, Sánchez, Garaigordobil, & Gondim, 2015). But some of the personality dispositions like motivational orientations have been treated rather unfavorably (Kanfer, 1994). Similarly, job attributes (e.g., level of complexity) is also considered an important motivator for heuristic behaviors such as creativity (Parker & Ohly, 2008). However, there is a need to uncover the underlying mechanism or the process through which these antecedents influence creativity. Previously creativity research has followed extrinsic versus intrinsic motivation tradition, but the synergistic effect of these contradictory types of motivations is yet to be known (Amabile & Pratt, 2016). Therefore, this study aims to fill the research gap by exploring the role of authentic leadership, the motivational orientation of personal mastery, and job complexity in fostering employee creativity through the process variable of autonomous motivation.

1.3.1 Gaps in Literature

After a careful review of the literature pertaining to workplace creativity, three areas were identified. First, it is apparent that very little is known about the factors contributing to employee creative behavior. A major part of the literature is focused on the personality dispositions responsible for creative behavior. But research investigating a multitude of factors both from within the individual and from the context is scarce. For this purpose, personality disposition (the motivational trait of personal mastery) and contextual factors (leadership and job characteristics) as antecedents of employee creative behavior were included in the study model. Individual differences and contextual factors can provide a better understanding of each component's contribution in both relative and collective terms. The reason for choosing two elements from the

context is that two factors are better predictors of work outcomes than only one (Chiaburu, Lorinkova, & Van Dyne, 2013). Second, the process through which employee creative behavior is induced remains largely an area requiring more explanation. Previously different non-motivational variables have been used as process variables for inducing employee creative behavior, for example, willingness to take the risk (Berg, Grimstad, Skerlavaj, & Cerne, 2017), psychological empowerment (Zhang & Bartol, 2010), creative self-efficacy (Gong, Huang, & Farh, 2009) harmonious passion (Liu, Chen, & Yao, 2011) but the evidence about motivational process variable (except intrinsic motivation) remains scant. Even the proficiency of the supposedly only motivational path (i.e., intrinsic motivation) is not convincing (Grant & Berry, 2011). This study tries to unravel the motivational path through which employee creative behavior can be induced.

The third gap is the identification of the right type of motivation for inducing employee creative behavior. Eminent scholars have acknowledged the gap that extrinsic motivation's complementary effect with intrinsic motivation should be investigated (Amabile & Pratt, 2016). The current study proposes autonomous motivation as the process variable between independent variables and employee creative behavior, which has elements of intrinsic motivation and extrinsic motivation. This study is among the first using the autonomous type of motivation in the organizational setting. Previously some studies have used autonomous motivation in other settings (e.g., Liu et al., 2013). The current study tries to integrate the workplace creativity literature with selfdetermination theory literature by using the autonomous type of motivation as the creativity inducing mechanism. This study proposes that self-determination theory can explain workplace creativity because it provides a theoretical framework that is much more comprehensive and detailed. In short, this study is conducted to bridge the gaps identified, as discussed. This study will use independent variables of authentic leadership, personal mastery, and job complexity as predictors to explain workplace creativity through the mediating mechanism of autonomous motivation.

1.3.2 Problem description in Pakistan Settings

Pakistan software export board is a body made by the government of Pakistan to facilitate and support the IT and software industry's sustainable development domestically and internationally (Pakistan Software Export Board, 2018). Internet penetration in Pakistan has increased almost three-fold during the past decade (Farooq, 2018). The mushroom growth of software companies from 300 to 1800 has occurred in the last decade. However, still remittance of the software industry stands at the lowest among the region (Pakistan Software House Association, 2018). Pakistan software industry requires a high-quality workforce, state support (Arain, Tunio, & Shah, 2014), and IT infrastructure (Qutab, Iqbal, & Farasat, 2017). It has been identified that policies devised by the state of Pakistan for promotion are persistent and continuous (Pakistan Software Export Board, 2018). However, still, the progress of the software industry is far from satisfactory in comparison with regional competitors. The government of Pakistan wants to take IT export to 10 Billion US Dollars until 2025 by providing various kinds of incentives and infrastructure help (BR Research, 2018). It has been working at the grass-root level for better skill development (APP, 2018). Pakistan and its tech ecosystem have been identified as one of the most promising in south Asia (Partington, 2020).

It would be difficult to ignore the cultural value system of Pakistani society with respect to creativity and innovation when approaching a sub segment of the society (e.g., software industry). Social disapproval for the new ideas is a problem in the wider cultural value system of Pakistan. Emergence of digital technology and implementation of specific policies and measures are needed to support a system of creativity (UNESCO, 2005). Social discourse is devoid of reasoning and questioning the existing practices which translate into lower creativity and innovation. A prosperous Pakistan is possible if culture of innovation and creativity is promoted in society as well as organizations and institutions .

Unfortunately, compared with regional countries like India, Pakistan's IT industry lags behind; one example is "Flipkart", an e-commerce website worth more than 15 billion US Dollars. Not a single tech/software company is even near that number in Pakistan, and the apparent reason is "a system which does not promote innovation" (Ahmed, 2016). Narula (2017) says the primary reason for the Pakistani tech industry lagging behind its competitors is because usually, "trying new things" (creativity) is discouraged. Pakistan is ranked 72nd on the global innovation index, lower than its neighbors India and Sri Lanka (World Economic Forum, 2019). In a comparative study between the Indian and Pakistani software industry, Qureshi, Young, and Prashantham (2008) noted that Bangalore (Indian) software industry was much better connected with Silicon Valley in comparison with Lahore (Pakistan) and appreciated local innovative values. Numerous factors such as leadership play a crucial role in encouraging creativity at the workplace. Creativity is something that Pakistani software industry needs the most (Awan, Arabia, & Hassan, 2020). Research has shown that leadership has a significant role in boosting creativity at the organizational level, especially in the Pakistan context, where it is already lacking (Sayyam et al., 2021). Likewise, other environmental and personal factors have their role in enhancing creativity at workplace. Therefore, this study sets out to explain how leadership along with other environmental and personal factors contribute towards employee creativity.

1.4 Research Questions

1.4.1 General Research Question

What is the relationship between authentic leadership, personal mastery, job complexity, and employee creativity through the mediating role of autonomous motivation among employees of software industry in Pakistan?

1.4.2 Specific Research Question

- 1. What is the relationship between authentic leadership and autonomous motivation?
- 2. What is the relationship between personal mastery and autonomous motivation?
- 3. Does job complexity predict autonomous motivation?
- 4. Does autonomous motivation predict employee creative behavior?
- 5. Does autonomous motivation mediate the relationship between authentic leadership and employee creative behavior?
- 6. Does autonomous motivation mediate the relationship between personal mastery and employee creative behavior?
- 7. Does autonomous motivation mediate the relationship between job complexity and employee creative behavior?
1.5 Research Objectives

1.5.1 General Research Objective

The study's objective was to explore the relationship between authentic leadership, personal mastery, job complexity, autonomous motivation, and employee creativity. The study aimed to develop effective strategy measures that software houses in Pakistan can deploy to enhance employee creative behavior.

1.5.2 Specific Objectives

- 1. To examine the role of authentic leadership in explaining autonomous motivation.
- 2. To evaluate the influence of personal mastery orientation on autonomous motivation.
- 3. To assess the effect of job complexity on autonomous motivation.
- 4. To investigate the role of autonomous motivation in predicting employee creative behavior.
- 5. To examine the role of autonomous motivation in mediating the effect of authentic leadership on employee creative behavior.
- 6. To assess the role of autonomous motivation in mediating the relationship between personal mastery and employee creative behavior.
- 7. To examine the role of autonomous motivation in mediating the effect of job complexity on employee creative behavior.

1.6 Significance of the study

The identification of factors that influence enhancing employee creativity is a topic of timeless interest. How can we cause ourselves and others to be more creative? What are the essentials of being creative? Are compelling questions seeking answers more than ever before (Kaufman & Glăveanu, 2019). Today's business environment is characterized by cut-throat competition, uncertainty, volatility, and continuous change, where the key to survival is continuous creativity. Though creativity is important for every domain of business but developing, encouraging, and managing creativity can make a difference between success and failure of an organization in the information technology realm (Pandey, Ruhela, & Ruhela, 2021). From a strategic point of view, creativity is important for information technology industry firms in general and software development industry specifically. Because Creativity, intellect, and knowledge are the key inputs for the software industry. Software industry can be attributed as the "industry of the mind" (p. 20) where competitive advantage revolves around continuous innovation and creativity and the absence of creativity can lead to stagnation (Rozalia et al., 2013). Earlier reviews about employee creativity in the software development industry demonstrate that, despite its importance, very little emphasis has been laid on conditions necessary for fostering creativity (Amin, Basri, Hassan, & Rehman, 2018). The two most prominent models of employee creativity, the componential model of creativity by Amabile (1983) and the interactionist model by Woodman et al. (1993), have unified views about the source of employee creative behavior. According to both models, employee creativity is a product of multiple factors and can be affected by a host of environmental elements, which is a departure from earlier understanding of creativity among employees (e.g., creative personality). Therefore, it is important to study employee creativity from the prism of interactions between environment and person. Literature on creativity reveals that leadership is a primary determinant of employee creative behavior (Gupta, 2020; Hughes et al., 2018; Zhang, Xu, & Sun, 2020). Especially authentic leadership has shown to have promising prospects for employee creativity but has received much less attention (Lee et al., 2020). Likewise, personality traits and job characteristics are two of the most important environmental factors of interest in the case of employee creativity. Therefore, it was logical and based on solid theoretical grounds that these two environmental factors along with leadership be included as predictors of employee creative behavior in the study.

Firstly, the significance of the study is to present a research model based on the previous literature and aims to extend the understanding of employee creative behavior and its interlink with authentic leadership, personal mastery, and job complexity through the process of autonomous motivation from a self-determination perspective.

Secondly, the research tries to identify the factors that can predict employee creative behavior in the software industry of Pakistan. The findings will greatly help software development companies attract employees with more creative potential and provide an environment that can help retain such employees.

Thirdly, this study intends to add to the empirical evidence by testing the effect of leadership, personality disposition, and job attributes in autonomously motivating a follower using the basic psychological needs fulfillment paradigm. All these factors are known for having an instrumental value in the motivational sphere.

Fourthly, the study adds to the body of knowledge by verifying a theoretical model that incorporates elements from the work environment and within the individual as one integrated model. Successful assimilation of these elements will lend support to both componential theory and interactionist school of thought. Fifthly, creativity is one of the most cherished resources in the information technology industry (Amin et al., 2018). Like any other human behavior, motivation lies at the heart of creative endeavors. Motivation has a special place in the creativity research tradition. Even though a good amount of research is present on what type of motivation is most suitable for inducing employee creativity, there is a dearth of studies exploring the role of different types of motivations combined. This study responds to the call for more research on testing the complementary effect of different types of motivations on employee creative behavior (e.g., Amabile & Pratt, 2016; Gerhart & Fang, 2015; Hughes et al., 2018).

Lastly, the study provides additional insight into literature by measuring the effect of autonomous motivation as a mediator between authentic leadership, personal mastery and job complexity, and employee creativity. The proposed mediation process focuses on integrating self-determination theory and the componential theory of creativity in a way that autonomous motivation serves as a driver for creative behavior, which is a combination of intrinsic and extrinsic motivation. This integration will deepen the understanding of the correct type of motivation as a precondition for creative behavior.

1.7 Operational Definitions

The study employs the following operational definitions for the study.

1.7.1 Workplace Creativity

Workplace creativity literature denotes creativity in different terms such as "employee creative behavior", "employee creative performance", or simply "employee creativity". However, the nucleus of all these operationalizations is the concept of "idea generation" and its usefulness and practicality. Predominantly literature treats employee creative behavior both as a process and a product (Amabile, 1996). This study operationalizes employee creativity as a product of employee effort, which is quantifiable and appraisable by the performer himself, an in-job behavior that can be evaluated on usefulness and novelty criteria. This operationalization is consistent with the previous literature and accepted widely by the researchers (Lin, Mainemelis, & Kark, 2016).

This study employs the definition of workplace creativity as theorized by Tierney, Farmer, and Graen (1999), a work outcome in which individual employees demonstrate originality, takes risks, find new ways of using existing equipment, solve problems, try new ideas, identify new opportunities, voluntarily generate novel and useful ideas, and serve as a role model for creativity.

1.7.2 Authentic Leadership

The study utilizes the operational definition of authentic leadership as conceptualized by Neider and Schriesheim (2011), grounded in the work of Walumbwa, Avolio, Gardner, Wernsing, and Peterson (2008). Walumbwa et al. (2008) defined authentic leadership style as "a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate to foster greater selfawareness, an internalized moral perspective, balanced processing of information, and *relational transparency on the part of leaders working with followers, fostering positive self-development.*" The study conceptualized an authentic leader as someone who has a deep sense of self-awareness, displays transparency, gives room to the opposing opinions, and listens to dissent with an open mind, and acts according to his internal moral standards, not external stimuli (Neider & Schriesheim, 2011). The operationalization of authentic leadership used in this study revolves around these four dimensions.

- Self-awareness (SA)
- Balanced processing (BP)
- Internal moral perspective (IMP)
- Relational transparency (RT)

1.7.3 Personal Mastery

Personal mastery is a self-referent form of achievement striving. Individuals high on personal mastery orientation strive for excellence and define goals in terms of personal achievement (Heggestad & Kanfer, 2000). This study defines personal mastery as a motivational trait possessed by individual employee who tries to enhance his knowledge, works hard, improves performance, and sets a high standard for achievement (Kanfer & Ackerman, 2000). This study's operationalization of personal mastery consists of two elements; (1) Desire to learn (2) Mastery goals.

1.7.4 Job Complexity

There are multiple operationalizations of job complexity in the literature. This study uses a single unweighted additive average score of job characteristics as defined by Hackman and Oldham (1976) as an index for job complexity. This study's operationalization of job complexity is a perception-based score given by the incumbent on the following five job characteristics.

- Skill variety
- Task identity
- Task significance
- Autonomy
- feedback

This study utilizes the following operational definition of job complexity. A job is perceived as complex when it gives ample opportunity to use multiple skills, lets the performer start a new task and finish it, provides knowledge about the importance of the work, affords the required amount of autonomy, and provides ample feedback (Hackman, 1980).

1.7.5 Autonomous motivation

Autonomous motivation is a unique type of motivation made up of elements of intrinsic and extrinsic motivation. This study defined autonomous motivation on the lines of conceptualization of Gagné et al. (2015), who based their definition on the self-determination theory by Deci and Ryan (1985b). Autonomous motivation has three facets defined as per the operational definition used in this study; (1) intrinsic motivation, (2) identified regulation, (3) integrated regulation.

This study conceptualized autonomous motivation as an internal urge in which an employee tries to perform his job because he acknowledges the importance of his work and because the work aligns with his values. He enjoys performing his job because he finds his work exciting and enjoyable (Gagné et al., 2015).

1.8 Organization of the study

The study is organized into six chapters. This chapter (*Chapter 1*) presents the introduction and background in the first section. Then problem statement is laid down. Seven research questions are advanced in the subsequent section, followed by theoretical underpinning, rationale/significance of the study, and operational definitions. The chapter ends with a brief summary.

Chapter 2 starts with defining the variables used in this study. Subsequently, a detailed literature review of the related literature is presented. This includes the identification of the research gaps and highlighting the need for the current study. Major theories used to explain the constructs of the study are also discussed in this chapter.

Chapter 3 contains the theoretical framework of the study. This chapter presents the proposed research model. Based on the research model, seven hypotheses are formulated to test and validate the study model.

Chapter 4 discuss the research methodology. It starts with discussing the research paradigm and research process, followed by a detailed account of the research design and research instruments used in the study. Procedures adopted for data collection, unit of analysis, study population, sampling methods, and tools used for analysis are discussed in detail later in the chapter.

Chapter 5 explains the data analysis and results of the study. First, data preparation is presented, then pre assumptions of the analysis are discussed. Later response rate and sample profile are covered. Later on, analysis using partial least square (PLS) structural equation modeling (SEM) is performed and presented. In the end, hypotheses are tested using results of the PLS-SEM results. The chapter ends with producing the results for interpretation and discussion.

Chapter 6 presents the findings of the study. The results are discussed in the light of the past and contemporary literature. Then theoretical and practical implications of the study are discussed. Towards the end of the chapter, limitations and delimitations are described. The chapter ends with a short summary. Figure 1.1 shows the roadmap of the study.



Figure 1-4 : Chapters of the study

1.9 Summary

In summary, chapter one presents a comprehensive description of the study. The chapter starts with the introduction of the study, followed by the background of the study, problems statement, research questions, and significance of the study. Later theoretical underpinning, operational definitions, along a brief description of the organization of the study are provided. This chapter lays the foundations of the study by providing a detailed overview of the study formation. All relevant elements necessary for the introduction to the study are discussed in this chapter. The next chapter (literature review) commences with a detailed discussion of relevant literature to develop clear understanding of the study's variables. а

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides an overview of the previous research on workplace creativity and its linkage with other relevant variables included in this study. The chapter begins with a detailed description of the Self-determination Theory (Deci & Ryan, 1985b) to provide a theoretical structure on which this study is built and its variables connected. This is followed by a review of the literature for the study constructs (employee creative behavior, autonomous motivation, authentic leadership, personal mastery, and job complexity). Then hypothesis formation is discussed. The chapter concludes with a short summary.

2.1.1 Extrinsic motivation versus intrinsic motivation

Creativity is a phenomenon that has its roots in intrinsic motivation because historically intrinsic motivation has been considered the sole driver of creative behavior (Amabile, 1983, 1988). The assertion that all types of extrinsic motivation is determinantal to creativity has stood its ground for a long time. But an opposite parallel field of research also exists, which believes that creativity can be learned with external motivators like the financial reward (Eisenberger, Armeli, & Pretz, 1998a; Eisenberger & Rhoades, 2001). A large amount of the research carried out on workplace creativity follow either of the two assumptions; that reward negatively influences creativity, or reward can induce creativity. Both the opposite approaches find their theoretical underpinning in either cognitive evaluation theory (CET) by Deci and Ryan (as Cited in Ryan, 1982), which says that reward is either controlling or informational, and learned industrious theory (LIT) by Eisenberger (Eisenberger, 1992) which states that behavior can be reinforced with reward. CET is of the view that if the task is to be performed "in some particular way, at some particular time, or in some particular place. . .to receive the reward, the reward tends to be experienced as controlling" (Ryan, Mims, & Koestner, 1983, p. 738). In comparison, LIT theory postulates that reward provides reinforcement and takes away the "aversiveness" of the activity hence warranting repetition and is studied in a different stream of research from intrinsic motivation (Yoon, Sung, Choi, Lee, & Kim, 2015). Although there have been calls by eminent scholars for re-examining the role of external reward and the process through which reward can influence creativity (Amabile & Pratt, 2016; Gerhart & Fang, 2015) but conclusive empirical evidence of the effectiveness of extrinsic motivation in cohort with intrinsic motivation is yet to come.

The question still stands, what causes an individual to indulge in creative behavior? Is it mere reward or only the pleasure of the behavior itself? Both the sides have their arguments in this philosophical debate; however, for the sake of clarity, this study favors the argument of DeCharms (as Cited in Ryan & Connell, 1989) about "perceived locus of causality" as theorized by Heider (as Cited in Deci & Ryan, 1985a) meaning, source of the behavioral derivation of the actor; is it something innate or external?. DeCharms argue that internal "perceived locus of causality" signifies that the behavior of the actor is original and innate; on the other hand, external "perceived locus of causality" is seen as a "pawn" of "heteronomous" external force. This argument clearly falls in line with the original theory of creativity (Amabile, 1983, 1988), which states that creativity is something original and is produced by the intrinsic motivation of the actor.

On the contrary, LIT theory essentially takes the locus of causality outside of the actor hence relocating the trigger for creative ideas and thoughts, which is conflicting with the idea of innate originality. Similarly, expectancy theory (Vroom, 1964) postulates the theoretical proposition that the actor's action depends on his selfbelieve and outcome expectancy, which is referred to as "instrumentality" and, notably, the anticipation of some reward. This theory also has attracted some attention (Malik, Butt, & Choi, 2015), but again, reward expectancy takes the perceived locus of causality outside the individual. Another reason for favoring self-determination theory is its organismic nature, which considers human beings as active growthseeking organisms with psychological needs. When these basic psychological needs are fulfilled, it leads to the realization of an individual's true potential (Deci & Ryan, 1985a; Deci & Ryan, 2000), making it comparatively more comprehensive and effective for explaining a complex phenomenon like creativity. Similarly, Rosen, Ferris, Brown, Chen, and Yan (2014) also concluded that SDT has greater predictive power in explaining essential work outcomes, when compared to other theories, for example, "social exchange theory" and "conservation of resources theory."

A few other theories have been used to explain workplace creativity, for example, social cognitive theory (Bandura, 1986), which states that individuals learn through direct experience with the environment in line with their "behavioral capabilities" and observation of proficient models, reinforcements and self-efficacy. When an individual sees someone in a "proficient" position, encouraging or practicing creativity, he tends to repeat the behavior himself (Bandura, 2002). There is some empirical evidence for this theoretical assertion (Gong et al., 2009). Some other notable theories used for explaining workplace creativity are, role identity theory (see Farmer, Tierney, & Kung-Mcintyre, 2003), self-regulation theory (see De Stobbeleir,

Ashford, & Buyens, 2011), Social learning theory at the team level (see Hirst, Van Knippenberg, & Zhou, 2009).

2.1.2 Internalization of extrinsic motivation

Expanding on SDT, motivation was previously conceptualized as a unitary construct with a dual classification of external and internal gamut (Shalley & Gilson, 2004) of variable strengths (Locke & Latham, 2002). But Ryan and Deci (2000b) posit that motivation is dispersed on a qualitative continuum, with five subtypes based on autonomy and control dichotomy. They argue that motivation is not a unitary concept. SDT explains motivation on a continuum of autonomy and control where motivation is spread on a simplex like structure (Ryan & Connell, 1989). On one end is the extreme controlling motivation (extrinsic motivation). On the other end is the fully volitional motivation (intrinsic motivation). And in between lies a whole spectrum of different types of motivations with different blends of autonomy and control in them. Autonomy involves being free to choose, and control pertains to being under pressure from some external source. SDT posits that factors with controlling properties can diminish volitional motivation. For instance, external reward that induces the feeling of control is detrimental to intrinsic motivation. But SDT also proposes that extrinsic motivations can be internalized. And the internalization of extrinsic motivations under SDT is driven by "appropriateness driven" rather than "consequences driven" (Koehler & Rainey, 2008). It means that individuals internalize the motivations even when it is not fully volitional because of the importance of the activity or the value attached to the activity's performance. This internalization of extrinsic motivation forms the bases of different motivation types defined under SDT, and each motivation type can lead to different performance outcomes (Deci & Ryan, 2000).

2.1.3 SDT and individual differences

SDT recognizes general causality-orientation as the primary individual difference. Other than that, SDT acknowledges life goals and general aspirations as individual differences responsible for predicting outcomes in different life domains. These aspirations are: 1) financial wealth; 2) recognition or fame; 3) attractive image; 4) personal development; 5) meaningful relationship; 6) community contribution; 7) physical fitness. These aspirations are further grouped into extrinsic aspirations (financial wealth, recognition or fame, and attractive image) and intrinsic aspirations (meaningful relations, community contribution, personal development, and physical fitness). Research indicates that when individuals show a relatively strong inclination towards extrinsic aspirations, they tend to show signs of psychological ill-being, depression, and low self-esteem. On the other hand, when they emphasize intrinsic aspirations, they show better psychological well-being, self-esteem, and high selfactualization (Deci et al., 2017).

Self-determination theory has its similarities with other theories like the Maslow hierarchy of needs theory (Maslow, 1943). Maslow's need for belongingness and the need for relatedness under SDT are similar. Similarly, the need for self-actualization also overlaps in some respects with the need for autonomy and competence. Both theories converge on the consequences of the environment on human motivation. SDT posits that the environment can inhibit or facilitate motivation, and the hierarchy of needs theory states that environmental elements that are hindering the need satisfaction should be removed for the higher-order needs to be satisfied. But SDT doesn't consider self-esteem as a basic need, but rather it says that when all three basic needs are satisfied, an individual becomes self-actualized automatically. SDT considers psychological needs "as underlying the adaptive organization of behavior

and being supported by many individual adaptations, rather than themselves being functionally specific or modular add-ons" (Deci & Ryan, 2012b, p. 417). Another point on which SDT differs from the hierarchy of needs theory is that SDT enjoys a robust empirical base (Santamaria, 2016).

2.1.4 Sub theories of SDT

SDT consists of six sub-theories or mini theories: 1) cognitive evaluation theory, which explains how the social environment and interpersonal relations enable or inhibit intrinsic motivation; 2) organismic integration theory, concerns with the process of internalization of extrinsic motivation; 3) causality orientation theory, details how individual difference in orientation cause people to behave differently in diverse environments; 4) Basic psychological need theory, describes how basic psychological needs when satisfied contribute to self-determination and well-being; and recently introduced 5) goal content theory, discuss how intrinsic goals contribute to need satisfaction better than extrinsic goals such as money or fame (Niemiec, Ryan, & Deci, 2009) and 6) relationship motivation theory describes the relationship between autonomy and relatedness and how both the concepts do not contradict each other.

2.2 Creativity

Creativity is necessary for gaining and maintaining competitive advantage (Anderson et al., 2004), and it is critical for the organization's growth and performance (Mumford, Hester, & Robledo, 2012). Companies that will effectively manage their creative employees will succeed in the changing marketplace; those who fail to do so will disappear (Tang, 2016). As a result stoking creativity has taken center stage among organizational scholarship, business leadership, and policy experts

(James & Drown, 2012). But what exactly is creativity? This question has kept researchers, psychologists, historians, neuroscientists, artists, educationists mesmerized over decades. Thinkers from Aristotle to Einstein have tried to answer what it means to be creative, but the debate has not been settled yet.

During the early days, creativity was thought to be a divine attribute. Greeks believed that human creativity is a manifestation of divine intervention (Lugwig, 1995). It was regarded as something "associated with mystical powers of protection and good fortune" (Sternberg & Lubart, 1998, p. 18). As a result of this creativity construction, it was thought to be "beyond measurement and comprehension" (Batey, 2012, p. 56). By the time of Aristotle, creativity was recognized as a natural phenomenon governed by nature's laws. From Plato's belief that nothing can be created but can be a mimic/copy of the perfect forms to Aristotle's realism, creativity was required to satisfy the "empirical" requirements, devoid of divinity even if it did contain some "association with madness and frenzied inspiration." (Albert & Runco, 1998, p. 15). Another important aspect was that creativity was viewed as a predominantly male characteristic that could pass to his children. The western view of creativity was inspired by biblical stipulations, as described in Genesis, and the idea of an individual's original product is a predominantly western interpretation of creativity (Batey, 2012). It contrasts with the eastern view of creativity, which viewed it as mere mimicry or discovery. This notion of creativity remained unchallenged for 1200 years. In short, during the Middle Ages, creativity was thought to be the manifestation of the divine, channeled through creative attributes of a male exclusively.

However, during the renaissance period, creativity was recognized as an individual attribute that originates within himself sans divine intervention (Albert & Runco, 1998). This progress was not in isolation but was a part of the greater social transformation. New disciplines of science were taking birth with the rising trend of religious non-conformity. This transformation eventually left its mark on the discipline of creativity and swayed the concept outside the institutionally permitted interpretation (Given-Wilson, 1996). During the seventeenth and eighteenth centuries, the debate about talent, genius, and originality contributed greatly to the understanding, and the concept of creativity entered the phase of "artistic imagination." Even long after the birth of modern-day "research", it took another hundred and fifty years to chisel out creativity from the body of competing ideas such as imagination, genius, originality, and talent (Gruber, 1996).

Till the end of the nineteenth century, it was concluded that many people have talent, but genius is original and different from talent and is out of the reach and need for education. Francis Galton (1822-1911), in his quest for the discovery of "heredity genius," suggested that genius is a potential in every individual, and it is an ability that is distributed equally among the population (Albert & Runco, 1998). Therefore, the focus was now on measuring individual differences following the footsteps of Galton. The quest for measuring creativity continued during the early twentieth century; individual differences were theorized as a measure of creativity, and the instrument of choice for the purpose was intelligence quotient (IQ), and many other measures for creativity were devised. For example, during the mid-twentieth century, Guilford's (1897-1987) divergent thinking (DT) was thought to be a measure of creativity, but none of the conceptualizations seems to capture the essence of creativity entirely. Because researchers during early and mid-twentieth century

conceptualized creativity as a unitary concept. In comparison, research during and beyond the 1980s is much more complex and sophisticated, which conceptualizes creativity as a much more complex phenomenon that can be explained with a host of individual and environmental influencers. Therefore, factors like IQ and DT can be used to predict creative achievement and not serve as a sole criterion (Batey & Furnham, 2006).

In the business discipline, the concept of creativity is recent as compared to the rich historical background in arts and education. Sawyer (2012) identified three phases of workplace creativity research. The first phase was from the 1950s to 1960s, where the creativity research's main emphasis was attributes of the creative personality. During the second phase (the 1960s to 1970s), creativity was treated as a mental process rather than creative output or performance. The third phase was from the 1980s to the 1990s. During this phase, creativity was viewed as a complex phenomenon that resides inside a human being and has imprints from the broader societal and cultural influences. Amabile (1983) was among the pioneers who went beyond personality characteristics or knowledgeability of individual and defined creativity in terms of "componential mechanisms" where environmental factors can have an influence on the creative outcome. Researchers like (Csikszentmihályi, 1990; Woodman et al., 1993) posited that creativity cannot be view as a cognitive/mental process or attribute of an individual independent of environmental and societal factors but is a product of complex interaction of individual, work and environmental factors across different levels. The latest understanding of creativity is much more complex and states that multiple factors from within and outside the individual are responsible for the creative output (Amabile & Pratt, 2016). An increased amount of importance is being attached to creativity research in the business discipline, so much so that

there were less than two articles per one thousand scientific articles on creativity in the early twentieth century (Runco & Albert, 2010), and nowadays, creativity as a subject has its own journals (e-g Creativity research journal, creativity, and innovation management, journal of creative behavior).

Over the last six decades, a sizable body of literature has formed the core of creativity research from which theoretical understanding of its measurement and construct conceptualization can be further refined. The quest for defining and enhancing creativity has come a long way from its point of start in Greek mythology; now, it is being said that in the 21st century, human civilization has transitioned into the "creative age" from the "knowledge age" (Florida, 2010). Now societies and economies are focused more on generating creative ideas (Dubina, Carayannis, & Campbell, 2012) rather than creating things. This historical perspective was necessary to understand and trace back creativity as a concept and its importance in the business discipline.

2.2.1 Creativity in the organization

Research on creativity has gained increased importance across many academic disciplines like psychology, history, organizational behavior, education, and sociology. Organizations being a person existing in the broader social environment, cannot remain aloof of its surrounding. Organizations and businesses operate in a dynamic environment. During their day-to-day activities, organizations are faced with problems that are difficult and complex. The organizations relying on traditional techniques for solving novel problems will eventually lose their competitive edge and disappear in the environment of intense competition in the ever-increasing global milieu (Fabus, 2018). Therefore, new problems require new solutions (Wechsler et

al., 2018). Although people think of creativity as an artistic or natural sciences conception, but creativity in business organizations is as necessary and unavoidable as in any other life field. Managers and business leaders who wish to ensure their organizations' long-term success ensure the continuous flow of creative ideas in their organizations. Because new ideas not only serve the purpose of enhancing products and services but also guarantee the survival and competitiveness of the organization.

There are many conceptualizations of creativity at the workplace, but perhaps the most widely accepted and agreed upon contrivance of creativity is the production of novel and useful ideas concerning products, services, processes and procedures (Amabile, 1988, 1996; Shalley et al., 2004; Shin & Zhou, 2007). Novelty is "the degree to which an idea is original and modifies the paradigm" (Puccio & Cabra, 2012, p. 204). There is a lot of ontological and epistemological debate about the concept of "novelty", and the concept of novelty can vary according to society, group or individual but is "sine qua non" of creativity (Smith & Smith, 2017a). In the organizational creativity tradition, two lines of parallel theorization of "novelty" can be drawn; the first approach assumes novelty as an exceptional occurrence which needs to be regarded and examined accordingly, the other conceives it as a continuous and ever occurring phenomenon, but only a tiny amount of it is recognized as "novel" (Styhre, 2006). In organizational literature, novelty is the most crucial aspect of organizational or workplace creativity (Cropley, 1999). An idea is the "sentence of thought" it is a phenomenon that somehow "drifts into mind" and vanishes into oblivion; therefore, it is extremely important to make a note of it. The idea means "concepts, solutions, approaches, etc., that are novel" (Smith & Smith, 2017a, p. 282). The generation of ideas is not a by chance process; instead, they arise when they are being sought. It doesn't simply happen when people are not curious and not looking for answers or not searching for opportunities. The novelty of the idea is appreciated when it is grounded in domain-relevant knowledge (Zhou, Wang, Bavato, Tasselli, & Wu, 2019). Useful is defined as "everything that supports organizational goals" (Driver, 2008, p. 189). Goals are human decisions and vary according to people and situations; therefore, "usefulness" will certainly be context-dependent and depend on the eyes of the beholder (James & Taylor, 2010). But it was found that preference is given to the understandable ideas that were compliant with societal norms and hold benefits for people in contrast to the ideas that were time-consuming and risky (Blair & Mumford, 2007). This bias against creative ideas can be attributed to uncertainty avoidance (Zhou et al., 2019). Hence, in line with these assertions, the criteria for admissibility of an idea should be its organizational utility and practicality. But, another approach to the "usefulness" of an idea is that the only measure for the idea's usefulness should be its potential for success and utility. Because if the ideas are judged only based on the criteria discussed above, we risk losing a wealth of ideas that may not work presently but have the potential to work in the future. For example, Leonard's helicopter (Smith & Smith, 2017a). Therefore, a useful idea only needs to have the possibility of being successful and not necessarily carry the promise of its success (Smith & Smith, 2017b).

The organization's initial focus on creativity research was on the individual, his personality attributes, knowledge, experiences, and cognitive process. Because of the spontaneous nature of creative behavior, it is difficult to train and cultivate. Another predicament in learning creativity is that the Loci of creativity reside within the individual (Williams & Yang, 1998). If an organization facilitates and rewards creative behavior, the employee is more likely to exhibit such behavior than an organization where creative behavior is restricted and creative expression is

unwelcome (Diliello, Houghton, & Dawley, 2011). Later research considered the context or the broader level on which the creative behavior nurtures and how manipulation of organizational and environmental influencers can foster or inhibit creativity in individual (Williams & Yang, 1998).

Literature shows us that historically workplace creativity has been associated with numerous organizational, job and individual level variables. For example, in a recent meta-analysis Zhou and Hoever (2023) categorized factors within the individual and from the context on creativity inducing and inhabiting lines. We may follow these categories as signpost for our mapping of the creativity literature in the organizational context. These are few of the individual characters which literature has identified can induce creativity: employee learning goal orientation and knowledge sharing behavior (Mehmood, Jian, & Akram, 2020) psychological empowerment and motivational orientation (Bin Saeed, Afsar, Shahjehan, & Imad Shah, 2019) creative self-efficacy (Christensen-Salem et al., 2021) employee improvisation (Chen, Liu, Tang, & Hogan, 2021) high level of openness (Smith, Pickering, & Bhattacharya, 2022) intuitive and systematic working style (Al-Ghazali, 2023). The individual-level factors which can inhibit creativity were identified as; employees' work role identity conflict (Akkan & Guzman, 2022), individual power distance (Liang, van Knippenberg, & Gu, 2021) high introversion (Zhang, Zhou, & Kwan, 2017) employee shame (González-Gómez & Richter, 2015) insomnia (De Clercq & Pereira, 2021). By no means this is an exhaustive list of individual level creativity inhabiting or inducing qualities but they represent some of the significant and latest work in this field.

2.2.2 Componential theory of creativity

The first influential work focusing on the micro-level of creativity was by Amabile (1983, 1988). In her seminal works, she identified resources that are required for individual creativity and would increase the likelihood of an individual expressing creative and innovative behavior. She called it "componential model of creativity" and differentiated between creativity and innovation. She emphasized that if an organization wants its employees to be creative, then management and organization would have to make sure that resources are allocated for employee creative development and creativity, facilitating policies are enacted and implemented. According to Amabile (1996), if an individual has domain-relevant skills, creativityrelevant skills, and strategies and is intrinsically motivated to perform the task, he will exhibit higher creativity levels. The first two components of the model are learnable, but the third component of this model, "intrinsic motivation," is innate to an individual and the most important part of the componential model of creativity. If intrinsic motivation is not present, no matter how much the other two components are, an individual will not indulge or persist in creative behavior. Intrinsic motivation is defined as "the doing of an activity for its inherent satisfaction rather than for some separable consequence" (Ryan & Deci, 2000a, p. 56). The foundation of workplace creativity theory is the intrinsic motivation hypothesis, that "the intrinsically motivated state is conducive to creativity, whereas the extrinsic motivation state is detrimental" (Amabile, 1985, p. 4).

Another major school of thought is Woodman et al. (1993) interactionist theory of creativity. They proposed that creativity is a result of a complex interplay between an individual's characteristics, whether states or traits at both dyad and team levels and contextual factors. This creativity model has been widely used in creativity research

as it emphasizes that interaction between individual and organizational factors can foster or inhibit creativity. There are many other schools of thought for organizational creativity, but the componential model and interactionist model of creativity are the major schools of thought (Anderson et al., 2014).

2.2.3 Defining creativity

From Toynbee (1964) argument that creativity is the "human kind's ultimate resource to almost forty years later Florida's (2002, p. 160) assertion that creativity is the "ultimate economic resource" signifies that creativity is undoubted of paramount nature. But "What creativity is, and what it is not, hangs as the mythical albatross around the neck of scientific research" (Prentky, 2001, p. 97). Despite the importance attached to creativity, its research remains an "academic backwater" (Batey & Furnham, 2006). Creativity as a psychological construct has prevented researchers from arriving at a consensus definition that incorporates all the facets of creativity (Malik et al., 2015). The part of this predicament can be attributed to the historical past of the construct.

Many researchers have embarked on the journey of defining creativity and its different facets. Earlier Mooney (1963) and later Rhodes (1987) identified four facets of creativity: 1) person, meaning creative attributes of an individual; 2) process, a cognitive process through which creative output is generated; 3) press, the environmental effects on idea generation; 4) product, the resulting outcome from creative exercise. Building on these four facets Taylor (1988) laid down fifty definitions of creativity, but he also stated that these definition of a "creative person" are so diverse and sometimes contradictory that according to one definition, a creative person may not be a creative person at all as per the other definition. In this study, we

have operationalized creativity as a measurable product in the form of employee behavior.

There are many challenges in defining the concept of creativity; as a result research community has identified the performative nature of workplace creativity (Driver, 2008) and has focused more on increasing the creative output of organization rather than describing the complex nature of the process through which the creative output is obtained (Drazin, Glynn, & Kazanjian, 1999). But numerous attempts have been made to define creativity at the workplace. For example, creativity is "the production of high quality, original, and elegant solutions to problems" (Besemer & O'Quin, 1999; Christiaans, 2002). This simple definition has five noteworthy insinuations: 1) creativity is a performance, individual or group and not to be confused with many other organizational phenomena like personality, motivation, expertise and problem solving; 2) it is product of human cognition, and is studied as a cognitive product of human cognitive effort; 3) it is comparatively high-level cognition not to be confused with simple automatic cognitive processes like recognition and recall; 4) as it is a high-level cognition effort people have to decide if they want to invest their cognitive resources in it or not. One problem with this definition is that it does not explicitly specify the level of analysis on which creativity happens, is it an individual or group or organizational level? (Mumford et al., 2012).

The most widely accepted definition of workplace creativity is "the generation of novel and useful ideas concerning products, services, processes and procedures" (Amabile, 1988, 1996; Shalley & Zhou, 2008; Woodman et al., 1993; Zhou, 1998). Amabile suggested that defining creativity as a product will be greatly beneficial for the ease of measurement and stressed the need for relative judgment for the

assessment of creative product "a productive or response is creative to the extent that appropriate observers independently agree it is creative" (Amabile, 1982, p. 1001) and developed consensual assessment technique (CAT). This definition of creativity is widely accepted and used (Liu, Jiang, Shalley, Keem, & Zhou, 2016). This is a broad definition of workplace creativity, and its application always requires a certain degree of "subjective judgment" for example, an idea could be related to a problem or a novel approach to explaining something different from usual. Product is not restricted to only tangible things, for example, computer software, a new piece of music, or artwork. And "novel" doesn't always mean completely new; instead, it can be ranging from somewhat new to "moderately new" to "massively new" to "radically new." Anything can be "novel" if it falls in this range of categories; for example, it can be a variation of something existing to give it a new usage and shape or a combination of two different things to make something new from them. "usefulness" is also subjective and will be dependent of "which holder is eyeing them" (James & Drown, 2012). This defining creativity approach states that creativity is an individuallevel phenomenon that serves as an input for innovation (Amabile, 1988, 1996; Woodman et al., 1993).

2.2.4 **Operationalizations of creativity**

Although workplace creativity is the performance of a distinct behavior, definitional and measurement issues need to be addressed. Traditionally these four types of operationalizations are employed: 1) Product; 2) Performance; 3) Behavior; 4) Outcome measures (Mumford et al., 2012). Product-based measurement for creativity relies on the product of creativity, for example, a creative solution for an ill-defined problem. It has three attributes: 1) originality; 2) quality; 3) elegance (e-g

well crafted). Creative product-based measures are particularly attractive because of its solutional property (Welling, 2007).

The criticism of product-specific operationalization of creativity is that it is domain-specific and, in some cases, subjective and dependent on the judges of the observer, making it problematic to measure the level of creativity in the product. For example, inter-judges' consistency and consensus of the creative product can be a damning issue in product operationalization of creativity, especially when studies like (Dollinger & Shafran, 2005) have shown high creativity convergence ranking between expert and non-expert judges making this measurement questionable. The argument for the product approach of creativity is also persuasive. For example, MacKinnon (as cited in Chang & Csete, 2007) says that the product approach of creativity is the bedrock of creativity research, and through this approach, all other facets of the creative outcome can be unveiled, for example, person, process, and environment.

Creative performance is different from creative product-based operationalization. Former defines a set of "performance markers" with underlying creative potential, and then the individual is appraised or assessed on these set markers. For example, a divergent thinking test. Conventionally, such performances are scored on these three attributes fluency, flexibility, and fluency for creative solutions generated (Kim, 2006). This is by no means an extensive list of attributes on which creative performance can be appraised.

The approach which documents and evaluate the creative output is called the outcome-based operationalization. For example, Simonton (2004b) used Oscar awards as a measure of creative outcome for the film industry, and Nemeth and

Goncalo (2005) denoted the number of citations of an article produced as a result of the collaboration between authors as an indicator of creativity and impact. It is worth noting here that creative output measures are domain-specific measures of creativity. One important criticism of this type of creative measurement is the validity and reliability of the measures employed for determining creativity and to what extent these measures present a valid reflection of the creativity of the product (Simonton, 1991).

Behavioral operationalization does not rely on creative product or performance, but it counts behavior as evidence of creativity. The basis for assessment in this operationalization for creativity is the intensity and frequency of people's behavior for problems requiring creative thought. Creativity may be best conceptualized as behavior at the employee level, which serves as a prerequisite at the group or organizational level (Shalley et al., 2004). The present study follows this operationalization of creativity as a measurable and observable behavior of the individual as an indicator of creative output. For example, "I tried out new ideas and approached to problems" or "I demonstrated originality is my work" (Tierney et al., 1999). Behavior operationalization follows three approaches (Mumford et al., 2012). First, where an individual is required to exhibit domain-specific behaviors, and measurements are developed to capture creative behavior in that specific domain. For example, workplace, school, or any other social setting (e.g., Jaussi, Randel, & Dionne, 2007). The second approach assesses the general attributes of creative behavior rather than domain-specific behavior, for example, the measure of ideational behavior by Runco, Plucker, and Lim (2001). In the third approach, creativity is considered an aspect of personality. In this approach, creative attributes of the

personality are evaluated, an example of this approach is Prabhu, Sutton, and Sauser (2008), where creativity is treated as a general disposition of the personality.

There is also a difference in workplace creativity's operationalization and conceptualization between North American and European researchers. James and Drown (2012) compared the European and North American study approach of workplace creativity by comparing papers published in dominantly European journals and North American journal publications. They noted that the European approach towards creativity was more inclined towards the qualitative method of study and was more of an "organizational level" perspective of creativity than North American, which was predominantly quantitative and focused more on the "individual" level of analysis. The difference is attributed to the cultural differences between European and North American societies as the latter tend to be higher on individualistic values in comparison with the former. The current study falls more in line with the North American approach.

2.2.5 Creativity, motivation, and reward

The Componential model of creativity emphasizes on intrinsic motivation and takes the route of motivational explanation of creativity (Zhou & Shalley, 2011). The motivational approach to workplace creativity has received the most empirical attention. Researchers have used the motivational path to identify the determinantal or beneficial effect of various contextual factors on intrinsic motivation, which further inhibit or enhance workplace creativity (Anderson et al., 2014). Whereas the other component of the intrinsic motivation hypothesis is that extrinsic motivation, which has its origin outside the individual, for example, reward promise, the threat of punishment, or approaching deadline pressure, all are thought to harm creativity.

Cognitive evaluation theory (CET) (Deci & Ryan, 1980, 1985b) effectively explain this hypothesis. According to CET, the ability of contextual factors to influence intrinsic motivation depend on its nature, whether it is controlling or informational. If the contextual factors are informational, an individual is likely to feel competent and self-determined, and his intrinsic motivation will be high. On the other hand, if contextual factors are controlling, one would feel controlled from outside and is less likely to be self-determined; resultingly, their intrinsic motivation will be at a lower level.

The main assumption of this theory was that the presence of reward effectively shifts the loci outside the individual toward the reward stimuli hence "diverting attention from the task itself and nonobvious aspects of the environment that might be used in achieving a creative solution" (Amabile, 1983, p. 120). These assumptions of CET were later proved in a laboratory experiment by Shalley and Perry-Smith (2001). Amabile (1996) revised the term "intrinsic motivation hypothesis" into the intrinsic motivation principle of creativity due to increased empirical support for the notion that intrinsic motivation is a critical component of creativity across different domains and populations.

Despite seemingly overwhelming evidence of the negative role of reward for creativity, Eisenberger and Cameron (1996) challenged the assertion that reward has a decremental effect on creativity and proposed that the harmful effect of reward on general creativity can easily be avoided. He based his argument on behavioral theories that rewarded behavior tends to be repeated. He based his claim on learned industrious theory (LIT) (Eisenberger, 1992) that every effort has an unpleasant feeling induced by the performance or repetition of a task, and if the effort is rewarded, the sensation of high effort takes the secondary reward properties that mitigate high "aversiveness" of the effort. Therefore, when reward mitigates the effect of aversiveness of the effort; as a result, the individual is willing to extend his future effort in the goal-directed activity. LIT posits that individual learns which dimension of performance is rewarded and then direct their effort on future task as per previous reward experience. Creativity is a high-intensity cognitive activity and requires high cognitive effort; therefore, rewarding the individual for his effort will increase the likelihood of him exhibiting creative tendencies in the future (Eisenberger & Cameron, 1996). Eisenberger and Cameron (1996) is the first effective voice challenging the long-held belief for almost a quarter of a century that tangible reward is not entirely bad but can be used for enhancing creativity. This visibly contradictory explanation of creativity also received empirical validation. Later in a meta-analysis, Byron and Khazanchi (2012) examined the reward-creativity relationship and posited that creativity dependent reward does increase creative performance in some contingencies. These findings provide impetus to the original assertation that creativity contingent reward increases creativity, but some reward has a decremental effect on creativity as well.

These two apparently contradictory streams of research started reconciling when Amabile (1996, p. 160) proposed that "rewards that convey competence information to subjects may not undermine intrinsic motivation" that is similar to the argument of Deci and Ryan (1985b), proposed that reward or extrinsic motivation can enhance creativity provided it disseminates information about one's competence. A similar view is held by Eisenberger and Armeli (1997) that reward as an extrinsic motivator can enhance creativity. The convergence point for these two research streams is that not all extrinsic motivation types are detrimental to creativity. Gerhart and Fang (2015) also criticized this long-held belief that extrinsic motivation is bad for creativity and blames cognitive evaluation theory CET for this fallacy. They argue that extrinsic motivation is an important part of an individual's overall motivation system, and its interplay with creativity cannot be neglected or otherwise suppressed; instead, extrinsic motivation can favorably reinforce intrinsic motivation. Recently, Amabile and Pratt (2016) revised the original componential model of creativity and extended it by incorporating extrinsic motivation and a broader social environment. They argued that extrinsic motivation should be included in the model of workplace creativity because "understanding of motivation and creativity has changed significantly" (p. 158). So, the latest understanding includes extrinsic motivation in the creativity equation, shifting the focus away from the near-exclusive prerogative of intrinsic motivation for inducing creativity. According to Amabile and Pratt (2016) individuals can be intrinsically motivated for task performance for the enjoyment, satisfaction, or challenge of the job and extrinsically motivated with deadline pressure, incentives, or recognition according to the predisposition of the individual towards motivators.

Liu et al. (2011) highlight another interesting viewpoint about workplace creativity, which is in line with the field's latest developments. This perspective takes the debate of linkage between intrinsic motivation and workplace creativity beyond conventional research schema. They posit that "harmonious passion" is another form of motivation that is superior in predicting workplace creativity and defines harmonious passion as "the autonomous internalization of an activity, making it part of one's identity and creating a sense of personal enjoyment and free choice about pursuing the activity". They based their argument on self-determination theory (SDT) and proposed that harmonious passion is the form of motivation inspired by SDT,

which has elements of internalized extrinsic motivation, entrenched in the value system of the individual so well that it behaves like intrinsic motivation and is more stable. Therefore, they argue that harmonious passion has a stronger relationship with workplace creativity than intrinsic motivation and extrinsic motivation alone.

The proposition that extrinsic and intrinsic motivation both can be used to predict workplace creativity has found theoretical support from scholars like Gerhart and Fang (2015) and the original author of workplace creativity model Amabile and Pratt (2016). Amabile and Pratt (2016) proposed that extrinsic motivation's "complementary" effect should be studied in combination with intrinsic motivation. Liu et al. (2011) "harmonious passion" seems to be a point of intersection for both intrinsic and extrinsic motivation. Self-determination theory (Deci & Ryan, 1985b) posit that motivation doesn't consist only of external or controlling motivation and internal or intrinsic motivation, but motivation is spread on a continuum of different types of motivation and groups them into two categories; autonomous motivation and controlled motivation. Autonomous motivation is conceptually similar to harmonious passion because autonomous motivation incorporated intrinsic motivation and internalized extrinsic motivation, which resonates with the individual's value system, making it a better predictor of workplace creativity in its relationship with contextual and individual factors (Gagné & Deci, 2005). Based on the discussion above, this study uses autonomous motivation as a workplace creativity inducing mechanism. Autonomous motivation is better in quality when dealing with heuristic behaviors like workplace creativity (Gagné & Deci, 2005).

2.3 Autonomous motivation

Both the componential model of creativity (Amabile, 1983, 1988) and the interactionist model of creativity (Woodman et al., 1993) acknowledge motivation as the first step toward employee creative behavior. Especially the componential model of creativity (Amabile, 1983, 1988) assigns significant value to the motivational component when explaining creativity. It is referred to as the driver for creative behavior. As a result, the notion that employee creative behavior results from intrinsic motivation has found stable footings in the workplace creativity literature (see Cerasoli, Nicklin, & Ford, 2014). Historically, motivation has been seen as intrinsic and extrinsic motivation (Pinder, 2011), which is rather an oversimplification of a substantially complex phenomenon. Intrinsic motivation is defined as "the doing of an activity for its inherent satisfactions rather than for some separable consequence" (Ryan & Deci, 2000a).

An intrinsically motivated person performs an act for the enjoyment, fun, or challenge of it rather than anticipation of reward or fear of punishment. However, intrinsic motivation is not the only type of human motivation but is certainly one of the most important ones. Human beings are inquisitive, curious, and playful creatures from their birth, ready to learn and explore without expecting an extraneous or extrinsic reward. Being curious and inclined to learn new skills and apply those skills in creative and novel ways is part of human nature. This human predispositions spans over their lifetime and significantly affect every individual's performance, persistence, and well-being (Ryan & La Guardia, 2000). People are intrinsically motivated for some activities and not for others. Intrinsic motivation is a task-specific and not a general disposition (Ryan & Deci, 2000a).

On the other hand, extrinsic motivation is governed by the anticipation of external gains (Cerasoli et al., 2014) and refers to activities that are "done in order to attain some separable outcome" (Ryan & Deci, 2000a, p. 70). It arises from "the desire to obtain some outcomes (such as reward) that are apart from the work itself" (Amabile, 1993, p. 187). The individual is driven with the expectation of reward or by something outside the task or the act itself. In predominant motivation literature, intrinsic and extrinsic motivation are seen as the opposites of a coin (Deci & Ryan, 1985b). The most crucial discrimination between intrinsic motivation and extrinsic motivation is that intrinsic motivation involves an act's performance because its enjoyment and extrinsic motivation pertain to the task's instrumental values (Deci & Ryan, 1985a). In general, workplace creativity doesn't paint the extrinsic motivation is a good light. Extrinsic motivation has been associated with a decreased amount of creativity because of its controlling properties. Traditionally, intrinsic-extrinsic research dyad has focused on catalysts conducive to developing intrinsic motivation and mitigating the effects of extrinsic motivation so that it doesn't thwart intrinsic motivation.

Extrinsic motivation was generally regarded as harmful ever since the early workplace creativity literature (e.g., Amabile, 1983; Amabile, Conti, Coon, Lazenby, & Herron, 1996) because of the componential model of creativity, which laid much emphasis on intrinsic motivation and regarded it as the only condottiere of workplace creativity. Cognitive Evaluation Theory CET (Deci & Ryan, 1980) is one of the sub-theories of Self-determination theory; it explains that intrinsic and extrinsic motivation have different effects on workplace creativity. But the real controversy started when research stated demonstrating that intrinsic motivation can be undermined with extrinsic motivation (Ryan & Deci, 2000a).
Subsequently, the point of convergence between CET literature and workplace creativity was that extrinsic motivation is insufficient, controlling, and inferior in quality. It was considered detrimental to intrinsic motivation (because of its controlling properties and external "locus of causality." It was seen as inadequate to maintain interest in complex activities such as creativity. Both workplace creativity and CET concluded that extrinsic motivation offers little to no benefit when encouraging positive outcomes such as workplace creativity. A sizeable literature has been generated on this theme in the following years of CET and early work of workplace creativity. As a consequence, the discipline of psychology and organizational behavior and other disciplines (e.g., economics) started becoming interested in extrinsic reward's negative consequences on work motivation (Gerhart & Fang, 2015).

However, a parallel stream of research kept on studying workplace creativity from the lens of extrinsic motivation and demonstrated its vitality for facilitating employee creative behavior (Eisenberger & Armeli, 1997; Eisenberger, Armeli, & Pretz, 1998b; Eisenberger & Cameron, 1996, 1998; Eisenberger & Rhoades, 2001). Unlike CET and componential model of creativity, this brook of creativity research took a different route and rested the foundation of its theoretical difference in the Learned Industriousness Theory (LIT) (Eisenberger, 1992). According to LIT "effort is an unpleasant sensation produced by the intense or repeated performance of an activity" (Eisenberger & Cameron, 1996, p. 1161), and if the cognitive or physical effort by an individual is rewarded, it would take out the "aversiveness" of the activity and make behavior more likely of repeating. Tasks such as creativity requiring more than the ordinary amount of cognitive effort, can be induced via learned industriousness and the "attention-eliciting" effect of reward. Eisenberger and Cameron (1996) further challenged the conventional view that extrinsic reward reduces intrinsic motivation; they suggest that "reward for high creativity in one task enhances subsequent creativity in an entirely different task" (p. 1161), pointing toward the sustainability of extrinsic motivation and its benefit for employee creative behavior when used appropriately. The belief that human behavior can be reinforced with extrinsic intervention and creativity is no exception is termed "behaviorist" school of thought (Eisenberger & Shanock, 2003). This approach has its own logical reasoning (see Eisenberger & Cameron, 1996; Eisenberger & Cameron, 1998; Eisenberger & Rhoades, 2001; Eisenberger & Shanock, 2003) and has sufficient empirical evidence to back its theoretical suppositions (Li, Deng, Leung, & Zhao, 2017; Sue-Chan & Hempel, 2016).

A slightly different perspective on the driver of employee creative behavior; Montag, Maertz, and Baer (2012) who argue that where creative behavior is part of the core job requirements, it can be induced with external reward and on the other hand, it is internally driven in situations where it not part of the job requirements, hence sprouting from intrinsic motivation. However, research over the past four decades was majorly concerned with either the factors facilitating intrinsic motivation or mitigating extrinsic motivation's effect on workplace creativity.

In this regard, if one has to look for a middle ground between two extremes; Self-Determination Theory (SDT) Deci and Ryan (1985b); Ryan and Deci (2000a) has the potential of explaining this predicament about the interaction of extrinsic motivation with intrinsic motivation because not many empirical examples in the last four decades have tried to bridge this gap in the literature (Cerasoli et al., 2014). The chasm between the intrinsic and extrinsic streams of research on employee creative behavior contributed much to the understanding of the construct itself and added to the theoretical confusion at the same time because of the contradictory dichotomous paths. SDT is the middle ground on which both these approaches of motivation for eliciting creative behavior can be unified. SDT is an influential theory of human behavior and is used to explain a wide range of phenomena related to human motivation and classification of motivation itself, well-being, and workplace creativity (Chatzisarantis & Hagger, 2009). The central assumption of SDT (via basic psychological need theory) is that people have basic/fundamental psychological needs of competence, relatedness, and autonomy. When these basic psychological needs are fulfilled, the individual becomes self-determined or autonomously motivated. SDT doesn't view motivation as a unitary concept, but it explains motivation on a much deeper level. SDT provides details about intrinsic motivation, its initiation, and how it takes further directions according to environmental factors, which may affect its persistence and intensity (Kanfer, Chen, & Pritchard, 2008).

Intrinsic motivation under SDT is a relatively unified type of motivation as compared to extrinsic motivation. Extrinsic motivation through the lens of SDT is a much more complex and multifaceted categorization of motivation. The taxonomy of extrinsic motivation as per SDT comprises mixt types of "regulations" anchored in unique characteristics based on their determinants and consequences (Ryan, Williams, Patrick, & Deci, 2009). Rather than considering all extrinsic motivation as "bad," SDT maintains that extrinsic motivation can have a diminishing, enhancing, or no effect on intrinsic motivation at all (Deci et al., 2017). One fundamental assumption of SDT is that an individual can be intrinsically and extrinsically motivated at the same time. Organismic integration theory (OIT), a sub-theory of SDT states that people are prone to internalize and integrate contextual values and practices and that internalization of external values vary in their degree of integration with self. OIT proposes a continuum of different extrinsic motivation types according to the underlying level of autonomy (Ryan et al., 2009). It says well-internalized external motivation can behave like intrinsic motivation; when the individual understands and learns the importance and significance of the job, he tends to consider the importance of the job and feels ownership of the work he is performing, thus leading to more reliable performance. A well-internalized motivation is integrated with the self, such that the individual finds the activity purposive and without any conflict or barrier with the self (Deci et al., 2017).

According to SDT, types of motivation lie along a continuum of autonomy and are classified according to their proximity with autonomy; with the least autonomous "external" to most autonomous "intrinsic" motivation. The order is external, introjected, identified, integrated regulation, and intrinsic regulation (Ryan & Deci, 2000a). We will start discussing motivation types starting from intrinsic motivation, which is the most autonomous motivation type. SDT posits that intrinsic motivation originates from the desire to be active and doing something for the task's inherent enjoyment rather than some separable cause or consequence; the task's interest is spontaneous, and mere engaging in the activity is rewarding for the individual. It resembles the kids' playful nature but can also be seen in adults in sports and avocation. At the workplace, some parts of the job can be intrinsically motivating for the employee, leading to a high level of performance (Deci et al., 2017). Intrinsic motivation is an important part of the Componential theory of creativity and has been associated with different work performance (Cerasoli et al., 2014).

External, introjected, identified, and integrated regulation are extrinsic motivations because they do not originate from within the individual's self. External regulation pertains to the type of motivation initiated as a response to anticipation of reward or avoidance of punishment or compliance with external pressure, or external stimulants of behavior. External regulation is at the least autonomy level on the autonomous and control motivation continuum where others control the behavior. External regulation can be a powerful stimulant of specific behavior, but its long-term side effects may be detrimental for organizations because of its decremental impact on employee wellbeing and performance (Deci et al., 2017).

Introjected regulation refers to the condition when behavior is stimulated by inner pressure, such as guilt or obligations. In this type of motivation, the behavior is performed in an endorsed way but has external control. The employee seeking approval from his leader/supervisor about his performance is a form of introjected regulation. The employee seeks approval or avoids disapproval in performing his job not because of innate reason but because of a sense of obligation towards his leader or boss. Introjected regulation is self-controlled because it is concerned with self-esteem, ego, and guilt, external recognition, and status. Although introjected regulation originates internally but is controlling in nature, an individual's behavior is contingent upon the concept of self as evaluated by an external observer. The behavior exhibited is partly volitional, thus unstable and not suitable for a long-term commitment (Deci & Ryan, 2000, 2012a).

Identified regulation is more autonomous than introjected, where the individual has identified himself with the values of his work and accepts those values and work behavior as part of his own. Because the individual owns those values, the rationale for acting on those values is relatively more volitional and autonomous and originates from identifying the importance of those values (Deci & Ryan, 2000). Finally, when the individual "assimilates and integrates" with their identified values, they act with integrated regulation, which is the most internalized and autonomous form of extrinsic motivation (Deci et al., 2017). The condition for the formation of integrated regulation is when identified regulation becomes part of the individual's other values, needs, and experiences. And they are non-distinguishable from his identity so that he identifies himself with the values and thinks of them as if they are part of his concept of a coherent self.

Integrated regulation is the closest form of extrinsic motivation with intrinsic regulation because of shared characteristics such as volitional engagement and flexibility. The difference between intrinsic regulation and integrated regulation is that intrinsic regulation originates from inside the individual because of the innate enjoyment of the task, whereas in integrated regulation, behavior results from the personal importance and understood meaningfulness of the action for identified reasons (Deci & Ryan, 2012a). Integrated regulation is similar to intrinsic motivation so much that it is difficult to differentiate between the two in most of the cases (Gagné et al., 2015).

SDT groups identified, integrated, and intrinsic regulation as "autonomous motivation" and further categorizes external and introjected regulation under controlled motivation (Deci & Ryan, 2012a). Autonomous motivation is the central variable of SDT and of monumental importance in explaining motivation. Autonomous motivation is defined in terms of its intrinsic origin and meaningful identification of extrinsic values with the individual's core concept as perceived by the

individual. Two determinants of autonomous motivation are internal drive and perceived meaningfulness that resounds with the individual's values. Autonomous motivation occupies a central position in SDT in predicting various work outcomes and is a better predictor of positive "attitudinal and behavioral" than controlled motivation (Gagné & Deci, 2005). It contains both intrinsic motivation and well-internalized extrinsic motivation.

2.3.1 Autonomous motivation and creativity

SDT states that when the individual performs a task for its innate enjoyment or interest and its identified importance and instrumentality, he can be referred to as autonomously motivated (Deci et al., 2017). Autonomous motivation is particularly useful concerning activities that are complex and require greater cognitive flexibility, persistence, are challenging, abstract, and heuristic (Gagné & Deci, 2005). Therefore, the linkage between autonomous motivation and employee creative behavior is stronger than controlled motivation (Grant, 2012b). Autonomous motivation is linked with a preference for novelty, better concentration, and deep learning but has a strong influence on complex, heuristic activity and requires greater information processing and creativity (Deci & Ryan, 2008b). Autonomous motivation can be affected by the individual's environment (Deci & Ryan, 2008b). A positive work environment that supports employees' basic needs satisfaction (need for autonomy, competence, and relatedness) leads to high-quality motivation like autonomous motivation (Trépanier, Forest, Fernet, & Austin, 2015). Basic psychological needs satisfaction leads to autonomous motivation has found empirical evidence recently (see Wang, Gao, & Panaccio, 2020). Basic psychological needs satisfaction also helps in internalizing extrinsic motivation (Deci et al., 2017). Autonomous motivation is mainly related to effective performance on tasks requiring creativity, cognitive flexibility, and conceptual understanding (Gagné & Deci, 2005). This linkage between autonomous motivation and workplace creativity has empirical evidence (see Liu et al., 2013), which further strengthens the proposition that autonomous motivation contributes to enhanced performance on heuristic tasks such as workplace creativity. One explanation to this linkage is that autonomously motivated individuals devote more attention to the problems he finds intrinsically interesting, consciously important, and resist the "situational and interpersonal" factors that can undermine creativity (Sheldon, 1995).

The autonomous form of motivation for explaining employee creative behavior offers the latest understanding of the integration of intrinsic and extrinsic motivation. Recently, Gerhart and Fang (2015) pointed toward the need to assimilate both the research streams of intrinsic and extrinsic motivation. Responding to such calls Amabile and Pratt (2016) revised the original componential model of creativity. They asserted that all types of extrinsic motivation are not bad for employee creative behavior. They proposed that some external motivation, such as well-internalized extrinsic motivations, can enhance workplace creativity and stressed the need to study extrinsic motivation's "complemental" effect. Autonomous motivation is the variable that is of central importance in SDT. It contains both the motivational elements (i.e., intrinsic motivation and extrinsic motivation). It can be the most suitable predictor of employee creative behavior.

Autonomous motivation is useful for the uninteresting but necessary tasks; for example, the tasks that one may not like initially but then decide to stay engaged due to instrumental reasons (Gagné & Deci, 2005). Autonomous motivation means that employee endorses the work's values and performs his work with satisfaction and

volition (Fernet, Austin, & Vallerand, 2012). As a medium through which different environmental and personal variables can affect workplace creativity, Autonomous motivation is significant. Despite its importance, autonomous motivation, as a variable, has not attracted much attention from the research community. Only a handful of studies have investigated the relationship between autonomous motivation and different work outcomes. Apart from the direct relationship between autonomous motivation and employee creativity (e.g., Moon, Hur, & Hyun, 2019), few studies have used autonomous motivation as a variable for predicting the independent variable's effect on creative behavior. For example, it was found that parental control affects Chinese adolescents' creativity through autonomous motivation (Ren et al., 2017). Another study concluded that autonomous motivation mediates the relationship between mastery-approach goal and mathematical creativity of Taiwanese students (Peng, Cherng, Chen, & Lin, 2013). The current study theorizes that autonomous motivation mediates the relationship between environmental and personal variables and employee creative behavior in the workplace. Recently, Yu, Zuo, Liu, and Niemiec (2020) found that autonomously motivation indirectly affects creativity through state vitality. Likewise, Zhang and Yang (2020) concluded that spiritual leadership influenced innovative employee behavior through autonomous motivation. They identified the boundary condition of power distance between spiritual leadership and autonomous motivation such that when power distance increased, the strength between spiritual leadership and autonomous motivation. Gupta (2020) identified autonomous motivation as the mediating variable between leadership and employee-level innovative behavior.

2.4 Authentic leadership

The concept of authenticity resides at the core of authentic leadership theory (Avolio & Gardner, 2005), and authentic leadership style is a product of authentic leadership theory. The term "authenticity" carries multiple meanings in the tradition of philosophy and psychology. The philosophical construction of authenticity relied historically on ethical choices and moral virtues, whereas psychology posits authenticity as a trait or identity (Novicevic, Harvey, Ronald, & Brown-Radford, 2006). Authenticity as a concept has a rich pedigree in philosophy and carries imprints of ancient Greek philosophers like Aristotle to modern existentialists like Sartre on its form and figure. The concept of authenticity can be explained on the themes of self-understanding, self-knowledge, absence of self-deception and acceptance of one's ontological realities, and the understanding of the ways in which the individual is connected within his social structure. In short, authenticity represents a variety of mental and behavioral processes through which an individual "discover, develop, and construct a core sense of self and, furthermore, how this core self is maintained over time and situation" (Kernis & Goldman, 2006, p. 293). The "selfreferential" and "relative" nature of authenticity should always be considered to understand the concept of authenticity thoroughly. It would help in not confusing it with other identical concepts like "sincerity" and prevents from making the mistake of viewing authenticity in totality. Because authenticity cannot be construed in "either" and "or" terms, authenticity is always relative in nature where one can differ in the degree of his authenticity from others (Erickson, 1995). In the discipline of psychology, authenticity is not a reflection of others on one's values but a manifestation of one's own convocation coupled with the acceptance of responsibility of one's actions and the meaning that one attaches with his own moral identity

(Erickson, 1995). Authenticity is "owning personal experiences, be the thoughts, emotions, needs, wants, preferences, or beliefs, processes captured by the injunction to know oneself" and ensures "that one acts in accordance with the true self, expressing oneself in ways that are consistent with inner thoughts and feelings" as a mechanism of reducing the tension between moral conviction and moral identity (Harter, 2002, p. 382).

The concept of authenticity becomes increasingly relevant when the individual is torn between moral dilemmas born due to civilization's evolution. In such a turbulent environment, a leader with a steadier philosophical view about himself, his followers, and the community becomes important. Because of his authenticity, the leader may help the organization survive amid moral discrepancies (Novicevic et al., 2006). Authentic leadership theory has its roots in the concept of authenticity, and the concept of authentic leadership itself originates from the positive psychology with a more positive focus as compared to its early reliance on "un-ethnicity" (Avolio & Gardner, 2005). Further exploring the concept of authenticity, one generally agreedupon definition of authenticity in management is "real" or "genuine" or "true." However, there is not much agreement among academics on any particular definition of authenticity (Lehman, O'Connor, Kovács, & Newman, 2018). But on a practical side, no matter how "tricky" the concept of authenticity is (Alvesson & Einola, 2019), it carries a great appeal for researchers, and its studies transcend a host of academic domains and fields of research because of its significant implications for employees in modern organizations. The reflection of interest of academic scholarship in the concept of authenticity can be seen from the number of published articles about authenticity that has doubled over the last decade (Lehman et al., 2018). Some

researchers have even gone further and called authentic leadership an "antidote" to the crisis of leadership in modern organizations (Sparrowe, 2005).

There are many proposed definitions of authentic leadership in the literature. The most commonly used definition of authentic leadership is "a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development" (Walumbwa et al., 2008).

Leadership Quarterly (Volume 16, Issue 3) published a special issue, "authentic leadership development," which helped in constructing the current form of authentic leadership with the inputs from prominent contemporary scholarship and designated it as a "hot" field of leadership study. Authentic leadership has been leading the positive form of leadership since then and has established itself as a standalone construct that distinguishes itself from overlapping leadership constructs like transformational, ethical and servant leadership (Lemoine, Hartnell, & Leroy, 2019; Neider & Schriesheim, 2011). Much emphasis has been put on the conceptual clarity of the construct. For example, in a recent meta-analysis, nearly half of the articles on authentic leadership were conceptual (Banks, McCauley, Gardner, & Guler, 2016). Despite debate among academics, authentic leadership since its inception has made an extraordinary amount of progress (Avolio & Fred, 2014) and has entered the maturity stage (Gardner, Cogliser, Davis, & Dickens, 2011).

Since its inception, authentic leadership was conceptualized as a multidimensional construct (Luthans & Avolio, 2003) covering the diverse domain like traits, states, behaviors, attributes, and contexts and was posited to operate at all levels (e.g., individual, team, and organizational levels) (Cooper, Scandura, & Schriesheim, 2005). Stepping in a similar direction, Ilies, Morgeson, and Nahrgang (2005) proposed four dimensions of authentic leadership: 1) self-awareness, 2) unbiased processing, 3) authentic behavior, 4) authentic relational orientation. Shamir and Eilam (2005) proposed an authentic leader is someone who has the role of leader as a central component of his self-concept and has "achieved a high level of selfresolution or self-concept clarity" and his "goals are self-concordant" and his behavior is "self-expressive" (p. 398). Likewise, Walumbwa et al. (2008), in their effort to define authentic leadership and trying to capture its multi-componential model, relied heavily on the conceptual advancements made by (Ilies et al., 2005; Shamir & Eilam, 2005) and the inherent moral component and developmental focus (Avolio & Gardner, 2005). The authentic leadership construct has four dimensions self-awareness, relational transparency, internalized moral perspective, and balanced processing. Initially, it was found that these dimensions are not independent of each other, but a single higher-order factor for which authentic leadership is responsible for the dependence (Walumbwa et al., 2008) and this conceptualization seem to be confirmed after nine years of research (Avolio, Wernsing, & Gardner, 2017). Following is the brief description of all four dimensions of authentic leadership.

2.4.1 Self-awareness

Self-awareness is the basic and fundamental concept to authentic leadership on which the pioneers of the construct seem to have a consensus (e.g., Avolio & Gardner, 2005; Ilies et al., 2005; Shamir & Eilam, 2005). Besides, the notion of awareness is also a part of the concept of authenticity and refers to "one's awareness of, and trust in, one's own personal characteristics, values, motives, feelings and cognitions." It is the degree to which the leader understands his own "inherent contradictory self-aspects" (p. 377) and acknowledge the effect of these contradictions on the formation of his feelings, behaviors, thoughts, and actions (Ilies et al., 2005). A leader is self-aware when he is cognizant of his existence and what makes up that existence in the social context in which he exists (Avolio & Gardner, 2005). Self-awareness is the leader's comprehension of his strengths, weaknesses, limitations, and understanding of his emotions and personality (Walumbwa et al., 2008). Self-awareness is the understanding of how one attaches meaning to the world around him and how those meaning influence his perception of himself as embedded in the social context. Gaining a clarity of one's true self and awareness about himself in his context is very important because all subsequent knowledge of the individual is based on that understanding (Shamir & Eilam, 2005). Self-awareness echoes one's trust in his values, feeling, and personal character. It signifies that when a leader is aware of his personal strengths and limitation, he is adaptive to any developments in the environment (Ilies et al., 2005).

For an authentic leader, self-awareness is not the end but a process for reaching a point where one understands his sense of purpose, unique talents, core values, desires, and beliefs (Avolio & Gardner, 2005). Self-awareness of leader affects followers' positive emotions, and these positive emotions foster "eudemonic states" in the follower, which are similar to intrinsic motivation (Ilies et al., 2005). Self-awareness is probably the most crucial aspect of authentic leadership because it keeps the leader committed to the understanding of himself (the authentic self) when faced with the conflicting dilemmas in the environment and forms the basis of acting with authenticity (Luthans & Avolio, 2003). Besides greater self-knowledge, selfawareness increases the leader's ability for "personal expressiveness" and "flow" because greater self-knowledge and self-awareness enable the individual to choose challenges and tasks according to his capabilities and skills, which is a fundamental condition for experiencing flow (Csikszentmihalyi, 2003). One delicate point to understand about self-awareness is that if authenticity is viewed as a mere way of reducing the conflict between self-identity and actions of an individual, then any "narcissists, miscreants, or even the most clueless" (p. 596) could claim to have achieved the authentic self. Therefore, a high level of concept-clarity and extensive knowledge about self are the corner stones of authenticity and authentic self (Diddams & Chang, 2012).

2.4.2 Relational transparency

Relational transparency refers to being authentic (as opposed to being un-authentic or fake) in displaying one's personal values, beliefs, and feelings to ensure truthfulness and transparency in the leader-follower relation (Diddams & Chang, 2012). Such openness promotes trust through the transparent display of one's true expressions and information about one's thoughts and feelings while keeping the display of inapt emotions at a minimum. This transparency can only be achieved if one's behavior is stimulated by his own values, preferences, and needs instead of any external anticipation of reward or harm or by reason of efforts to please others (Ilies et al., 2005). Relational transparency is not just sharing positive information about one's true self but one's vulnerabilities and self-deprecating aspects as well (Gardner, Avolio, Luthans, May, & Walumbwa, 2005). The leaders are thought to avoid showing their weaknesses because that may undermine the very authority they command, however, by breaking the mirage of invincibility and sharing his flaws and limitations with his followers authentic leader creates a sense of equality where followers tend to show the feeling of affiliation with the real self of their leader (Diddams & Chang, 2012). Another important aspect of authentic leadership is that he focuses on the development of his follower's high level of self-clarity through authentic modeling where followers connect with the leader in such a way that they take on the positive core values of the authentic leader (Luthans, Norman, & Hughes, 2006). The followers who perceive their leader like them may see his actions as a form of modeling and may view themselves as capable as their leader (Diddams & Chang, 2012). It is also consistent with leader-member exchange and social identity scholarship that has consistently establish that followers who perceive their leader similar to them have better working relations and enhanced liking for the leader (Huang & Iun, 2006). Another aspect of relational transparency is that by being transparent about himself, an authentic leader increases the prototypicality in his group, enhancing group cohesiveness and reducing uncertainty (Hogg & Terry, 2000). By increasing prototypicality, the leader increases empathy with his followers, who, in return, are more likely to comply with his requests (Shamir & Eilam, 2005). Relational transparency results in greater cohesiveness, decreased uncertainty, and increased satisfaction among group members (Diddams & Chang, 2012).

The concept of relational transparency is closely related to self-regulation. Self-regulation is central to most formulations of authentic leadership (Luthans & Avolio, 2003). Self-regulation is "the process by which authentic leader align their values with their intentions and actions" (Avolio & Gardner, 2005, p. 325). It is to be noted here that the concept of self-regulation can be explained using self-determination theory (Deci & Ryan, 1985b, 2000). Self-determination theory proposes that authenticity is a byproduct of self-regulation where an individual internalizes his

values and makes them a part of the self. Self-regulation is the process through which the leader aligns his self-awareness with his behavior to exhibit transparency in his actions (Sparrowe, 2005). Thus, a leader who practices what he preaches is viewed by his followers as genuine and original, and his followers are more likely to comply with his requests.

2.4.3 Balanced processing

Balanced processing can be defined as the ability to objectively analyze relevant data before making a decision (Avolio, Walumbwa, & Weber, 2009). Green (2014) believed that balanced processing is the deliberation in decision making. In other words, it is the ability to seek inputs and evaluate those inputs before coming to decisions. An earlier conceptualization of balanced processing was Kernis's (2003) "unbiased processing" as he refers to authenticity as "unbiased processing of selfrelevant" information. Kernis (2003) argued that unbiased processing is essentially objective in nature, where an individual objectively evaluates his positive and negative aspects and information about his emotions, internal experiences, and knowledge. Another aspect of unbiased processing is that it is devoid of any interpretive distortion (e.g., defensiveness), exaggeration, or suppression of external evaluative information by the individual. Thus, an authentic leader lacks the selfserving biases. Unbiased processing prevents from distorting or ignoring the information about self that results in making accurate behavioral choices which are beneficial in both short and long-term and leads to self-growth and self-development. Balanced processing is an important dimension of authentic leadership because of its contribution to the development of the leader himself and his followers.

This developmental aspect of authentic leadership converges with selfdetermination theory, which postulates that human beings are growth-oriented organisms who seek development and complexity for innate psychological needs (Ryan & Deci, 2000b) and self-serving bias is absent from individuals who are selfdetermined or autonomous after success or failure (Knee & Zuckerman, 1996). Thus, it can be induced that autonomously motivated individuals have full assimilation between the sense of true self and self-referenced values. Although the authentic leadership construct borrows a lot from the work of Kernis (2003), however, Avolio and Gardner (2005) differ from the absolute objectivity of Kernis's "unbalanced processing" and favor "relative objectivity" as they rely on the argument that "humans are flawed and biased information processors" (p. 317) particularly regarding information related to self. This approach contrasts with absolute objectivity and asserts that authentic leaders and followers can consider multiple sides of an issue and evaluate various perspectives as they process information in a relatively objective manner because they are not threatened by their ego. Balanced processing signifies that self-related information incorporates the perspective of others (e.g., followers, peers) and is processed in a fashion free from distortion, bias, deflation, and denial as much as possible (Gardner, Avolio, & Walumbwa, 2005). Balanced processing of information is associated with the leader's moral integrity, which is closely linked with the objective decision-making characteristic of an authentic leader (Ilies et al., 2005). Resultantly, balanced processing of information and relatively objective decision making enables authentic leader to understand the accurate long-term causal relationships between behavior performed and their future outcomes. Because future outcomes are not proximal to their causal behavior therefore, to establish the linkage between causes and outcomes, relatively objective

information processing is essential for an individual's growth and development (Harvey, Martinko, & Gardner, 2006). Therefore, with balanced processing, authentic leaders weigh all the relevant information and try to comprehensively understand the factors associated when making attributes about self or others' performance.

2.4.4 Internalized moral perspective

The fourth attribute of the authentic leader is internalized moral perspective or moral self-identity, which is the ability to be directed by internal moral standards as opposed to the external requirements (Avolio et al., 2009). Luthans and Avolio (2003) were the first to conceptualize authentic leadership with an inherent moral/ethical component. An authentic leader has the ability to act on his moral intentions once he has chosen a path for himself; his moral courage does not allow organizational constraints, whether from inside or outside of the organization, from changing or forfeiting his moral course. The internal moral reinforcement ensures his sustained moral actions, not any fear of punishment or greed for a reward. An authentic leader sees himself as a "moral standard-bearer" and demonstrates consistent high moral and ethical standards. He has a highly developed sense of his role as a leader who is responsible for acting morally and in the best interest of his followers. Because of his moral perspective-taking ability, he placed himself in the "shoes of others" before making decisions that may affect them and look for a win-win situation. He forms mental models of situations where they are faced with moral dilemmas and use these mental models, which are consistently updated to grapple with the present moral problem. When faced with a moral dilemma, an authentic leader weighs all the options and performs a transparent evaluation of available alternatives (May, Chan, Hodges, & Avolio, 2003).

Leaders have been expected to make moral decisions since time immemorial (Ewest, 2017) and the need for a leader to act morally and ethically was the reason to incorporate the moral component of authentic leadership (Gardner, Avolio, Luthans, et al., 2005). But the inclusion of a moral/ethical dimension of authentic leadership is not without criticism from scholars. Those who are in favor would argue that the ethical/moral attribute of authentic leadership is essential for studying the positive organizational behavior (Luthans & Avolio, 2009), and those against argue that authenticity is not inherently ethical and both have been muddled together unnecessarily (Alvesson & Einola, 2019; Liu, Cutcher, & Grant, 2016).

2.4.5 Authentic leadership and creativity

Authentic leadership fosters positive achievement in his followers (Luthans et al., 2006) and induces a "hopeful, open-ended, visionary and creative response to circumstances" (Begley, 2001, p. 354). An authentic leader arouses positive affect among his followers and does not shy away from listening to their ideas (Banks et al., 2016). He presents his original self and his authenticity to his followers and expects them to do the same (Avolio et al., 2009). A generally agreed-upon definition of authenticity is real or original (Lehman et al., 2018). Similarly, creativity requires the element of novelty in the idea to be considered creative in the first place and novelty is the degree to which the idea is original (Puccio & Cabra, 2012). So, for an idea to be creative, it must be authentic and original. An authentic leader is the one who presents his original self and wants reciprocation from his followers, as a result, his actions reverberate with his followers (Gardner, Avolio, Luthans, et al., 2005).

There is a debate among the scholars about the similarity and overlap of Authentic leadership (AL) with various forms of positive leadership styles such as transformational leadership, ethical leadership, servant leadership. The overlap is understandable because AL is theorized as the "root construct" underlying all forms of positive leadership (Avolio & Gardner, 2005, p. 316). However, research has demonstrated its uniqueness (Neider & Schriesheim, 2011). Besides, some studies have shown its preeminence over transformational leadership on selected outcomes (e.g., Banks et al., 2016). In a recent meta-analysis by Lee et al. (2020) suggest that authentic leadership dominates on its correlation with employee creative behavior as compared to other forms of leadership. This meta-analysis reports thirteen types of leaderships' comparison with each other in their correlation with creative behavior. Specifically, transformational, transactional, ethical, humble, leadership-memberexchange, benevolent, authoritarian, entrepreneurial, authentic, servant, empowering, and destructive leaderships were compared. It was found that authentic leadership along with entrepreneurial leadership shared the largest amount of correlation with employee creative behavior.

The role of leadership for inducing employee creative behavior is of utmost importance given the authority of leadership in shaping various aspects of organizational and work environment. We seek to determine the relationship between authentic leadership and employee creative behavior in this study. An authentic leader possesses necessary positive psychological capital, and his actions are grounded in internal ethical and moral standards. The very building block of authentic leadership is what makes it most relevant for employee creative behavior. For example, an authentic leader ensures the transparent flow of information between him and his follower through relational transparency component. Such an exchange of information flow forms the environment of trust and safety (Agote, Aramburu, & Lines, 2016), where the follower is not afraid of expressing his new ideas and receives transparent feedback for his efforts. Creativity and idea generation is essentially a complex process, susceptibility of failure and obstacles in work environment makes it a difficult endeavor. A high probability of failure in creative activities needs a stable and emotionally peaceful environment that authentic leadership is capable of. Authentic leadership allows his followers indulge in creative activities without the fear of failure by fostering an environment of safety and trust (Černe, Jaklič, & Škerlavaj, 2013). Authentic leadership always provide a constructive feedback which has been shown to enhance creative behavior (Christensen-Salem, Kinicki, Zhang, & Walumbwa, 2018). Authentic leadership is the form of leadership with high self-awareness (Walumbwa et al., 2008) and transfers it to his follower through modeling and relationing. "Authentic leaders are originals, not copies" (Avolio & Gardner, 2005, p. 321). Followers reciprocate the process of self-awareness as they identify their strengths, weaknesses, and real self. As they become more self-aware, they become more transparent with the leader and present original thoughts and ideas without any fear. Furthermore, an authentic leader actions are synonym with his values, and he cannot present himself as something which he is not. Creative behavior is coming up with original ideas. The inspiration from the leader resonates with the followers (Walumbwa et al., 2008), and they may exhibit more originality and authenticity. Moreover, Authentic leader motivated his followers by giving them a sense of purpose for delivering new and innovative products and services (George, 2003). Authentic leadership focuses on the development of their followers holistically by exhibiting authentic behavior and providing opportunities for skill development in an autonomy supportive environment (Hoch, Bommer, Dulebohn, & Wu, 2016). Authentic leadership inspire creativity in his followers through behavioral modelling and being autonomy supportive. Honesty and authenticity set authentic leadership apart from other forms of leadership in inducing workplace creativity (Lee et al., 2020).

Previously Authentic leadership has been studied with creative performance directly (e.g., Černe et al., 2013; Rego et al., 2014). However, studies on Authentic leadership and its relationship with the creative performance from the perspective of Self-determination theory are rare. Besides, there is a fair amount of overlap between authentic leadership theory and self-determination theory (Miniotaité & Buciuniene, 2013). Based on the attributes discussed above, this study deems it appropriate to explain employee creative behavior and its relationship with authentic leadership in light of self-determination theory (Deci & Ryan, 1985b; Ryan & Deci, 2000b). Given that Authentic leadership has received much less attention than other positive psychology leadership constructs in its relationship with workplace creativity (Hughes et al., 2018) it necessitates a detailed study of its relationship with employee creative behavior. Although a sizeable number of empirical studies have focused on other positive outcomes (both attitudinal and behavioral) of Authentic leadership but work on its relationship with employee creative behavior is sparse.

Rego et al. (2012) were among the pioneers who embarked upon investigating the relationship between AL and employee creative behavior. They found out that AL not only directly predicts employee creative behavior but also through the mediating mechanism of psychological capital. In another study, Černe et al. (2013) concluded that the team leader's perceived authentic leadership style directly predicted employee creative behavior. This was one of the first studies investigating the

cross-level effect of an authentic leader on team members. In a similar vein, Müceldili, Turan, and Erdil (2013) tested the relationship between authentic leadership and innovation mediated by creativity and found out that authentic leadership directly affects creativity positively that subsequently leads to innovation. Furthermore, employee creativity was shown to mediate the relationship between performance and AL (Ribeiro, Duarte, & Filipe, 2018). In another study, Rego et al. (2014) explored a different process through which AL affects employee creativity. They found that hope and positive affect mediates the relationship between AL and employee creative behavior. Few other studies tried to explore different mediating mechanisms. For example, it was found that employee's perception of an authentic leader's interactional justice has a positive effect on employee creative behavior (Li, Yu, Yang, Qi, & Fu, 2014). Ahmad, Zafar, and Shahzad (2015) concluded that authentic leadership affects academic staff's creative behavior in the higher education sector of Pakistan through intrinsic motivation and positive mood; on the contrary, Hassan and Din (2019) assert that relationship between authentic leadership and faculty member creative behavior in the universities of Punjab province in Pakistan is not mediated by intrinsic motivation. Malik, Dhar, and Handa (2016) stated that the relationship between AL and employee creativity is mediated by knowledge sharing behavior among nurses in India. Further, it was found that AL has a positive relationship with employee creative behavior through the mediating mechanism of affective commitment and job resourcefulness, which subsequently leads to increased employee job performance (Semedo et al., 2016). Subordinate's creative behavior was positively affected by AL through the atmosphere of trust and psychological safety in a team study in China (Meng, Cheng, & Guo, 2016). Information sharing mediates the relationship between AL and employee creative behavior among virtual teams'

members (Hahm, 2017). In another interesting undertaking Han, Hao, Yang, and Liu (2017) state that there is a positive relationship between transparent leadership which is based on the relational transparency component of AL, and employee creative behavior mediated by psychological safety and the ability to focus. Sanda and Arthur (2017) concluded that authentic leadership and employee creativity relationship is mediated by innovative climate and moderated by work-related flow in such a way that when work-related flow is higher, employee creative behavior increases. Psychological capital mediates the relationship between AL and bank employees' creative behavior in Pakistan and the relationship between AL and employee creativity was moderated by job experience such that increased job experience enhanced employee creative behavior (Zubair & Kamal, 2017). Thriving at work mediated the positive relationship between AL and employee creative behavior and also authentic leadership moderated the relationship between leader-member exchange and employee creative behavior through thriving at work in such a way that the relationship was stronger when authentic leadership was high (Xu, Zhao, Li, & Lin, 2017b). Also, authentic leadership predicted employee creative behavior both directly and through affective well-being and satisfaction, where satisfaction with management moderated the direct relationship between authentic leadership and employee creative behavior and through affective well-being such that creativity is high when satisfaction with management increases (Semedo, Coelho, & Ribeiro, 2017b). Recently, Chaudhary and Panda (2018a) concluded that authentic leadership positively affects employee creativity directly through psychological meaningfulness and psychological safety and psychological meaningfulness and engagement. Likewise, employee perception of authentic leadership has a positive effect on their creative work behavior through affective commitment (Ribeiro, Duarte, Filipe, &

Torres de Oliveira, 2019) and job resourcefulness (Semedo et al., 2018), work engagement, and psychological empowerment (Mubarak & Noor, 2018b) workplace climate harmony (Alzghoul, Elrehail, Emeagwali, & AlShboul, 2018). In another study (Shang, Chong, Xu, & Zhu, 2019) stated that the relationship between authentic leadership and creative work behavior is mediated by promotion focus and test a moderated mediation model. Where the leader's power sources (position, personal, and relational) moderates the mediated relation and found that all three power sources moderate the mediated relation between authentic leadership and promotion focus.

Other than employee creativity, authentic leadership has demonstrated its positive influence on a wide range of positive outcomes for example, team-level productivity (Lyubovnikova, Legood, Turner, & Mamakouka, 2017) identification with leader, trust, psychological capital, relationship quality (Gill & Caza, 2015) proactive behavior (Liu, Fuller, Hester, Bennett, & Dickerson, 2018) authentic fellowship and basic need satisfaction (Leroy, Anseel, Gardner, & Sels, 2015) occupational coping self-efficacy, lower burnout, better mental health (Laschinger, Borgogni, Consiglio, & Read, 2015) relational social capital, job satisfaction (Read & Laschinger, 2015) interprofessional collaboration (Regan, Laschinger, & Wong, 2016) trust in leader, experience of positive emotions (Agote et al., 2016) organizational commitment, reduced turnover intention (Gatling, Kang, & Kim, 2016) person job fit, civility norm (Laschinger & Read, 2016) mindfulness (Baron, 2016) knowledge sharing behavior (Edu-Valsania, Moriano, & Molero, 2016) learning goal orientation, civic virtue (Mehmood, Hamstra, Nawab, & Vriend, 2016).

2.5 Personal Mastery

Work motivation is defined as "'a broad construct pertaining to the conditions and processes that account for the arousal and direction, magnitude and maintenance of effort in a person's job" (Katzell & Thompson, 1990). In another definition, work motivation is "those psychological processes that cause the arousal, direction, and persistence of behavior" (Ilgen & Klein, 1988). There is a general agreement in the literature about "arousal", "direction" and "persistence" components of work motivation. Nature and working principles of work motivation have remained a longstanding debate. The source of motivation is contested, whether it is produced by external sources or factors from the environment or an individual's internal inclinations.

While Conceptual work on the motivation domain started nearly a century ago. Still, like any other field of study, different models are used to define motivation and the underlying processes. Various taxonomies of theories of motivation have been proposed in the literature. Katzell and Thompson (1990) categorize motivational theories into exogenous theories (motivation related external factors that can be changed by external forces such as need theories, reward, expectancy theories and goal theories) and endogenous theories. Theories related to endogenous factors are self-efficacy theories, intention theories, and other cognitive theories. Deci (1992) classify motivational theories into push and pull theories. Push theories are the ones in which an individual is coerced or directed by an external drive. When an individual is pulled or attracted toward an outcome, they are classified in pull theories. Kanfer (1994) arranged motivational theories according to their proximity and immediacy with observable behavior. All these theories emphasized that cognitive antecedents precede the actual observable behavior.

Perhaps, Murray (1938) was the first who attributed variability in behavior motivation to personality factors but then for a long time, individual differences in personality fell out of favor in the motivational research. In the more contemporary literate, Jung (1978) was among the first who argued that cognition is essential for making sense and attaching meaning to situations and surroundings, evaluating consequences before, during, and after our actions, and assessing and reacting to the actions of others. But one important consideration is missing without which the whole debate about cognition or situation arousing our actions is meaningless. He argued that the cognitive appraisal of a given situation depends on the individual, and each person, depending on his or her set of personal constructs for perceiving the world, may define alternatives in a given situation in a different way.

Probably, this was the first-time motivation was viewed from the lens of individual differences. During the mid-1980s, individual differences in motivation started resurfacing, and constructs like self-efficacy (Bandura, 1982) and goal setting (Locke & Latham, 1990) were used to connect individual difference variables with important work outcomes. Though other individual difference variables such as regulatory focus, contentiousness, motivational traits, and goal orientation are quite visible in the contemporary literature, however, throughout the literature, approach and avoidance goal motivation, as theorized by Hoppe (as cited in Elliot, 1999), sits at the core of individual difference in motivation conceptualizations. The foundation of this approach is that the individual strives to become competent and avoid incompetence. Later McClelland (1951) asserted that there are two types of achievement motivation, one based on the desire to avoid failure (i.e., avoidance achievement motivation) and the other is oriented around attaining success as (i.e., approach achievement motivation) (Donovan, Bateman, & Heggestad, 2013).

Kanfer and Heggestad (1997) attempted to integrate motivational theory and personality domain research. According to them, the situational conceptualization of work motivation (i.e., the effect of work environment on employee behavior) has directed the bulk of research effort toward different forms of rewards for inducing the desired behavior. Because according to that conceptualization, motivation is something that an individual "experience because of situational factors" (p. 2) rather than "posses" in different degrees, making pay/salary the only tool of choice which leaves managers clueless in scenarios where the employee with ample incentive doesn't perform. The answer to this puzzle, according to them, is individual differences in motivational dispositions/motivational traits. They argue that though researchers acknowledge the importance of traits in motivational research but "do their best to ignore" them. They argue that individual difference in motivational research has been treated as "a distant and not well-liked relative attending a family reunion" (p. 13).

Individual differences in motivation are not without consequences. Individual differences in motivation are responsible for variation in job performance (Kanfer, 1994). Kanfer and Heggestad (1997) proposed a taxonomy of motivational traits and skills and posited that individual difference in motivational dispositions could sufficiently affect the motivational process of employees' in the workplace; for example, employees with a certain type of personality disposition can react entirely different to a job situation as compared to his colleagues. This taxonomy of motivational traits and skill is based on achievement and anxiety complex. Achievement trait grouping includes traits based on approach tendencies, and anxiety complex comprise of traits based on avoidance tendencies (Heggestad & Kanfer, 2000). Their conceptualization of motivational traits is based on the research in the

personality domain where traits are "relatively stable and enduring tendencies and preferences across a broad range of life situation" and skills are viewed as "relatively malleable, contextually situated patterns of self-regulatory activity that involve cognition, affect and behavior" (Atkinson, 1957, p. 359). They differentiate between traits and skills, and further argue that motivational traits and skills are conceptually interrelated but distinct. Motivational traits are relatively stable personality disposition that can affect motivational skills over time. Motivational traits are relatively less affected by the environment when compared to motivational skills, whereas motivational skills can be learned over time through various training programs, job conditions, and life situations. It is important to mention here that an individual's motivational skills can be altered through interventions, but motivational traits are "impervious" to change once an individual has attained adulthood. Motivational traits are not situation-specific and are likely to prevail across situations. Motivational traits are said to provide "affordances" for motivational skills development. This cluster of individual differences in motivational dispositions is quite similar to McClelland's (1951) theorization of approach and avoidance orientation (Mitchell & Daniels, 2003).

Furthermore, Kanfer and Heggestad (1997) identified two motivational traits in the approach complex of their motivational trait taxonomy; Personal Mastery and Competitive Excellence. Personal Mastery is the self-referent approach to individual differences in motivational disposition identified by Kanfer and Heggestad. Personal Mastery, to a large extent, is similar to Murray's (1938) need (*n*) achievement conceptualization, which he defines as "to excel one's self". Personal Mastery construct is also conceptually closer to "learning goal orientation by Dweck and Leggett (1988) and "trait achievement" by Hough (1992). Personal Mastery is a "self-

referent form of achievement striving" (p. 755), and individual high on this trait strive for excellence and define goals in terms of personal improvement. In achieving those standards, they are not deterred by hardship and difficulties and have a high desire to achieve, learn new skills, and refine existing. They are always inclined toward challenging jobs and try to acquire new skills and knowledge to accomplish those jobs. Because of the "self-referent" nature of the trait, individuals high on Personal Mastery are always in competition with themselves irrespective of co-workers or colleagues. They aim to "be the best they can be" (p. 755) or the best form of themselves. Individuals high on Personal Mastery are ambitious, hardworking, and always seek challenging goals for themselves. Whereas, individual low on Personal Mastery are unenthusiastic, care less about accomplishments, have a laid back approach and tend not to put effort in their work (Heggestad & Kanfer, 2000).

Before moving forward, it is crucial to define Personal Mastery trait construct clearly and delineate its conceptual boundaries. As stated earlier, Personal Mastery shares a good deal of conceptual similarities with learning goal orientation. Besides, it is also pertinent to mention here that the motivational traits complex and goal orientation framework by Dweck and Leggett (1988) as a whole have a considerable overlap as well. Approach motivational trait of Personal master is conceptually similar to "learning goal orientation". Likewise, competitive excellence and "performance goal orientation" are quite alike. Personal Mastery and learning goal orientation are self-referent and approach orientated constructs primarily concerned with self-improvement and task mastery. Meanwhile, competitive excellence and with performance goal orientation are other-referent motivational constructs concerned with performance with respect to others and proving one's worth in normative terms. Kanfer and Heggestad (1997) noted that although goal orientation complex research is getting much attention, it does not provide a useful taxonomy of individual differences in the motivational domain and calls for a coherent framework of distal person characteristic which affect behavior through proximal mediators. They introduced a motivational trait skills framework where distal (motivational traits) connect with desired behavior through more proximal (motivational skills) processes. Personal Mastery belongs to the motivational trait complex, which connects to organizational relevant outcomes through intermediator processes.

Despite its similarity with learning goal orientation, Personal Mastery explains a unique portion of achievement motivation complex which is ignored by learning goal orientation that is hard work (one exerts great effort in task completion irrespective of the level of intrinsic motivation or enjoyment, have a tendency to remain busy, are diligent and find it difficult to remain idle) competitive acquiescence, and dominance (Donovan et al., 2013).

The nature of trait and state-like individual differences should be understood to determine their effect on behavioral outcomes. For this purpose, the proximity and distance of these personality dispositions is an important consideration. Research in individual difference domain has always differentiated between trait-like constructs: the distal determinants of behavior and state-like constructs that are more proximal to the desired outcomes. Trait-like individual differences are more of biological nature, such as cognitive ability or other personality characteristics, whilst state-like characteristics are situation-specific and malleable over time. Trait individual different individual differences are the tendency of an individual to behave differently across different contexts and situations (Chen, Gully, Whiteman, & Kilcullen, 2000). Kanfer (1994)

provided a framework of motivational constructs and arranged them according to their proximity with action, and she argued that trait-like individual differences (heredity/genetics) are distal to behavior in comparison with state-like (self-regulation/goals) individual difference. Further, the relationship between the trait-like individual difference of motivational disposition and behavior is more of an indirect nature and connected through state-like motivational dispositions. This theoretical assumption has attracted some empirical attention as well (e.g., Chen et al., 2000).

Personal Mastery belongs to the motivational trait skill complex, which is a precise categorization of individual differences in motivation (Kanfer & Heggestad, 1997). Personal Mastery is a trait-like motivational disposition that is distal to the observable behavior and requires a process variable to connect with the outcome variable. The major problem with the motivational trait skills complex is the lack of empirical research, though there are a handful of empirical studies connecting motivational traits with important organizational outcomes; for example, Diefendorff and Mehta (2007) found a negative correlation between Personal Mastery, interpersonal deviance, and organizational deviance. Likewise, Ang, Ng, and Goh (2004) concluded that there is a positive relationship between the motivational trait of competitive excellence and self-development organizational citizenship behavior OCB. In another study, Personal Mastery orientation was used as a moderator between the perception of "change process" and perceived change in person-environment fit in such a way that it buffers the effect of poor change management on the perception of personenvironment fit. It means, individual with high Personal Mastery orientation trait are less likely to be affected with the perception of poor change management, that perception of poor change management will have little effect on individual's perception about person environment fit (Caldwell, Herold, & Fedor, 2004).

Ackerman, Bowen, Beier, and Kanfer (2001) concluded that individual differences in motivational disposition could result in variability in knowledge tests' performance and found that motivational traits can affect knowledge structures' development. They concluded that Personal Mastery and desire to learn has a significant positive correlation with all knowledge domains tested in the study (i.e., physical sciences/technology, biology/psychology, humanities and civic domains) and Personal Mastery was also found to have a positive correlation with the said domains of knowledge. In a more recent study, Alcover and Topa (2018) tested whether the motivational orientation of different age groups affects job characteristics and psychological workability on job mobility intention. They found that Personal Mastery orientation mediates the relationship between job characteristics and both psychological workability and job mobility intention.

2.5.1 Personal mastery and creativity

Personal Mastery is characterized by the desire to learn and increase one's competence, acquire new skills and knowledge, and use those acquired skills for task performance (Kanfer & Heggestad, 1997). Individuals with high Personal Mastery orientation have a tendency to look for opportunities to increase their knowledge (Heggestad & Kanfer, 2000). With the increase in knowledge and experience, an individual would end up with large and more interconnected response possibilities, which comprise new ideas, facts, and past cognitive scripts, which may help find creative solutions to ill-defined problems (Amabile, 1983). Divergent thinking test has been used in traditional creativity studies to seek multiple ideas for the solution of novel and ill-defined problems; the answers generated to these problems serve the bases of appraisal for creativity (Mumford et al., 2012). Therefore, individuals who spend more time honing their knowledge, skills, and abilities can have possibly more

responses in a given situation to a certain problem, which may enable an individual to come up with new and unique ideas for performing their job. Employee creative behavior at work involves useful and practical ideas generation for the job's performance, which may yield tangible results for the organization (Amabile, 1988). It would not be surprising to see if the individual difference in motivational disposition can have implications for employee creative behavior on the job. Personal Mastery involves self-regulation where individuals act in a particular manner because of their personality(trait) inclinations; thus, individuals exhibiting more selfimprovement predisposition, setting difficult goals, and selecting challenging tasks for themselves behavior may be more capable of indulging in creative behavior when performing their job.

Motivation is almost central to almost all creativity theories (e.g., Amabile, 1983, 1988; Woodman et al., 1993). Hence, the individual differences in motivational disposition cannot be ignored when studying employee creative behavior. Intrinsic motivation is of particular importance in the componential theory of creativity because of the special importance attached to it, it is the driver of the creative outcome (Amabile & Pratt, 2016). Intrinsic motivation is to "engage in an activity out of interest, enjoyment or a personal sense of challenge" (Amabile, 2012, p. 134). At the same time, Personal Mastery is about being motivated for the sake of personal improvement and opting for difficult and challenging tasks to polish one's skills and abilities (Heggestad & Kanfer, 2000). The reward for an individual high on Personal Mastery orientation is the accomplishment of the task itself, and no external reinforcement is required to make him opt for the hardship of completion of a difficult task that he considers necessary for his skill betterment (Kanfer & Heggestad, 1997). Therefore, an individual's reward mechanism on Personal Mastery is internal, which

is quite similar to intrinsic motivation. So, it can be inferred that the individuals high on Personal Mastery orientation are intrinsically motivated, and if other influences of creativity are in place, individuals with Personal Mastery are more likely to exhibit creative behavior.

A typical adaptive response pattern pertains to persistence, adopts complex strategies to solve a problem, spends more time on problem solving, and seeks appropriate help for difficult tasks (Renae & Jin, 2009). Meanwhile, creative work behavior and creative problem solving differs from routine tasks in multiple ways; it requires people to survive in novel situations, learn new skills and knowledge, are motivated to work on a challenging task which is devoid of formal structure or guidelines, and have a high chance of initial failure. These characteristics of creative problems solving and creative work behavior require more than just skills and knowledge, it requires individuals to have a certain personality and motivational dispositions which allow them to stay persistence in their effort, remain steady when confronted with frustration, and adapt to the changing task requirements (Mumford, Connelly, Baughman, & Marks, 1994).

Creative problem solving and creative work behavior requires an individual to remain persistent, exhibit a lack of defensive rigidity, adapt and deploy strategies for novel situations, and require certain personality and motivational disposition. These qualities converge with the concept of Personal Mastery orientation. Where individuals with high Personal Mastery orientation boast high adaptive response patterns in their behavior, they are more persistent in task performance, exert full effort for task completion, and remain steady in the face of initial failure. One of the most important obstructions in expressing creative ideas is the fear of failure (Davis,
1999). Individuals with high Personal Mastery orientation do not give up in the face of failure and hardship and remain resolute despite initial failure (Heggestad & Kanfer, 2000). Therefore, it can be induced that individuals with high Personal Mastery orientation are more likely to indulge in creative problem solving and exhibit creative work behavior in task performance.

Kanfer and Heggestad (1997) is a comprehensive framework that lays down necessary tools (i.e., MTQ) to analyze the individual differences in motivational disposition and their effect on important employee outcomes. However, this framework's only problem is the lack of attention it has received from the research community and is marred by the lack of empirical research. Despite its potential for understanding the role of the motivational aspect of personality and its effect on important work outcomes such as creativity, Personal Mastery is an under-researched area ignored by the research community (Donovan et al., 2013). Clearly, more research is needed in this domain of knowledge to better understand the importance of individuals' motivational dispositions and their implications for employee creative behavior.

2.6 Job complexity

Undoubtedly, work is the most salient part of an individual's adult lives spanning over the majority of his biological life. During the course of his work life, he learns, develops, and matures. Characteristics of work (i.e., the structure, content, and configuration of work from now on referred to as work design) have a key contribution to his physical and psychological well-being (Kanfer et al., 2008). Work design has shown to have a fundamental impact on employee experience of activities and task performance. It is a key driver to foundational outcomes like employee prosocial behavior, creativity, turnover, leader-follower relationship, and other voluntary and compulsory activities inside and outside the organization (Grant, 2012a). Understanding how the employee views their work and its importance in shaping their jobs remain a salient area of research today. Rapid changes in the work and organizational environment make it even more critical. To better understand the work design and its effect on the broader organizational outcome, it is imperative to look at the work design's historical development.

During the early 20th century, job simplification (breaking down complex tasks and narrowing them down into simple tasks) was viewed as a means for achieving employee dexterity and saving time on simpler tasks. But as time goes by, job simplification started attracting industrial psychologists' criticism because of consequences like dissatisfaction, alienation, and lower productivity (Dysvik & Kuvaas, 2011). Job simplification resulted from the large-scale application of scientific management principles where mental work was allocated to managers, and workers were performing only manual work to achieve efficiency (Parker, 2014). Till the mid-20th century, there was almost a consensus among the scholars that job simplification inevitably results in monotony, boredom, job dissatisfaction, and inappropriate work behavior by the employee (Hulin & Blood, 1968). In contemporary literature, job simplification is also not viewed in a favorable light and is considered to cause problems such as turnover, dissatisfied workforce, absenteeism, and results in uninteresting and alienating work.

Job simplification and job specialization have their roots in Frederick W. Taylor's scientific management system or simply put, Taylorism. Taylorism is based on four well-known work analysis principles, selection of workforce, custom training, and

close monitoring. Taylor's Principles of scientific management revolutionized the work design because of its emergence at a certain point to time and place (i.e., Europe and America at the start of the 20th century). Taylor's scientific management principles created a vertical division of labor by separating the conception and implementation of work. By the mid of the 20th century, criticism on Taylorism started surfacing, and a counter-movement emerged, demanding more worker autonomy (Groß, Siegert, & Bauernhansl, 2017).

As a response to Taylorism and affiliated approaches of management focus of researchers shifted towards designing a motivating work that can keep the worker motivated during task performance. Thus, job enlargement, job enrichment, and job rotation were presented as a potential remedy for such monotonous and unexciting, and much more emphasis was put on the motivating features of the work design (Parker, 2014). Now, managers have to design jobs that were motivating (i.e., autonomous, significant, identifiable, providing feedback) and to cater to both employee and the organization's needs. A routine and simple job has a minimal skill set requirement compared to a complex job that is more skill-intensive, integrated, and enriched (Morgeson & Humphrey, 2006). With the decreasing emphasis on manufacturing jobs, more knowledge-intensive and complex jobs were viewed in a favorable light.

One of the problems with the routinization and simplification of jobs is that routinization involves automaticity of work behavior. The performer has no control and awareness of the results, and he keeps striving to achieve efficiency (Ohly, Sonnentag, & Pluntke, 2006). Routinization and simplification are seen as the antonym of creativity in a large part of the literature (Ford & Gioia, 2000) because individual performing routine and simple jobs narrow the range of behavior required for performance, which results in less application of cognitive inventory. Individuals performing routine and simple jobs tend to stick to their routine and shy away from experimenting with new approaches to performing work, which is detrimental to creativity (Shalley & Gilson, 2004). Whereas, complex jobs excite the performer because of the challenging nature of the work and the feeling of competency, whereas simple jobs are characterized by lack of control and are monotonous (Oldham & Cummings, 1996). Likewise, a considerable body of research shows that complex jobs can indeed foster employee creative behavior because employees performing a complex job are intrinsically motivated and satisfied in comparison with their counterparts performing simple jobs (Chae & Choi, 2018; Fried & Ferris, 1987; Shalley, Gilson, & Blum, 2009; Sung, Antefelt, & Choi, 2015).

2.6.1 Job Characteristics and Motivation

The majority of the classical motivational work design theories suggest that work characteristics impact employee intrinsic motivation, leading to enhanced task performance. Individuals who are intrinsically motivated to perform a job have extended knowledge about the job and are more likely to develop creative and novel ways of performance (Ohly et al., 2006). For example, the socio-technical system approach by Trist and Bamforth (1951) assumes that employees are intrinsically motivated for task performance (Parker & Ohly, 2008). Another well-known theory, "motivation-hygiene" theory (Herzberg, Mausner, & Snyderman, 1959) proposes that factors associated with the job itself, for example, the level of recognition, the nature of the job itself, job responsibilities, and advancement opportunities, termed as motivation factors lead to job satisfaction. Thus, it can be deduced from literature

that job characteristics have motivational consequences, a central pillar of employee creative behavior.

2.6.2 Job complexity workplace creativity

A job can be referred to as complex when it allows the performer to exhibit skill variety, provide complete information about the performed task, viewed as impactful, give freedom to the performer and echo feedback for the correct performance (Oldham & Cummings, 1996). Another definition is "the extent to which a job entails autonomous or less routines and the extent to which it allows for decision latitude" (Shalley et al., 2009). Complex jobs are challenging, ambiguous, difficult, lack a formal structure, and require the application of complex skills to perform (Humphrey, Nahrgang, & Morgeson, 2007). Such jobs will enhance the performer's excitement and garner greater interest in the performed activity, resulting in increased creative behavior (Shalley et al., 2004). Furthermore, referring to the componential model of creativity (Amabile, 1983, 1988), the work environment elements can both enhance or inhibit employee creative behavior by affecting employee motivation. Job characteristics affect employee creative behavior through its impact on intrinsic motivation (Coelho & Augusto, 2010). Job complexity enables employee creative behavior because employees performing complex jobs see it as their duty to improve work procedures and develop new methods of performing the job (Frese, Teng, & Wijnen, 1999). Among many other things, it is the unstructured nature of the complex job that warrants judgment and creativity to solve the problems that are new and unusual (Chung-Yan, 2010).

2.6.3 Job characteristics model

The relation of job characteristics emanates from the motivational aspect of job characteristics. Job characteristics are already established index of job complexity in the literature (Ohly et al., 2006). Expanding further, motivation-hygiene theory initiated the debate that compensation or salary is not the primary driver of employee motivation; rather, attributes of the work/job are the dominant predictors of employee motivation and performance. This notion sparked an interest in job enrichment (Parker & Ohly, 2008). Job enrichment is an equivalent of job complexity (Pierce & Dunham, 1976).

The job characteristics model (JCM) by Hackman and Oldham (1975) has job enrichment at its heart. Hackman and Oldham's job enrichment model suggests that jobs can be made more motivating by introducing five characteristics in them (Amabile, 1993). Further, JCM proposes that if a job has these five characteristics (i.e., skills variety, task identity, task significance, autonomy, and feedback), it leads to three critical psychological states of sense of responsibility and meaningfulness that results in positive affect. JCM essentially comprises of three components: 1) core job dimensions; 2) critical psychological states; 3) employee growth need strength. Hackman and Oldham propose if a job can be customized in such a way that it comprises employee skills variety, task identity, task significance, autonomy, and feedback, worker/employee, it will be more motivated to perform that a simple job and would result in greater performance and job satisfaction. Furthermore, JCM posits that core job dimensions lead to three critical psychological states responding to their properties. The psychological state of experienced meaningfulness can be formed as a result of three core job dimensions, namely, skill variety, task identity, and task significance. Job autonomy influences the psychological state of experienced

meaningfulness, and job feedback stimulates the knowledge of the actual results. The final part of the JCM is the employee growth need strength; Hackman and Oldham (1975) posited that individuals vary according to their need for growth and development. Individuals with high growth need tend to have a strong desire for accomplishment, want to learn new skills and knowledge and seek personal development. When an employee's growth need is satisfied, his psychological health and job satisfaction are ensured; when growth need is thwarted, it may lead to negative consequences (Elias, 2007). Jobs containing all the elements of JCM (i.e., skill variety, task identity, task significance, autonomy, and feedback) can be considered a complex job (Humphrey et al., 2007). Since the aggregate of job characteristics is already an established index for measuring job complexity, this study explicates that the job characteristics model's single unweighted additive index will measure job complexity. All five characteristics of JCM are explained briefly.

2.6.3.1 Skill Variety

Skill variety is defined as "The degree to which a job requires a variety of different activities in carrying out the work, which involves the use of a number of different skills and talents of the employee" (Hackman & Oldham, 1976). Skill variety requires an employee to demonstrate his expertise and skills repertoire to perform the job. Jobs with increased skill variety requirements are seen as more challenging by the employees (Hackman, 1980). The skill application requirement relives monotony, which is the result of repetitive and routine activities of work. Variety in a job is an important determinant of an individual's motivation and satisfaction (Grant, Fried, & Juillerat, 2011).

Skill variety is also related to employee creative behavior. Jobs that require the usage of diverse skills enable an individual to utilize, integrate, and assimilate their knowledge related to different domains and come up with an alternate solution to problems that require non-conventional solutions, thus enhancing idea generation leading to employee creative behavior (Chen, Shih, & Yeh, 2011). Skill variety is essentially part of job complexity and can play its part in inducing employee creative behavior (Shalley et al., 2004).

2.6.3.2 Task identity

Task identity is defined as "the degree to which the job requires completion of a "whole" identifiable piece of work; that is, doing a job from beginning to end with a visible outcome" (Hackman & Oldham, 1976). Jobs that involve completing a full unit of service or making an entire product are more interesting than jobs requiring the performance of only a small part (Hackman, 1980). For example, a carpenter making a piece of a chair from the beginning to the end will have more task identity and find the job more interesting than a carpenter making only a part of the chair. With reference to work motivation, task identity represents the intrinsic human need for task accomplishment by working on a whole task from start to end (Parker & Ohly, 2008). When employees are working on small parts of a larger task, it means their unique contribution cannot be identified by themselves as it fits in the larger picture, therefore hampering their sense of accomplishment.

A job with a narrow knowledge of the task and a smaller area of responsibility tend to have a lower motivational significance (Lincoln & Kalleberg, 1990). Gagné and Deci (2005) argue that identifying with one's job is vital because it helps employees determine how meaningful his work is, which has motivational implications. Hackman and Oldham (1976) do not differentiate between different motivation types as does Self-Determination Theory (Deci & Ryan, 1985b). They only consider motivation as a whole, but later research shows that task identity has a positive relationship with the introjected type of motivation, which is a form of motivation associated with peer pressure and self-identity (Foss, Minbaeva, Pedersen, & Reinholt, 2009).

2.6.3.3 Task Significance

Task significance refers to "the degree to which a job impacts the lives of others, both inside and outside the organization" (Hackman, 1980). Task significance is associated with enhanced intrinsic motivation and job satisfaction (Hackman & Oldham, 1976). A job that can influence the lives of others is high on task significance. Employees' perception of task significance affects their perception of meaningfulness, purposefulness, and value of their work (Zalesny & Ford, 1990). When employees see their job having a higher impact on people's lives, they tend to perform better.

Task significance has attracted attention from general management (Grant, 2008a, 2008b) and public administration management (Bellé, 2013, 2014). Grant (2007) argued that task significance influence employee persistence, effort, and helping behavior when they were in contact and had information about the impact of their job on stakeholders.

2.6.3.4 Autonomy

Task autonomy refers to "the degree to which an individual is given substantial freedom, independence, and discretion in carrying out a task, such as scheduling work and determining procedures to follow" (Hackman, 1980). Whereas Humphrey et al.

(2007) define the broader conception of autonomy as "the freedom an individual has in carrying out work". The concept of autonomy is perhaps the most studied and the most influential of all the components of the job characteristics model (Humphrey et al., 2007). Later research shows that the concept of autonomy is rather multifaceted (Morgeson & Humphrey, 2006). It can be broken down into three further parts: 1) work-scheduling autonomy, the ability to decide the timing of the work, 2) workmethod autonomy, the ability to control how work is performed; 3) decision-making autonomy, the power to make a decision affecting the work. Task autonomy differs from job autonomy and conceptually resembles empowerment and self-management, with the latter being the more recent concepts (Humphrey et al., 2007).

Complex and challenging jobs can only be beneficial if they provide incumbents with greater autonomy. Job autonomy can garner greater intrinsic motivation if the job is complex and require unconventional solution (Hackman, 1980). Complex jobs afford the performer with the independence to utilize their skills and try multiple solutions to solve the problem (Baer, Oldham, & Cummings, 2003), which resembles the concept of creativity. In the perspective of Self-Determination theory, when the job incumbent is given enough freedom over his work, he can experience greater selfesteem because autonomy is part of one's integrated self (Deci & Ryan, 1985b).

2.6.3.5 Feedback

Feedback is defined as "worker's knowledge of the results of his work activities and their effectiveness" (Hackman & Oldham, 1975). Feedback is concerned with the accurate and timely information the performer can get from his job. Feedback from a job is critical for designing a motivating job and is central to the motivation theories such as goal-setting theory (Locke & Latham, 1990). When provided by the supervisor, constructive feedback leads to a perception of fairness and positively affected performance and job satisfaction (Alder & Ambrose, 2005). Feedback received direct from customers can enhance the internalization of long-term organizational values (Parker & Ohly, 2008), which is akin to identified regulation (i.e., individual consciously internalize external values considering them important for self) as proposed by Self Determination Theory (Deci & Ryan, 1985b). Feedback is vital for complex jobs because as the job's complexity increases, the need for feedback increases (O'Neill, Hambley, Greidanus, MacDonnell, & Kline, 2009). Also, research on feedback has pointed towards its importance in promoting creativity. Several studies have shown that there is a positive relation between feedback and creativity (e.g., (Shalley & Gilson, 2004; van der Rijt, 2013; Whitaker & Levy, 2012) and other positive work attitudes, for example, work motivation, job satisfaction, and reduce role ambiguity, role conflict, and anxiety (Humphrey et al., 2007).

2.7 Chapter summary

The literature review identified different gaps in the field of employee creative behavior research. This study aims to bridge the identified gaps by applying the selfdetermination theory framework. A detailed explanation of the framework application and hypothesis development is discussed in the next chapter.

CHAPTER 3: THEORETICAL FRAMEWORK AND HYPOTHESES

DEVELOPMENT

3.1 Introduction

This chapter presents the theoretical framework and hypothesis development in two sections. First, the theoretical framework is discussed, and in the second section, hypotheses are developed in this study. In the end, a short summary concludes the chapter.

3.2 Theoretical Underpinning of The Study

The rationale of the study is based on the theoretical underpinning of the selfdetermination theory (Deci & Ryan, 1985b) and componential theory of creativity (Amabile, 1988), which are integrated into a theoretical framework as depicted in Chapter two (Literature review) and Chapter three (theoretical framework and hypothesis development) of the study. The relationships proposed in the theoretical framework are based on the principles of deduction, as explained in Chapter two and three.

The componential theory of creativity is one of the major theories used for explaining workplace creativity. It lays down three components of creativity: 1) creativity relevant skills, 2) technical knowledge and skills, 3) motivation (driver for creativity). When all three components are present in an individual, it leads to enhanced creative behavior. Unlike domain and creativity-relevant skills, the debate about the driver for creativity (motivation) bifurcated into two distinct yet opposing streams: intrinsic versus extrinsic motivation. Recently, the pioneers of creativity research at the workplace proposed that extrinsic and intrinsic motivation can be combined to explain employee creative behavior better (Amabile & Pratt, 2016). Therefore, the need for capturing the synergetic effect of intrinsic and extrinsic motivation leads to selfdetermination theory.

Self-determination theory (SDT) is a meta-theory widely applied in the fields of motivation and personality development. It started from a narrower focus on intrinsic motivation and evolved into a general theory of human motivation which encompasses both intrinsic and extrinsic motivation. SDT has found its relevance in many domains such as business, sports, education, leadership, medicine, and entertainment (Ryan & Deci, 2019). SDT has been widely used to explain workplace creativity (e.g., Liu et al., 2011; Ren et al., 2017; Xie et al., 2020) in the business research sphere. SDT is an appropriate theory for explaining creativity at the workplace because of its emphasis on motivational aspect of behavior. Amabile (1988) placed motivation at the heart of the componential model of creativity. SDT identifies the principles on which the long-term motivation of the workforce can be based. The central premise of SDT is the fulfillment of basic psychological needs which individuals pursue to satisfy in the course of their struggle for their goals and valued ambitions. SDT adopts a different and complex approach when explaining motivation than mere intrinsic motivation and absence of intrinsic motivation. It conceptually refines motivation types and classifies them into two broader categories of autonomous and controlled motivation. Both motivation groups have distinct implications for important work outcomes.

The study's research model is built upon the theoretical foundations of SDT, of which autonomous motivation is a central pillar. Autonomous motivation signifies the presence of choice and volition even when the behavior is complacent with external actors (Van den Broeck, Ferris, Chang, & Rosen, 2016). Autonomous motivation has been shown to predict employee creative behavior in various studies (e.g., Chen, Zhang, et al., 2021; Levesque-Côté, Fernet, Morin, & Austin, 2021; Wang et al., 2020).

Moreover, the basic model of SDT (Deci et al., 2017) proposes that environmental factors, in conjunction with personal factors, play an important role in inducing autonomous motivation or self-determination. Therefore, leadership and work attributes were chosen as environmental factors alongside the motivational orientation of an individual (personal factor) as predictors of autonomous motivation and employee creativity.

Various theories have been used to describe employee creative behavior in the literature, for example, cognitive resources theory (Liu & Liu, 2020), social exchange theory (Zhang et al., 2018), prosocial motivation theory (Grant & Berry, 2011), social learning theory (Pan, Lou, & Zhou, 2013). But this doctoral study favors the theoretical propositions of SDT and finds it well suited for explaining employee creative behavior. This decision draws its strength from the intrinsic nature of creative behavior and SDT's emphasis on the motivational aspect of human behavior. SDT theorists believe that humans are active growth-seeking organisms with an internal proclivity to be intrinsically motivated. Also, SDT has settled the dichotomous intrinsic versus extrinsic motivation debate by extending itself via organismic integration theory (Vansteenkiste, Lens, & Deci, 2006), where external motives can be internalized by identification or integration process. This particular attribute of SDT makes it suitable for assimilating extrinsic and intrinsic motivation when explaining employee creativity. Moreover, literature also suggests that SDT has better predictive power to explain essential work outcomes such as creativity when compared with social exchange theory and conservation of resources theory (Rosen et al., 2014)

3.3 Self-determination theory

The development of Self-determination Theory began in the 1960s with the pioneering work of Edward Deci. During his experiments related to conditions that can

undermine intrinsic motivation, Deci found many factors that can be detrimental to intrinsic motivation, such as time pressure, external reward, the threat of punishments, and several competition types. He summarized these findings into cognitive evaluation theory (CET). Deci concluded that the theme underlying these findings was autonomy versus control. Intrinsic motivation was threatened when the individual perceived anything controlling its actions. Later in their book, "Intrinsic Motivation and Self-Determination in Human Behavior" Deci and Ryan (1985b) reiterated the same argument that extrinsic reward undermines intrinsic motivation but with a much more complex and profound level of analysis regarding human motivation, which formed the bases of SDT.

SDT is a meta-theory of human motivation and personality development irrespective of context or situation. SDT's specific focus areas are volitional behaviors and social conditions that promote them (Sheldon Kennon, 2003). It is an organismic dialectical theory belonging to the family of holistic psychological theories such as the cognitive development theory of Jean Piaget and Carl Rogers's theory of personality (Ryan, 1995). Unlike other theories, SDT doesn't differentiate between context and suggests that human motivation has almost similar causes and consequences in nearly every life context, whether sports, clinical, education, and workplace. SDT posits that human motivation is independent of context, but the environment or context has motivational consequences for its inhabitants and can diminish or facilitate different types of motivation (Ryan & Deci, 2000b). A critical distinction between other theories and SDT is that SDT tries to explain human motivation beyond simple, dichotomous explanations of intrinsic and extrinsic motivation. SDT has been applied in various practical fields and domains such as education (Standage, Duda, & Ntoumanis, 2005), parenting (Schiffrin et al., 2014), religious orientation (Neyrinck, Lens, Vansteenkiste, & Soenens, 2010), sports, exercise (Hancox, Quested, Ntoumanis, & Thøgersen-Ntoumani, 2018). In health and wellness research, SDT has been applied in a variety of health behaviors, for example, tobacco abstinence, physical activity, weight loss, medication adherence, diabetes management, and cholesterol reduction, and in many controlled clinical trials (Deci & Ryan, 2012b; Patrick & Williams, 2012; Smith, 2011).

The central assertion of SDT (via basic psychological need theory) is that people have basic/fundamental psychological needs of competence, relatedness, and autonomy. The need for competence means being effective in interaction with the environment. Relatedness concerns the feeling of being cared for and respected. Autonomy indicates freedom of choice and disposition (Deci & Ryan, 2000). It is suggested that all three basic psychological needs are of equal importance for self-determination. However, when the environment and leadership support autonomy, the need for autonomy is fulfilled, and employees would find other ways to satisfy other needs (Deci et al., 2017).

The concept of needs has been used in two ways. First, needs are considered as desires that vary in intensity as a function of individual differences and are learned through person-environment interaction. McClelland (1951) uses basic needs in this sense. Second, where needs are considered basic nutrients and are essential for any organism's development, this conformation of basic psychological needs views needs as fulfilled or thwarted rather than measuring their strength or intensity. SDT maintains that every human being seeks to fulfill these basic psychological needs directly or indirectly through substitutive or compensatory activities. Basic needs are universal in nature and apply to all persons regardless of gender, upbringing, or culture. Basic needs

can be expressed differently in different cultures and at different life stages, but their necessity is unchanging (Ryan & Deci, 2008). Gagné and Deci (2005) posit that psychological needs fulfillment determines the quality of motivation, and autonomous motivation is superior in quality to controlled motivation (Deci & Ryan, 2012a).

This study's theoretical proposition is that when these three basic psychological needs are fulfilled with the contextual (authentic leadership and job complexity) and individual factors (motivational trait of personal mastery), an individual becomes self-determined/autonomously motivated, leading to employee creative behavior. This study also sets out to examine autonomous motivation as a mediating mechanism between contextual variables and the outcome variable based on SDT's framework. Autonomous motivation is a combination of intrinsic motivation and well internalized extrinsic motivation(Gagné & Deci, 2005). Besides, need satisfaction and a supportive environment can positively affect performance, especially on heuristic tasks such as creativity (Rosen et al., 2014; Ryan & Deci, 2000a). Therefore, this study proposes that workplace creativity can be explained with the intrinsic and internalized external motivation called "autonomous motivation" (Gagné & Deci, 2005).



Figure 3-1 : Basic model of Self-determination theory

Source: Olafsen and Deci (2017)

3.3.1 Criticism on SDT

One criticism on SDT was that is it the only theory of interesting tasks? Are all types of rewards bad? To answer these questions, SDT comes up with a complex form of motivation spectrum where motivation is spread between two polls of autonomy and control. Owing to such criticisms, SDT has evolved over time and addresses itself as an "organismic dialectical theory." Another criticism of SDT is its cross-cultural application because autonomy is perceived differently across cultures, whether collective or individualistic. The argument is that SDT is a western theory; that is why it emphasizes "autonomy" which is indicative of individualistic culture, but in collective culture such as east Asia, autonomy holds little value. SDT suggests that it doesn't matter if the culture is collective or individualistic; if the individual's actions are autonomous rather than controlled, he will experience greater mental health and functionality. SDT tries to answer this criticism with the incorporation of the latest mini theory of Relationship Motivation Theory (Ryan & Deci, 2019). It argues that such perception is because of confusion about the meaning of "autonomy." According to SDT, autonomy is "volition, choice, and concurrence" (Deci et al., 2017, p. 28). SDT's application in cross-cultural scenarios has been tested actively and has shown that it is important to differentiate autonomous and controlled motivation in different cultures because even in collective cultures, one may be viewing their attachment with the group as more volitional and autonomous. Therefore, if the behavior is based on autonomous motives, culture becomes immaterial, whether collective or individualistic. Also, it is the degree to which basic psychological needs are satisfied or frustrated that predict better work performance and well-being rather than the type of culture (Chirkov, Ryan, Kim, & Kaplan, 2003; Nie, Chua, Yeung, Ryan, & Chan, 2015; Van den Broeck, Vansteenkiste, Lens, & De Witte, 2010)

3.4 Theoretical Framework

Figure 3.1 presents the theoretical framework of the study. The theoretical framework is built on the foundations of self-determination theory (SDT) (Deci & Ryan, 1985b), as illustrated by the basic SDT model in figure 2.1. The framework of the study identifies two elements from the context (i.e., authentic leadership and job complexity) and personality dispositions (i.e., motivational orientation of personal mastery) predicting employee creative behavior through the mediating mechanism of autonomous motivation (motivation type defined under SDT). The selection of the framework's variables is based on the basic model of SDT (Deci et al., 2017). The basic model of SDT proposes that heuristic behaviors like employee creativity/workplace creativity can be induced when individual differences and contextual factors from the environment collectively motivate the employees and when their basic psychological needs are satisfied with these factors. The model of employee creative behavior identified for the study is consistent with the componential model of creativity (Amabile, 1988) and the interactionist approach of employee creative behavior (Woodman et al., 1993). Both approaches emphasize that employee creativity is a product of a complex interaction of multiple factors within and outside the individual. Following these guidelines, variables from the context and personality dispositions were selected, based on their theoretical relevance with the outcome variable (employee creative behavior). The reason behind choosing two variables in the context section because it was found that two variables from the context can better predict vital employee outcomes instead of one variable (Chiaburu et al., 2013); therefore, two variables, namely authentic leadership and job complexity, were chosen. In the personality disposition section, one variable, namely personal mastery, was selected. The relevance of the said variables with employee creative behavior has been discussed in chapter 2. As discussed earlier, the study's framework tries to address the literature

gaps by extending the antecedents of employee creative behavior and connecting these variables with the unique mechanism of autonomous motivation. The framework attends to the calls for expanding the antecedent network of employee creative behavior with more comprehensive mediating mechanisms (Amabile & Pratt, 2016; Fischer, Malycha, & Schafmann, 2019).



Figure 3-2: Revised dynamic model of workplace creativity.

Source Amabile & Prat (2016)

The study framework includes seven hypotheses. From hypothesis H1 to H3, test the direct relationship of the antecedents of creative behavior with autonomous motivation (mediating variable). Further, H4, H5, and H6 test the relationship between independent variables and the outcomes variable mediating through autonomous motivation. The direct relationship between the independent variables and the outcome variable is not tested because the study does not follow the piecemeal approach for testing the mediation. It follows Hayes (2013) for testing the mediating mechanism. Finally, H7 tests the relationship between autonomous motivation and employee creative behavior. The study uses structural equation modeling for testing the study model. Therefore, all these hypotheses will be tested in an integrated study model and not in isolation. Furthermore, (Deci et al., 2017) pointed out that only a few studies have used both need satisfaction and autonomous motivation in the study mode. They posit that autonomous motivation can be used as a substitute for basic needs satisfaction when testing for the relationships between variable and outcome. Autonomous motivation can be used as a substitute for the basic needs satisfaction.



Figure 3-3 : Theoretical Framework

3.5 Hypotheses development

3.5.1 Authentic leadership and autonomous motivation

An authentic leader is motivated to learn about his strengths, weaknesses, goals, aspiration, emotional states, personality dispositions as an individual (Gardner, Avolio, & Walumbwa, 2005). When an individual is acting with authenticity, his awareness and knowledge about his internal personality propensities help him integrate them with his authentic self, and he becomes more aware of multifaceted aspects of his personality and tries to assimilate them with one "cohesive self." This awareness of the individual about the self is the first step towards a healthy functioning and acceptance of the self (Kernis & Goldman, 2006). For an act to be authentic, it must be endorsed by the self, as it includes both the chosen behaviors (i.e., intrinsically motivated) and the ones which entail more difficult choices akin to an arduous task that is not desired but valued (identified regulation) (Ryan & Deci, 2004). Similarly, the authentic aspect of one's personality is fully endorsed by the self and is volitional and meaningful to the individual. When an individual acts according to his authentic values and interests, he is autonomously motivated (Ryan, LaGuardia, & Rawsthorne, 2005). One of the underlying assumptions of self-determination is that authentic-self grows as one acts with volition and experiences a sense of efficacy and relatedness (Ryan & Deci, 2003). This notion is analogous to the need for autonomy, competence and affiliation. In an empirical study Leroy et al. (2015) tested this assumption and found that authentic leader does fulfil his followers' basic psychological needs of autonomy, competence and relatedness.

Gardner, Avolio, Luthans, et al. (2005) grounded the foundations of authentic leadership's construct in the "authentic-self" theorization of Kernis (2003) and self-determination theory (Deci & Ryan, 2000). It is crucial for an authentic leader to be autonomously motivated to preserve his "authentic-self" because the difference between

acting authentically and half-heartedly is the degree to which his actions are autonomous or volitional (Ryan & Deci, 2012). The central premise of the relation between the authentic leader and his follower is that an authentic leader uses selfawareness, self-regulation, and a positive psychological state to garner authenticity in their followers. Therefore, the authentic leader and his followers are in a cognitive symmetry where the leader allows the follower to act with greater autonomy and volition (Avolio & Gardner, 2005). So, due to this authentic harmony with his leader, the follower feels that his activities are more authentic, self-directed, and autonomous (Gagné & Deci, 2005). Authentic leader supports followers' self-determination and is effective in fostering followers' internalized self-regulation (autonomous motivation) without the fear of external coercion because his values reverberate with his followers (Walumbwa et al., 2008) and are reciprocated through a positive social exchange (Avolio & Gardner, 2005). An authentic leader empowers his followers to fulfill their need for competence, affiliation, and autonomy (Gardner, Avolio, Luthans, et al., 2005). This study postulates that utilizing his authenticity and self-awareness, an authentic leader nurtures followers' autonomous motivation. Thus, theorized

H₁: *Authentic leadership positively affects autonomous motivation.*

3.5.2 Personal mastery and autonomous motivation

Self-determination theory (Deci & Ryan, 1985b, 2000) posits that an individual's motivation is a product of contextual factors in which an individual exists but doesn't discount the individual's personal attributes in stimulating motivation. Employee general causality orientation (Deci & Ryan, 1985a) was typically recognized as individual difference under SDT, but in the latest version (Deci et al., 2017), in addition to causality orientation, SDT identifies life goals, intrinsic aspiration, and extrinsic aspirations as a general individual differences. Financial wealth and social recognition

fall under extrinsic aspirations, whereas personal development, meaningful relationship, community contribution, and physical fitness fall under intrinsic aspirations. Similarly, intrinsic aspirations are correlated with autonomous motivation, and extrinsic aspirations are related to controlled motivation (Deci et al., 2017). Motivational personality traits are somewhat similar to intrinsic aspirations.

Motivational personality traits are defined as "trans-situational individual differences in preferences related to approach and avoidance of goal-directed effort expenditures" (Kanfer & Ackerman, 2000, p. 753). The motivational trait is an individual's persistence and yearning to be successful in his work. They are stable over time and situations (Feist, 2010a). Personal mastery is one of the motivational traits based on approach motivation, accentuating the need for achievement, learning, and high performance. Manipulation in approach motivation can result in variance in intrinsic motivation (Elliot & Harackiewicz, 1996). People with personal mastery orientation are driven, resolute, hardworking, and seek challenging goals; however, those low in this trait are unenthusiastic about achievements (Kanfer & Ackerman, 2000).

As aforementioned, intrinsic aspirations entail personal development, which is conceptually similar to personal mastery. It is pertinent to mention here that SDT doesn't treat personal aspirations (individual differences) such as personal development as needs, but it posits that needs are "essential nutrients" for an individual's development and personal aspirations are "learned desires." So to clarify, psychological needs do not vary according to individual differences, but the individual difference is a function of the degree of psychological needs fulfillment (Deci & Ryan, 2008b). Typically, the promotion of autonomous motivation has been examined in the light of contextual factors, but processes within an individual's psyche are equally important and how these processes facilitate autonomous motivation (Brown & Ryan, 2015). Because autonomous motivation requires not only external stimuli, it also involves the cultivation of internal potential of acting congruently with the external demands, according to his values and interest (Deci & Ryan, 2008b). Therefore, by logical extension of the argument that individuals with intrinsic aspirations such as personal development are more likely to have their basic psychological needs satisfied, leading to autonomous motivation (Deci & Ryan, 2008b). This study posits that:

H₂: Personal mastery positively affects autonomous motivation.

3.5.3 Job complexity and autonomous motivation

It is an established proposition that job design has a motivational significance (Foss et al., 2009; Parker, 2014; Parker & Wall, 1998). Researchers over the years have tried to explain the motivational consequences of job design through psychological mechanisms, and they were justified in doing that because of the prevalence of "demotivating" work designs back in the early days of the 20th century (Parker, 2014). Now with the advent of computers and the rise of knowledge workers, jobs have evolved into more complex and knowledge-intensive forms requiring higher-skilled workers and computer-aided work (Parker, Morgeson, & Johns, 2017). SDT's approach to motivation is relatively new in work design literature, which proposes that every individual has three basic psychological needs, need for autonomy, need for competence, and need for relatedness and distinguishes between two types of motivation; autonomous and control (see Deci & Ryan, 2000). Where autonomous motivation is acting with volition and freedom, and control motivation is acting on external demands. Alongside other contextual factors, work design can fulfill the basic psychological needs of an individual, with autonomy need being the most important one, which can induce intrinsic motivation and facilitate better internalization of extrinsic motivation leading to autonomous motivation (Parker & Ohly, 2008).

SDT also recognizes that some tasks may not be intrinsically motivating, but still individual will not see them as controlling; nonetheless, will find them relatively autonomous because they are congruent with individual's values, interest, and goals (Parker & Ohly, 2008) which is akin to internalized regulation; a component of autonomous motivation. From a job complexity perspective, it is proposed that employees view complex jobs as challenging and meaningful and are more likely to pour extra interest in them (Gagné & Deci, 2005). Complex jobs require a more extensive range of diverse activities than jobs with identical main tasks and duties. Complex jobs also require greater utilization of knowledge and skills and employment of a wide range of cognitive resources by the performer and engage higher intellectual and intricate thought processes (Nübler, 2018; Shalley et al., 2009). Likewise, working on complex jobs with knowledge characteristics will increase employees' cognitive complexity and self-efficacy and give them a sense of control and autonomy over their work (Parker & Ohly, 2008). Wood (1986) conceptualized a job as complex if it possesses certain attributes, for example, the number of distinct acts that are required to be performed, knowledge and skills requirements for the successful performance of the job, but the most crucial one is the autonomy of decision making by the performer. In another study Frese, Garst, and Fay (2007) showed that perception of complexity in a job was related to employee control orientation; employee control orientation means an individual's perception of control over decisions related to performance and outcome of the job. Hence, it can be inferred that if a job is complex and interesting and provide the performer multiple methods of performance and control over decisions related to performance and outcome of the job, an individual will feel a sense of autonomy, thus fulfilling his need for autonomy and leading to autonomous motivation. Therefore, it is theorized that:

H₃: *Job complexity has a positive relation with autonomous motivation.*

3.5.4 Autonomous motivation and employee creative behavior

Creativity is a challenging endeavor and involves risk-taking and moving out of comfort zone; leadership comes in handy in such a situation (Hammond, Neff, Farr, Schwall, & Zhao, 2011). Authentic leaders arouse followers' authenticity (Avolio & Gardner, 2005) and do not feel threatened by his followers in his leadership position and also help them become self-actualized (Walumbwa et al., 2008). Authentic leadership theory is based on human self-actualization (Walumbwa et al., 2008), which says that human beings cannot attain self-actualization if the need for belonging, safety, and esteem are not met (Heylighen, 1992). On the other hand, Self-Determination theory (Deci & Ryan, 1985b) also lay down similar preconditions (basic psychological needs) for an individual's self-determination. According to self-determination theory, when an individual becomes self-determined/autonomously motivated, he is free to choose his conduct outside of any external influence. Self-determination is a sense of choice and freedom of initiating his behavior on his own drive (Deci & Ryan, 1985a).

A self-determined individual is autonomously motivated. Autonomous motivation is of better quality (Gagné & Deci, 2005) and can result in much better positive outcomes than controlled motivation (Gagné et al., 2010). Especially when compared with controlled motivation in predicting heuristic behavior like workplace creativity (Gillet, Vallerand, Lafrenière, & Bureau, 2013). Autonomous motivation is a combination of both intrinsic motivation and extrinsic motivation. The intrinsic motivation component makes people freely engage in activities for the innate reason of enjoyment of the task, and identified regulation makes the motivation last long by attaching importance to the task because of the individual's interest or alignment of the job with his values (Moller, Ryan, & Deci, 2006). However, it only recognizes the type of extrinsic motivation in which an individual finds meanings and importance of activity because it falls in line with his values system or is considered important and significant (Deci & Ryan, 2008a). This type of motivation is essentially the antidote to the Carrot and Stick (CAST) approach of motivation. CAST approach to motivation can yield short-term surges in performance on simplistic tasks but cannot maintain and enhance performance on complex and heuristic activities such as creativity and innovation alone. The combination of intrinsic and extrinsic motivation can lead to many positive outcomes.

Autonomous motivation is positively related to enhanced learning and vice versa, an established precondition for employee creative behavior. For example, in a recent study, it was found that autonomous motivation resulted in greater learning engagement and learning frequency (Jansen in de Wal, van den Beemt, Martens, & den Brok, 2018); a prerequisite for creativity. The empirical evidence suggests that enhanced learning results in greater creativity (Groenendijk, Janssen, Rijlaarsdam, & van den Bergh, 2013). Similarly, Taiwanese students who were autonomously motivated were not shying away from experimenting with new and novel learning and problem-solving methods (Shih, 2009), which is akin to creativity. In numerous experimental studies, autonomous motivation has been linked with a deeper understanding of problems, increased persistence, and enhanced creativity (Deci & Ryan, 2008).

Expanding further on autonomous motivation, in a study about persistence and consistency Grohman, Ivcevic, Silvia, and Kaufman (2017) found that persistence was a significant predictor of creativity. Creativity as an endeavor is not devoid of failure and require an individual to stay motivated even in the face of failure (Smith & Henriksen, 2016). Therefore, in the beginning, autonomous motivation can help develop an initial interest via intrinsic motivation and then sustain that interest through identified regulation. Only a handful of studies have examined the linkage between autonomous motivation and employee creativity (e.g., Liu et al., 2013; Mammadov, 2020) and a recent few others with innovative behavior (Wang et al., 2020; Zhang & Yang, 2020).

Empirical evidence of this relationship is sparse. Thus, this study addresses the gap and proposes that autonomous motivation can predict workplace creativity.

H₄: *Autonomous motivation positively affects employee creative behavior.*

3.5.5 Mediation

Scholars have connected self-determined/autonomous behavior with openness, less stereotyping, superior emotional stability, accepting one's authentic self, trust in one's self-worth, honesty, and responsibility (Ryan & Deci, 2020). Similarly, authentic leadership is known to have been associated with similar outcomes qualities. Not surprisingly, there is a convergence between the authentic leadership theory and self-determination theory (MiniotaitĖ & BuČIŪNienĖ, 2013). As per SDT, authentic-self is the manifestation of an autonomously motivated individual (Emmerich & Rigotti, 2017).

Likewise, the authentic leadership process facilitates followers' autonomous motivation because an authentic leader is not inclined to protect his fragile ego and doesn't feel threatened by his followers; therefore, he is more likely to create an environment of trust and autonomy (Leroy et al., 2015). Environment supportive of autonomy and self-determination helps internalize extrinsic values (Gagné & Deci, 2005); identified regulation that is part of the autonomous motivation is an internalized form of extrinsic motivation. A leader who supports autonomy, understands follower's perspective, is non-manipulative, and encourages followers to express their originality, helps followers satisfaction, leading followers' selfin need to determination/autonomous motivation (Deci et al., 2001).

Authentic leadership promotes positive achievement, emotional stability, and trust among his followers, which makes them comfortable with their original self (Avolio & Gardner, 2005), resultantly making them feel secure, give them hope, and inspires positive effect in them (Rego et al., 2014). Such employee conditions are breeding ground for creativity; thus, authentic leadership can be an appropriate leadership style for inspiring followers' creativity (Cerne, Jaklic, & Skerlavaj, 2013). The majority of work on authentic leadership is theoretical (Anderson & Sun, 2017). Some empirical studies have provided evidence of direct linkage between authentic leadership and employee creative behavior (Cerne et al., 2013; Rego et al., 2012). But a dearth of empirical studies on the linkage between workplace creativity and authentic leadership has decelerated the development of the authentic leadership construct.

Little is known about the nature of its relationship with workplace creativity and its place in the nomological network (Xu, Zhao, Li, & Lin, 2017a). Therefore, it is about time that we explore the mechanisms through which authentic leadership influences workplace creativity. Scholars like Karam Elizabeth (2017) postulate that an authentic leader can enhance his follower's intrinsic motivation. Leroy et al. (2015) proposed that an authentic leader can better satisfy his followers' psychological needs, leading to a better internalization of extrinsic motivation, eventually leading to autonomous motivation, subsequently, creativity. Therefore, this study theorizes that authentic leadership has a positive effect on workplace creativity through autonomous motivation. Hence,

H₅ : *Autonomous motivation mediates the relationship between authentic leadership and employee creative behavior.*

Creativity doesn't develop in a vacuum; skills, knowledge, attributes, personality traits, and motivation required for creativity are not a result of isolation but are a product of the environment and context in which they exist (Baer, 2016). Social context and individual factors can increase or decrease an individual's autonomous motivation (Moller et al., 2006). Personal mastery is a motivational orientation based on approach and avoidance goal motivation (Kanfer & Heggestad, 1997). Individuals placed high on personal mastery trait set high performance for themselves, even in the adverse conditions (Hinsz & Jundt, 2005). The thirst for learning defines their personality, and this motivation trait makes individual enhance their knowledge and learn new skills while improving on existing ones (Kanfer & Ackerman, 2000). From the selfdetermination perspective, learning motivation was positively associated with the satisfaction of the need for competence (Sheldon & Filak, 2008). If the organizational climate emphasizes learning opportunities and facilitates an individual's mastery goals, it increases intrinsic motivation (Buch, Nerstad, & Safvenborn, 2017). Individuals with mastery and learning orientation find themselves intrinsically motivated due to the inherent pleasure of learning, as both mastery orientation and intrinsic motivation are directed towards achieving proficiency and mastery towards an area of interest (Cerasoli et al., 2014). Though learning is a cognitive resource-intensive process and requires effort (Sweller, 1994), individuals with personal mastery orientation bear the labor of learning because of their thirst for knowledge and the recognized importance of acquiring knowledge (Kanfer & Ackerman, 2000). Similarly, identified regulation (a part of autonomous motivation) is about performing behaviors for its identified importance (Deci et al., 2017). Therefore, it would not be wrong to say that individuals with personal mastery orientation, if provided with ample opportunities to learn, are more likely to become autonomously motivated towards an activity if it enhances their knowledge not only because of intrinsic reason but also identified reasons.

Amabile's (1996) componential theory of creativity has three components; domainrelevant knowledge and skills, creativity-relevant knowledge and skills, and intrinsic motivation. Here, personal mastery orientation is most relevant because it facilitates intrinsic motivation and enhances domain-specific and creativity-relevant skills and knowledge. In her previous work, Amabile (1983) postulated that Individuals with more experience and knowledge build a larger and more cohesive network of response possibilities and better utilize their acquired cognitive abilities to draw creative ideas for problem-solving. And it is a long-held belief in the creativity literature that creative problem solving requires divergent thinking or coming up with many solutions to an unstructured problem (Cropley & Cropley, 2008), which requires a broader response possibility and cannot be achieved with a small knowledge repository. So, individuals with increased knowledge and skills may come up with more creative ideas. In an empirical study, Hinsz and Jundt (2005) found that personal mastery is positively correlated with idea generation in undergraduate students. However, studies linking personal mastery orientation and creativity and the mechanism through which it influences creativity are scant. Therefore, this study postulates that individuals with personal mastery orientation are more likely to become autonomously motivated and creative. Hence hypothesized,

H₆: Autonomous motivation mediates the relationship between personal mastery and workplace creativity.

A job can be stated as complex if it provides performance autonomy, is not routine and repetitive, and requires originality and creativity (Gould, 1979). Tadić Vujčić, Oerlemans, and Bakker (2017) argue that challenging and complex jobs facilitate employee's autonomous motivation because they find such work as fun, interesting, and meaningful and highly complex jobs may require high energy and cognitive resources. However, it also makes them feel competent because of the attainment of a challenging and complex task. Job characteristics theory and self-determination theory are consistent because both the approaches focus on employee motivation. Proponents of self-determination theory have focused more on the autonomy component of the job and its relationship with intrinsic motivation. However, job complexity (measured by aggregating all five dimensions of the job characteristics model) has shown to have a positive correlation with intrinsic motivation (Pierce, Gardner, Cummings, & Dunham, 1989). Gagné and Deci (2005) also proposed that complex jobs are more likely to induce autonomous motivation due to the satisfaction of needs and positive affect, whereas mundane jobs are designed to promote control motivation.

Complex jobs require employees to combine knowledge resources from different sources and require more intricate performance than simple jobs (Shalley et al., 2009). It is a long-held belief that job complexity enhances creativity (Amabile, 1988; Oldham & Cummings, 1996) because complex jobs (i.e., high in autonomy, variety, significance, identity, and feedback) "individuals' excitement about their work activities and their interest in completing these activities, and this excitement should foster creativity" (Shalley et al., 2004). There is also considerable evidence regarding this notion (Chae & Choi, 2018; Coelho & Augusto, 2010). But the mechanism through which job complexity affects creativity is still unknown. So, extending the logical argument, the job complexity, when seen from the perspective of SDT, results in autonomous motivation, further leading to creativity. Therefore, this study proposes that job complexity enhances workplace creativity through autonomous motivation. Thus, hypothesized,

H₇ : Autonomous motivation mediates the relationship between job complexity and workplace creativity.

3.6 Chapter summary

The theoretical framework and hypothesis development for this study are discussed in this chapter. The theoretical framework is based on the self-determination theory (SDT). The study identifies three antecedents from the context and personality dispositions (i.e., authentic leadership, personal mastery, and job complexity) and linked them with employee creative behavior through the mediating mechanism of autonomous motivation. These variables are linked together in the theoretical framework supported by the simple model of SDT (Deci et al., 2017). Seven main hypotheses are developed to illustrate the relationships of the study. The methodology used to test these hypothesized relationships is discussed the chapter. in next

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

This chapter presents the methodology used in this study. The chapter is divided into six sections. A brief description of the research paradigm is provided in the first section. The following section details the research process. A detailed description of the research design used for the study is presented in section three, followed by the description of the questionnaires used in the study. The next section provides details about the sample size and the data collection technique used in the study. In the last section, the data collection process is detailed, followed by a chapter summary.

4.2 Research paradigm

The design of a research study always starts with the selection of paradigm (Creswell, 2014). A research paradigm is the "people's values, judgment, norms, standards, frames of reference, perspective, ideologies, myths, theories, and approved procedures that govern their thinking and action" (Gummesson, 2000, p. 18). It is the researcher's beliefs and his view about the world he lives in, the world he wants to live in, and how he interprets the events in his world (Lather, 1986). A paradigm defines a researcher's philosophical orientation and has significant implications for the decisions he makes during the course of his research (Kivunja & Kuyini, 2017). Several paradigms and competing assumptions are used in social research, for example, positivism vs interpretivism or post-positivism vs constructionism (Fitzgerald & Howcroft, 1998). The positivism paradigm has dominated social sciences during the last two hundred years because of the belief that human behavior and societies can be studied scientifically like other natural sciences (Schumpeter, 2003). Later, scholars started arguing against the utilization of positivism in social sciences. One of the criticisms for its usage in social sciences is that the positivist paradigm is useful when issues are known, and measurable entities are involved (Onweugbuzie, 2002), unlike social behaviors that are "fluid." The way we behave and make sense of situations vary greatly. Human behavior cannot be comprehended with clearly defined boundaries and rules like natural sciences (Kivunja & Kuyini, 2017).

The assumptions of positivism are that truth is part of an "independent part of the whole", a theory is deductive in nature and forms the bases of causal knowledge, axiologically, scientific research is value-free and objective. This approach is often contrasted with interpretivism, which regards reality as plural and product of different interpretations and perspectivity. However, post-positivism offers the best of both worlds when it comes to real-world problems and finds a middle way between the above discussed epistemological and ontological premises (Henderson, 2011). Post-positivism ontologically does not depart far away from conventional positivism principles but also believes in the importance of subjective reality. Post-positivism is a paradigm that can be useful when studying human behavior (Samdahl, 1999), that transforms positivism from a narrow outlook to a more inclusive mode to address real-world problems.

Positivism is linked to modernism and prefer empirical knowledge over any other type of knowledge. Post-positivism does not negate these conventions of positivism but suggests that social knowledge is "fragmented," and knowledge is socially constructed (Henderson, 2011). One crucial thing about post-positivism is that it is neither antipositivism nor a continuance of positivism. It is essentially an upgrade to positivism and does not reject scientific principles as postulated in the positivist ontology. Furthermore, post-positivism incorporates more complex inquiry methods and provides a more comprehensive explanation of the phenomenon to supplement the findings of quantitative methods (Adam, 2014).

The basis of social sciences is naturalistic, and the post-positivistic paradigm recommends the usage of studying the phenomenon in its natural environment and
employs multi-methods to achieve less biased and objective results. Therefore, the postpositivistic framework usage is more useful for studying social phenomena because it allows studying the phenomenon from different perspectives and contexts while not compromising on the tenets of positivism (Kock, Gallivan, & DeLuca, 2008). The postpositivistic paradigm emphasizes the "probable" and non-comprehendible nature of reality beyond human understanding. Ontologically speaking, a post-positivist believes that there is an objective reality, but it can only be captured and measured imperfectly. Epistemologically, a post-positivist researcher cannot remain aloof from the phenomenon being studied, but "objectivity and researcher's subjective independence" (p. 131) serve as important guidelines for him. Moreover, both the positivistic and postpositivistic paradigms aim to explain, predict, and control a phenomenon, and both serve as "foundations" of quantitative research (Ponterotto, 2005).

The current study is a non-experimental, explanatory, cross-sectional, postpositivistic quantitative research, utilizing a questionnaire-based survey technique for data collection. Its non-experimental design is useful because it is hard to introduce experimental intervention in real work organizational environment (Kothari, 2004). Quantitative research design is suitable because when it is required to measure behaviors, knowledge, opinions, and attitudes, quantitative research technique can provide valuable insight into otherwise hard to interpret data (Cooper & Schindler, 2013). Concerning employee creative behavior, a significant number of studies have applied a quantitative approach (Chaudhary & Panda, 2018b; Hirst et al., 2009; Kong, Chiu, & Leung, 2019; Lin et al., 2016; Shalley et al., 2009). Therefore, a sizeable body of literature with known variables and theories supporting the work in this study is present. For that reason, the quantitative study design is appropriate. The present study does not set out exploring in an interpretive way but instead seeks to confirm or challenge the relationships defined under the most general form of Self-determination theory (SDT) (Deci & Ryan, 1985b) and will be relying on the empirical evidence to establish any views regarding the said relationships. For this purpose, survey data will provide a quantifiable explanation of the subjective data gathered in this study (self-report employee creative behavior). Quantitative research is based on theory testing, for which a researcher uses a hypothesis to deduce his findings (Creswell, 2014); therefore, this study will undertake hypothesis testing based on the conceptual framework of SDT. The study's major concern is to explain and understand the phenomenon under investigation and develop generalizability that can contribute to the theory and prediction.

4.3 Research Process

This study employs the standard research process that is common in all scientific investigations. Different scholars have identified different numbers of steps of the research process (e.g., Adams & Taylor, 2014; Bordens & Abbott, 2002; Graziano & Raulin, 1993). These five general steps are common in all research process models, i.e., identifying research questions, research design/method selection, population and measurement, analysis, and interpretation of results.

The formulation of the research questions is the most critical step in any scientific study. Therefore, the researcher needs to clearly understand the research questions and the expected outcome of the study; otherwise, there is a high chance of error. The research process of the study started with the identification of research questions using a literature review. The literature review determines if the research topic is researchable and the importance of the current study in the broader body of knowledge (Creswell, 2014). Research questions of the study are listed in chapter one, and a detailed literature

review is presented in chapter two. Further, relevant theories were identified using the literature review, which led to the development of the theoretical framework and testable hypothesis, as described in chapter three.

The next phase is the selection of the most suitable research design. The variables, their appropriate measures, and research design are identified in this section. Quantitative research can be generally categorized as experimental and non-experimental (e.g., correlational and descriptive). Under the experimental research, specific conditions are created to test certain propositions or theories. On the other hand, non-experimental studies rely on the field's existing conditions to test certain hypotheses. The non-experimental design does not allow the researcher to control the situation, and the researcher cannot manipulate the variables involved in the study (Gelo, Braakmann, & Benetka, 2008). The research paradigm and design are discussed in the earlier section of this chapter. The most relevant variables with the outcome variable as per the research questions are identified in chapter two.

The next step is the identification of the study population. Quantitative research is useful when a smaller group (sample) is used to make inferences about a larger set of people (population). In every study, there is usually a population. It is a larger group of people to which results of the study being conducted is applicable. The selection of a correct sample from the study population ensures the study's rigor and better generalizability (Swanson & Holton, 2005). This study identifies the study population in chapter one (software houses employees). Appropriate measurements for the variables of the study will be discussed in this chapter later on.

Data analysis is performed in chapter five. Different sets of analysis tools are used for different research designs; for example, experimental research uses different statistical tools as compared to non-experimental. Partial least square structural equation

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modeling technique PLS(SEM) is used for data analysis. The analysis tool and its appropriateness for the current study will be discussed later in this chapter.

The final step in the research process is the interpretation and understanding of the results. Perhaps it is the most crucial stage of the research process. Irrespective of the study's quality, if the results are not presented and disseminated effectively, it will be proven not very worthy. This section allows the researcher to share his study's results with all the relevant stakeholders from academia and industry. Chapter six of the study presents and interprets the results of the study.

4.4 Research design

4.4.1 Cross-sectional research design

The research design choice is the key to making valid research findings. Different research designs have different implications for the results of the study. A cross-sectional research design is chosen for this study. The study involves a theoretical framework based on the mediation process. The cross-sectional research design is criticized for having a low ability to determine the mediation process; thus, it requires a few clarifications about study design choice. Mediation is an important concept that is aimed at understanding the underlying process of "empirical phenomenon". It is necessarily a process that determines the link between a causal chain of two latent variables (Fiedler, Schott, & Meiser, 2011). Therefore, a careful selection of research design is required when investigating the mediation process.

Different research designs have different strengths and limitations. We will discuss the advantages and limitations of a few designs here; for example, experimental design is considered the "holy grail" for establishing causality and laying temporal precedent of cause and effect (MacKinnon, Fairchild, & Fritz, 2006) because it permits the manipulability of both independent and mediating variable. However, there are situations in social and business sciences when experiments are impossible to conduct (Antonakis, Bendahan, Jacquart, & Lalive, 2010). The business researchers have very few opportunities for conducting experiments in the real world scenario. Consequently, experimental design is deemed not feasible because of limitations on the researcher's part in this study. The other two mostly adopted research designs in business research are cross-sectional and longitudinal design. If one has to choose between cross-sectional and longitudinal research design, longitudinal design for studying mediation is recommended (Maxwell, Cole, & Mitchell, 2011). However, like experimental or any other research design, it is not without limitations; for example, the time interval of taking snapshot between casual occurrences remains a riddle yet to be solved, and longitudinal data collection is far more time consuming and cumbersome process (Spector, 2019). Therefore, relying on longitudinal design, notwithstanding the cost and time it will take, without any explanation or guidelines for the interval between taking the snapshot of the casual occurrences will affect the validity of the results.

Then there is the cross-sectional research design. Some researchers believe that cross-sectional research design is not a valid method for testing mediation, because it is not feasible for establishing temporal precedent and has little to no guard against retrospective reporting (Maxwell et al., 2011). But others differ with this viewpoint; for example, Fairchild and McDaniel (2017) argue that it is not impossible to examine mediation using cross-sectional data because the onus of defining the correct temporal order in the mediation hypothesis remains with the researcher to avoid retrospective reporting bias. Shrout (2011) argues that cross-sectional research design should not be outrightly set aside for examining the mediation hypothesis that it "can never" analyze the mediation process. Instead, the researcher's primary duty is to look for heuristics and not strict casual relationships when dealing with human beings. Therefore "tentative mediation" claims can be made on the bases of cross-sectional data backed by a strong

theory that defines casual directions. Also, Cross-sectional data can be used for mediation hypotheses testing when the study is exploratory in nature and new relationships between variables are being explored (Spector, 2019) or when the process of mediation is swift and instantons that it is difficult to establish the temporal precedence; such that in case of human attitude and behavior (Fairchild & McDaniel, 2017). Since this study is based on a predefined temporal order (self-determination theory model) and the nature of the outcome variable being studied (employee creative behavior) provides a safeguard against retrospective reporting, therefore, mitigating the major concerns associated with cross-sectional research design.

Departing from the debate of what design is most suitable for investigating mediation, there are pertinent questions about the mediation process itself and its causal implications. For example, contrary to popular opinion, the mediation process is no "elixir" for establishing causality and revealing the underlying "process variables". Also, mediation does not allow making a definitive statement about the causal relationship (Haslam & McGarty, 2008). Addressing the concerns of causality is out of the scope of the study, but it requires a bit of explanation to clarify the choice of the current study design. Spector (2019) notes that for making a strong casual case four elements are required: 1) co-variance establishment; 2) temporal order; 2) elimination of alternate mechanisms; 4) explanatory mechanism; and cross-sectional research design can explain all these conditions when used properly. Many organizational variables are inner states, moods, perceptions, and attitudes of individuals; therefore, temporal order even for designs other than cross-sectional is difficult to establish, so why not use the most efficient and resource-friendly design. Also, the cross-sectional research design is efficient, not resource-intensive, and provide initial and timely evidence about the research questions requiring immediate attention. Therefore, if used properly, the crosssectional research design can yield valid results.

Our study is not making any causal claims in the first place, but rather it is a prediction oriented investigation. The prediction orientation nature of the study justifies the usage of the cross-sectional research design. When the focus is not establishing hardcore causality, the post-positivistic paradigm does permit cross-sectional designs to establish covariational relationships. The utilization of cross-sectional research design when studying mediation process is not entirely prohibited (Ghosh & Jacobson, 2016). It is suggested that the researcher should mention the limitations of the methodology in establishing causality and strictly use non-casual language while explicitly stating the non-definitive casual claim of the study (Ghosh & Jacobson, 2016).

Despite its limitations and being topic of philosophical debate among researchers, cross-sectional research design in business and social science discipline remains the most frequently used method of testing mediation because of its practicality and ease of deployment (David & Sava, 2015). A recent review study stated that when exploring the relationship between leadership and employee creative behavior, three fourth of the studies found no difference between times spread and cross-sectional research design for correlation between employee creative behavior and various leadership styles (Lee et al., 2020). We sum up the debate by deciding in favor of cross-sectional research design because its benefits outweigh its limitation.

4.4.2 Survey Method

A survey is a "system of collecting information from or about people to describe, compare, or explain their knowledge, attitude, and behavior" (Fink, 2003, p. 2). A more comprehensive definition is that a survey "is a systematic method of gathering information from (a sample) of entities for the purpose of constructing quantitative description of attributes of the large population of which the entities are members" (Groves, Singer, Lepkowski, Heeringa, & Alwin, 2004). The study variables, e.g., employee creative behavior, autonomous motivation, personal mastery, job complexity, authentic leadership are based on employees' behavior, attitude, perception, and beliefs about self and work environment; therefore, the survey methodology was the most appropriate. The survey is the most often used method in the social sciences to investigate and test the interrelation between psychological and sociological variables. It allows the rigorous testing of the relationship between variables of interest (Roberts, 1999). One of the advantages of the survey method is that it permits the researcher to study feelings, opinions, perception, and thoughts of respondents about a situation of interest (Fisher, 2007). Another advantage of the survey method is the ability to gather empirical data in a short duration of time with low cost from a large population which enhances the generalizability of the research outcomes (Draugalis, Coons, & Plaza, 2008).

Survey method allows the researcher to study the patterns and relationship between variables by collecting and analyzing quantitative data (Saunders, Lewis, & Thornhill, 2009). When the objective of the study is to obtain information from a population or a sample and investigate the interaction of variables in that population, the survey method offers its advantages (Creswell, 2014). In the business research discipline, the survey method is used in descriptive and exploratory studies for collecting quantitative data about events, situations, and people (Sekaran & Bougie, 2016).

Although the survey method is relatively simple and easy to deploy, it has its limitations. A few of the most critical challenges in a survey method study are; the misinterpretation of the data collected during a survey, the application of wrong data analysis technique, limited ability to investigate in-depth data structures, limited control timelines and low response rates, inability to determine if the respondents are responding honestly (Hair, Bush, & Ortinau, 2003). This study follows the guidelines

laid down by Hair et al. (2003) to overcome these limitations. Some of the measures taken to overcome the limitations of the survey method in this study are; the usage of an appropriate sample size (discussed later in the chapter) to minimize the random sample error, valid and reliable (already know and available in the literature) survey instruments were used for data collection, pre-testing of the instrument to identify and clarify the ambiguous statement, the usage of internet/web-based survey tool (google forms) to increase the response rate, sufficient details were provided at the beginning of the survey instrument about the aim, scope, privacy assurance and implication of taking part in the study. Self-reported surveys are criticized for common method bias; both statistical and procedural measures were taken to overcome this challenge in line with Podsakoff, MacKenzie, and Podsakoff (2010). A critical consideration in an internet/web-based survey is its ability to be forwarded to unintended subjects (Draugalis et al., 2008). A screening question was placed at the beginning of the survey form to keep it limited to the target population.

4.5 Instrumentation

A combination of well-known and validated measurements was utilized to develop the questionnaire for the study. A sixty-three items measurement was constructed by adapting different scales from the literature. Besides, a mixture of both seven and fivepoint Likert type scales were used as behavioral anchors as a procedural remedy for minimizing the common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). All the scale used in the study instrument were validated, and readily available in the literature. The selected measurements were adapted according to the study needs. Adapting the scales is a common and well-known practice in social science (Heggestad et al., 2019). All the scales have been adopted and followed the recommendation by (Heggestad et al., 2019) for changing the response from observant to self and vice versa.

4.5.1 Pre-testing

This study uses pre-developed and validated instruments for measuring the construct of interest. However, before the administration of the measurement, it was pre-tested. Pre-testing a questionnaire is a crucial step for ensuring that the participants understand the questions entirely and comprehend the meanings intended by the researcher (Sekaran & Bougie, 2016). Pretesting is performed to ensure that there is no ambiguity in the questions or measurement. Researchers are encouraged to perform pre-testing before administrating the main questionnaire (Hulland, Baumgartner, & Smith, 2018). It is important to ensure if the instrument's content is valid before administering it to the target population. The main objective of the pre-testing is to "to rectify any inadequacies, in time, before administering the instrument orally or through a questionnaire to respondents, and thus reduce biases" (Sekaran & Bougie, 2003, p. 249). It is a general practice in social sciences that all developed instruments (whether adopted or adapted) are pre-tested in the new setting to ensure their applicability and suitability (Kumar, Talib, & Ramayah, 2013).

In the first step toward pre-testing, the instrument was presented before the expert panel for face and content validity. Authors on research mythology stress the need for expert panel review of the instrument to maximize the instrument's content validity. Careful use of this process is one of the most important steps in the instrument development and administration process. (Davis, 1992). The instrument was pre-tested by the experts of the field to identify any apparent problems. The rationale for this process was to eliminate any ambiguity in the questionnaire's wording and evaluate whether the questionnaire accurately incorporates all the fundamental aspects of the problem. This process can improve the instrument's face and content validity (Frazer & Lawley, 2000). Expert validity is a form of content validity where experts are asked to review the instrument; the expert may eliminate, rephrase or replace words of the items which they deem appropriate for the measured construct (Hyrkas, Appelqvist-Schmidlechner, & Oksa, 2003). Experts can be allowed to identify problematic items, add and modify items (Lewis, Templeton, & Byrd, 2005). Two groups of experts consisting of two members each was consulted. Each group consisted of one member from academia and one from the relevant industry. The experts reviewed each item for its content, wording, scope, and purpose. They were asked to comment on the item clarity, ambiguity of the concepts, item representativeness, and appropriateness of instructions. The experts suggested the usage of few common synonyms for nontechnical terms. For example, the usage of "groundbreaking" in place of "revolutionary" in the item for workplace creativity (Tierney et al., 1999) "generated ideas revolutionary to our field." Moreover, replacing "showed" instead of "demonstrated" in the item "demonstrated originality in his or her work." Other than these few synonyms, no radical changes were made to the selected measurement's content or structure, therefore, no implications for the instruments' validity. The mere usage of common synonyms does not require testing the instruments for validity and reliability as long as it does not alter the items' meaning (Heggestad et al., 2019).

In the next step, a pre-testing survey was conducted with the actual participants. A small number of participants is usually selected to assess the appropriateness of the questions and their comprehension by the respondents. The absence of a pre-testing survey may result in low-quality data and may lead to the removal of items in measurement model analysis. Pretesting is different from the pilot study, and when performed accurately, it can eliminate the necessity of the pilot study (Memon, Ting, Ramayah, Francis, & Cheah, 2017). If problems with the measurement are not solved at the pre-testing stage, they would later become more complicated. Kumar et al. (2013) state that the purpose of the pre-testing is to ensure that the wording of the questions is appropriate and understandable, questions follow a sequence, and the instructions

accompanying the questionnaire are entirely understandable. Typically, a cognitive interview method is used to assess the respondents' internal cognitive processes when answering questions during the pre-testing process (Neuert & Lenzner, 2015). The respondent is asked to think aloud when answering the questions to reveal his thought process. During this process, the researcher also asks the respondent about the specific terms' meaning to gain access to the understood meaning (Hughes, 2004). The respondents were approached personally by the researcher, and the researcher was present during the pre-testing survey. A total of twelve actual respondents were selected for pre-testing the questionnaire. The number of respondents for pre-testing is recommended to be between five and fifteen (Willis, 2005). All of the respondents completely understood the questionnaire's language and content, along with the intended meanings.

The questionnaire was accompanied by a set of instructions to increase the respondents' understanding and increase the response rate. Item ordering for each instrument used in the questionnaire was kept unchanged as different behavioral anchors were used to access the respondents' responses. Items having responses on ordinal scales should not be randomized because the item's underlying order provides important information to the respondents, which helps them respond to the question (Pew Research Center, 2020). Based on the pre-testing results, the final web-survey was administered to the actual population containing a cover letter at the beginning explaining the study's purpose and informing the participants about the confidentiality of the data. A screening question was placed at the beginning of the survey to eliminate not intended audience. The submission of the survey assumed the participant's consent to participate in the study.

4.5.2 Demographic information

Demographic information was collected at the beginning of the instrument. It consisted of information related to gender, age, years of experience, and level of education.

4.5.3 Workplace Creativity

The instrument for the study was designed by adapting from various already available valid and reliable scales. The construct of workplace creativity was measured using the scale by Tierney et al. (1999). The scale's historical reliability was reported at $\alpha = 0.82$ by Zhang and Bartol (2010) and $\alpha = 0.85$ by Tsai, Horng, Liu, and Hu (2015). This scale has already been used in similar populations; for example, Lin (2017) used it in a Taiwanese software company, and Huang and Luthans (2015) used it for the employees (software engineers) of a large Chinese software company. Hughes et al. (2018) suggested it to be the most appropriate scale for measuring creativity compared to other competing workplace creativity measures in terms of item content and accuracy. The study uses self-reported creativity as it is a valid method for measuring creativity. Self-reported creativity is a major source of creativity reporting Self-reported creativity is a major source of creativity reporting (Lubart & Guignard, 2004) and it is entirely acceptable to use self-report creativity (Hammond et al., 2011). It is suggested that leader/supervisor reported creativity can be inflated or deflated based on the relationship between leader and follower (Rego et al., 2014). The scale used in the study consists of nine items. Three sample items of the scale are "demonstrated originality in his/her work," and "took risk in terms of producing new ideas in doing job" and "found new uses for existing methods or equipment." This study used a five-point Likert-type scale for measuring workplace creativity construct.

4.5.4 Autonomous motivation

The construct of autonomous motivation was measured by adapting the Multidimensional Work Motivation Scale (MWMS) (Gagné et al., 2015). MWMS consists of nineteen items covering all six dimensions of motivation under SDT, ranging from amotivation to intrinsic motivation. This study measured only two types of motivation under autonomous motivation; Identified regulation and intrinsic motivation, and did not measure integrated regulation, as Gagné et al. (2015) did not include integrated regulation in the MWMS. They argue that integrated regulation is so well internalized that it is indistinguishable from intrinsic motivation, therefore autonomous motivation was tested as a unidimensional construct because in the absence of the third dimension of autonomous motivation it would be better to treat it as a shared commonality. Historical reliability for each subscale of identified regulation and intrinsic motivation was reported at $\alpha = 0.88$ and $\alpha = 0.88$, respectively (Van den Bosch & Taris, 2018). Likewise, Van der Burgt et al. (2018) reported Cronbach's alpha ($\alpha =$ 0.83) for the combined autonomous motivation scale. The autonomous motivation was measured six items; three items for identified regulation and intrinsic motivation each. Three sample items for autonomous motivation are "because I personally consider it important to put effort in this job" and because putting efforts in this job aligns with my personal values" and "because putting effort in this job has personal significance to me." A seven-point Likert type scale was used for measuring autonomous motivation construct.

4.5.5 Authentic leadership

Authentic leadership inventory (ALI) (Neider & Schriesheim, 2011) scale was used for measuring authentic leadership. ALI consists of fourteen items. ALI measures authentic leadership on four sub-dimensions; self-awareness, relational transparency, internalized moral perspective, balanced processing. Self-awareness and relational transparency were measured using three items each. Internalized moral perspective and balanced processing were measured using four items each. This study theorized authentic leadership as a higher-order construct with four dimensions. ALI's historical reliability has been reported at $\alpha = 0.91$ (Rahimnia & Sharifirad, 2015). Likewise, Cao, Zhao, and Zhao (2020) reported Cronbach's alpha ($\alpha = 0.835$). Three sample items of ALI are "my leader clearly states what he/she means," and "my leader shows consistency between his/her beliefs and actions," and "my leader asks for ideas that challenge his/her core beliefs." A five-point Likert-type scale was used for measuring authentic leadership.

4.5.6 Personal mastery

Personal mastery was measured using the Motivational Trait Questionnaire (MTQ) (Kanfer & Ackerman, 2000). MTQ consists of subscales of personal mastery, competitive excellence, motivational anxiety. Personal mastery has two further dimensions; desire to learn and mastery goals. Desire to learn and mastery goals were measured using eight items each. Historical reliability for personal mastery subscale of MTQ was reported at $\alpha = 0.89$ Alcover and Topa (2018). Similarly, Rodríguez-Cifuentes, Segura-Camacho, García-Ael, and Topa (2020) reported Cronbach's alpha at 0.802. Three sample items for personal mastery scale are "when I become interested in a task, I try to learn as much about it as I can" and "when I am learning something new, I try to understand it completely" and "even when I have worked hard on a task, I work more because I want to completely understand what i am doing." A five-point Likert type scale was used to measure personal mastery.

4.5.7 Job complexity

The job complexity literature uses multiple incumbent and non-incumbent-based schemes for measuring the perception of a job's complexity. This study used the Job Characteristics Model (JCM) (Hackman & Oldham, 1975) for measuring the incumbent's perception of job complexity. It calculates an average of all five job dimensions of JCM in an attempt to form an un-weighted additive index of complexity based on the perception of the incumbent (performer). The job dimensions under JCM are; skill variety, task identity, task significance, autonomy, and feedback. JCM uses fifteen items to measure all five dimensions of the job; three items each. The formation of a complexity index is consistent with the literature (discussed in detail in chapter two, literature review). Chae and Choi (2018) reported historical reliability for all five dimensions of JCM at; skill variety ($\alpha = 0.81$), task identity ($\alpha = 0.80$), task significance ($\alpha = 0.84$), autonomy ($\alpha = 0.80$), and feedback ($\alpha = 0.87$). The original behavioral anchors for measuring JCM were used in the instrument of the study.

As we know, a job can be considered complex if it contains work characteristics, as described by JCM. Job complexity has been measured using two different methods in workplace creativity literature. The first approach is non-incumbent based, and the second is incumbent based. Incumbent based measurement of job complexity is measured using job analysis, which requires direct observation of the job under investigation. Job analysis is a detailed and complete non-incumbent based method of job complexity but is not feasible in studies involving multiple participants across different organizations (Judge, Bono, & Locke, 2000). Another non-incumbent based method of job complexity is based on the Dictionary of occupational titles (DOT) by (United States Department of Labor, 1991) and is referred to as (DOT -complexity). This measurement of job complexity is a relatively objective and non-self-report measurement of job complexity (Oldham, Kulik, & Stepina, 1991). DOT handbook was

developed for the US department of labor to identify and analyze the function performed by incumbent and functional requirements for the job (Shalley et al., 2009). In 1939 first edition of DOT was printed to standardize the occupational definitions. DOT's idea was to provide a uniform occupational language that can be used in local job service offices. DOT has been updated several time, with the latest being 1991 (United States Department of Labor, 1991). DOT is based on the classification of jobs as per the complexity of skills required when dealing with data, people, and things. DOT uses a nine digit code to describe a job, first three digits provide information regarding the industry in which the job is located, the next three digits (referred to as DPT code) characterize the complexity of skills required to perform activities which are concerned with data, people, and things, the last three digits contain the additional information related to the job for example training time needed for a job (Rousseau, 1982).

DOT scheme of characterizing job complexity offers a considerable advantage over incumbent-based job complexity methods that the source of information is not the incumbent, hence reducing common method bias (Gerhart, 1987). So, unlike incumbent-based complexity measures like job characteristics, DOT is based on actual observations of jobs that are actually being performed (Gerhart, 1988). The problem with a scale based on occupational complexity such as DOT is the unavailability of data sets related to different occupations, making them unsuitable or used in empirical research (Strenze, 2013). Another problem with such measures is that they are based on general occupations rather than on specific jobs (Judge et al., 2000). For example, Judge et al. (2000) give an example of a police officer job, DOT will be considering the complexity level of the policeman in general and not the job of the police officer who took part in the survey. Since DOT only considers job complexity across occupations, it neglects the variance among jobs within the occupation, hence introducing error in the analysis, resulting in underestimating the relationship between job complexity and other variables of the study (Gerhart, 1987).

The second method of measuring job complexity is the incumbent-based perception of complexity. The job Characteristics (JCM) model by Hackman and Oldham (1975) is commonly used for this purpose. This type of formulation of job complexity is denoted by a job's relative score on all five dimensions of JCM, both additive and multiplicative. JCM is necessarily a perception-based characterization of job complexity and is based on the assumption that perceptions originate from the job's actual conditions (Judge et al., 2000). Thus, the worker's description of the work should reflect the actual characteristics of the work. Therefore, the incumbent-based perception of work characteristics and its complexity level includes both the worker's perception and the actual characteristics (Purvanova, Bono, & Dzieweczynski, 2006). Likewise, perception-based work formulation of job complexity has shown strong convergence with alternate complexity measures based on DOT. But a delicate point to consider before favoring either of the two characterizations of job complexity is that is there a difference between "occupational complexity" and "job complexity" (Gerhart, 1988); a job is defined as "specific posts entailing particular duties and responsibilities and involving the performance of particular task in particular settings" whereas occupation is "an aggregation of jobs, groups on the basis of their similarity in content" (Cain & Treiman, 1981). Therefore, an important distinction between the incumbent perception of job complexity (IPJC) and DOT based characterization is that both represent different underlying constructs (i.e., occupational complexity and job complexity). Besides, IPJC is a valid measure of job complexity and represents "objective" job complexity, capturing the unique variance beyond DOT based measure (Ganzach & Pazy, 2001). Hence, this study prefers the usage of IPJC over DOT based formulation of job complexity and uses five dimensions of JCM as characterization of job complexity.

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Under the IPJC, there are two formulations based on JCM used in the literature; 1) multiplicative combinational index (i.e., Motivational Potential Score – MPS) (Oldham & Cummings, 1996) and single unweighted additive index score (Ferris & Gilmore, 1985). A comparison between the two shows that a single unweighted additive index of job complexity performs better in comparison with the multiplicative combinational index when predicting vital psychological outcomes, performance, and satisfaction (Fried & Ferris, 1987). Because multiplicative indexes such as MPS are made up of two cross-product terms, which inflates measurement errors (Evans, 1991). Thus, usage of a single unweighted additive index of job characteristics as a measure for job complexity is recommended when predicting important personnel and work outcomes (Boonzaier, Ficker, & Rust, 2001). Also, a single unweighted additive index is an accepted method of calculating job complexity in workplace creativity literature (e.g., Baer et al., 2003; Chae & Choi, 2018)

4.6 **Population and sampling**

The population of the study is the software developers/engineers working in major cities of Pakistan. Software developers face additional challenges than other organizational employees because software engineering is substantially more complex. The software industry environment is turbulent and requires agility and fast response adoption (Williams & Cockburn, 2003). Employees are considered the key contributor to organizational success in the IT industry (Dhar & Mittal, 2015). The information technology (IT) industry is a labor-intensive industry, and highly skilled individuals are always in short supply; therefore, the key concern for managers in the IT industry is attracting and retaining these highly skilled individuals. Abstract problem-solving skills and creativity are the IT industry's employees' fundamental attributes that distinguish them from others (Wynekoop Judy & Walz Diane, 2000). The ability to develop creative solutions to abstract problems is a critical trait requirement for software

developers (Dyba, 2000). Software developers need to possess high-quality problem solving and analytical skills as their jobs are complicated and intellectual. A software developer's job is not physical, but it requires cognitive processing skills (Graziotin et al., 2014). The software industry has seen a rapid increase in Pakistan in recent years. Pakistani software industry has seen a growth of one thousand and twenty-four percent over the past decade and still growing at a fourteen percent pace per year. The total number of companies exceeds seven thousand, and the number of graduates entering the job market each year surpasses thirty thousand (Pakistan Software House Association, 2020a). The total number of IT professionals in Pakistan stands around three hundred thousand, more than 30 thousand new graduates are entering the market (Pakistan Board of Investment, 2020) therefore obtaining the complete list of respondents was not feasible hence, convenience sampling technique was used. The study didn't discriminate between software developers, engineers, testers, and web developers and consider all of them under the broad category of software developers because the major component of these job titles is developing and testing software. Though software all companies/houses are spread across the length and breadth of Pakistan, but majority of the companies are located in four localities, Lahore, Karachi, Islamabad, and Faisalabad. Total number of employees from each company taking part in the study cannot be determined as snowball sampling technique was used and a large majority of respondents didn't want to mention their organizational affiliation. The researcher selected these localities for finding the respondents based on convenience sampling technique. The study is an individual level study and the unit of analysis for the study is induvial employee. The study uses single source data. All the variables were collected from the single employee.

4.7 Data collection

The data collection for the study was conducted using a self-administered web-based survey tool; google forms. Self-administered questionnaires are "a data collection technique in which the respondents read the survey questions and records his or her responses without the presence of a trained interviewer" (Hair et al., 2003, p. 256). "considerable evidence suggest that people are more likely to give honest answers to self-administered than to interview questions." (Dillman, 1978, p. 38). The usage of web-based survey tools is consistent with the traditional survey methods (paper-pencil survey) (Gosling, Vazire, Srivastava, & John, 2004). Web-based survey tools are more feasible for reaching a larger audience than traditional tools because of their ease of deployment, speed, economy, convenience, and simplicity (Sue & Ritter, 2012). Geographically dispersed population can be accessed with relative ease with web-based survey tools. Web-based survey tools also reduce social desirability bias (Gosling et al., 2004). Despite its advantages, web-based survey tools have their limitations. For example, relatively low response rate, sampling issues, limited internet access, multiple responses, relatively higher item non-response rate. In order to counter the low response rate, two reminders were sent to the respondents (Wright, 2005). The study offered no monetary benefits, therefore, eliminating multiple responses. Furthermore, respondents were required to answer every question therefore, lowering the item non-response rate. One important sampling issues of web-based surveys is that the survey link can be forwarded to non-intended audience. A screening question was introduced at the beginning of the survey to ensure the eligibility of the respondents. Despite its limitations web-based survey technique benefits outweigh it limitations (Heen, Lieberman, & Miethe, 2014).

Recruitment

Responses were collected from software companies located in four major cities of Pakistan; Lahore, Karachi, Islamabad, and Faisalabad. Multiple strategies were employed for recruiting respondents. First, the Human Resources departments of software houses located in the said geographical localities were approached for formal approval, and then their employees were administered the survey. Personal contacts were also used for recruiting respondents. In addition to that, participants were recruited from online communities of the intended audience on social media platforms (Facebook, LinkedIn). Recruiting respondents from online communities is a common practice when administering web-based surveys (e.g., Kamboj & Rahman, 2017). Facebook and LinkedIn communities are viable options for recruiting a specific study population (Brickman Bhutta, 2012).

Sampling technique

The decision about the sampling technique in social sciences is of vital importance since it is not possible to collect data from every member of the population (Sekaran & Bougie, 2016). Among many different sampling techniques, convenience sampling is a popular choice of researchers in the business research discipline (Hulland et al., 2018). The sample is chosen based on the researcher's convenience, where the researcher selects the readily available subjects. Simple random sampling is superlative and considered the gold standard for a representative sample. However, when the population list is hard to access, researchers prefer convenience sampling (Etikan, Musa, & Alkassim, 2016). Practical criteria are the hallmark of the convenience sampling technique. The usual convenience sampling principles include geographical proximity, easy accessibility, and the respondent's willingness to participate in the study (Paltridge & Phakiti, 2015). The central assumption of convenience sampling is that the population

is homogenous. This study defines the sample universe as geographically local; therefore, convenience sampling is justified. Another predicament keeping the study from opting for random sampling was that the accessibility of the complete population list of software industry employees was next to impossible. There are more than seven thousand organizations in the Pakistani software industry employing over three hundred thousand individuals, and more than thirty thousand graduates are entering the job market every year (Pakistan Software House Association, 2020b). The major advantage of convenience sampling is its minimal cost and the liberal requirement of complete population list, which makes it the tool of choice. When the study's purpose is to test proposed theoretical assertions, convenience sampling is sufficient (Hulland et al., 2018) and especially the difficulty associated with creating a comprehensive sampling frame makes convenience sampling a practical choice (Rowley, 2014).

Sample size

The sample size is the number of observations required to achieve findings of a question of concern in a given population. In other words, it is the total number of respondents in the sample. The literature talks about different rules of thumb for calculating the appropriate sample size for a study. For example, "ten times rule" (Barclay, Thompson, & Higgins, 1995) or power table by Hair, Hult, Ringle, and Sarstedt (2014). However, the latest research recommends that the minimum sample size should be calculated through power analysis when performing a Structure Equation Modeling analysis (Hair, Risher, Sarstedt, & Ringle, 2019; Ringle, Sarstedt, Mitchell, & Gudergan, 2018). Statistical power or simply referred to as power is the probability of avoiding the false negative or type II errors (Kock & Hadaya, 2016). The minimum sample size is calculated using power analysis by taking into account the model's largest regression. It depends on the effect size of the coefficients of the study model. The

greater the assumed effect size, the smaller the required sample size is. The most difficult part of power analysis is to get a good estimation of effect size. A good source for determining the effect size is the past meta-analysis studies. However, in the absence of benchmark studies, a typical configuration is recommended (e.g., medium effect size) (Memon et al., 2020). There are multiple software packages available for performing power analysis. For example, IBM SPSS Sample Power, G*Power, Solo Power analysis, Power Package for R. This study used G*Power software for power analysis. Since statistical power in psychological studies remains low; therefore, a typical power analysis using G*power is recommended at $f^2 = 0.15$, $\alpha = 0.05$, and power of 0.80 (Bakker et al., 2020). The minimum sample size using these parameters was calculated at 77.

4.8 Analysis

The study used structural equation modeling (SEM) for the analysis of data. The SEM method is appropriate for management research in general and specifically useful because of its ability to analyze cause and effect relationships between latent variables while taking measurement error into account (Hair, Hult, Ringle, Sarstedt, & Thiele, 2017). SEM is particularly useful when dealing with the complex relationship between latent and observed variables (Sarstedt & Cheah, 2019).

There are two generations of tools used for data analysis with SEM technique. The main difference between the second and first-generation SEM is the ability to test multiple regression models stimulatory (Ramayah, Hwa, Chuah, Ting, & Memon, 2016). There are two main approaches for using SEM; Factor-based SEM (CB-SEM), and composite-based SEM (PLS-SEM). Factor-based SEM is based on common factor assumption between latent and observed variables, whereas composite-based SEM is founded on multivariate statistical techniques and assumes that latent variable is the

deterministic aggregation of the observed variable (Hwang, Sarstedt, Cheah, & Ringle, 2019). From the beginning, composite-based CB-SEM was the dominant method for using structural equational modeling in social and business research, perhaps because of the easy availability of software packages like LISERAL, which led to methodological advances in its usage (Sarstedt, Ringle, & Hair, 2014). However, composite-based PLS-SEM was developed as an alternative. Its purpose was to achieve similar results but with a different approach and in different situations and has its own set of advantages and limitations (Rigdon, Sarstedt, & Ringle, 2017).

Partial least square (PLS) SEM is also called PLS path modeling; this approach of modeling has gained acceptance in business research and has also seen popularity in fields like agriculture, ecology, environmental science, geography and psychology and human resources (Ringle, Sarstedt, Mitchell, & Gudergan, 2020). PLS-SEM is a second-generation technique for performing multivariate data analysis and is popular among social scientist because of its ability to test theoretically supported casual models, relationships between multiple predictors and criterion variables, construct unobserved variables, model measurement error, test empirical data with pre-observed theoretical assumptions (Chin, 1998). But the question remains, which approach to use and which not to? The answer is, it depends on the nature and purpose of the study; for example, if the purpose of the study is prediction or identification of key predictors of a target construct (variance explanation) and exploration or extension of a theoretical structure (theory development), PLS-SEM is the tool of choice (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014).

Since this study is a prediction oriented exploratory study, therefore PLS-SEM technique is most suitable. There are several tools available for using the PLS technique of structural equational modeling, for example, WarpPLS, PLS-GUI, ADANCO, XL-

STAT, GeSCA (Ramayah et al., 2016) but are limited in scope except for SmartPLS. SmartPLS is the most often used software package to apply PLS-SEM technique (Sarstedt & Cheah, 2019). This study used SmartPLS for PLS-SEM. SmartPLS is a prediction oriented, variance-based structural equation modeling software package which offers certain advantages over other CB-SEM based software like LISRAL, EQS, and AMOS in theory development and prediction-oriented research environment (Hair, Ringle, & Sarstedt, 2011).

Wold (2006) cites these reasons for using PLS-SEM: 1) the PLS-SEM shows great flexibility in the integration of theory and practice; 2) offers researchers the ability to communicate with the computer for tentative model improvement, and ease of testing indicators, variables, or inner relations makes it easy to test for predictive relevance. Additionally, Sarstedt, Ringle, and Hair (2017) suggest these reasons for using PLS-SEM: 1) ease of using composites for formative measured latent variables; 2) Latent variables scores extracted can be used for further analysis; 3) deployment of consistent PLS for overcoming the limitation of its inability to conduct factor-based SEM and goodness to fit measure.

Moreover, this study used PLS-SEM because it is particularly useful when examining mediation (e.g., Brunetto, Teo, Shacklock, & Farr-Wharton, 2012), moderation, and complicated relationship among constructs while accounting for measurement error at the same time, which otherwise would have been very difficult (Ringle et al., 2018). Wold (2006) states that PLS-SEM is "virtually without competition" (p. 9) when dealing with models that are large and complex and have many latent variables. Likewise, PLS(SEM) is useful for exploration and prediction, and it can handle complex models that involve a large number of constructs with causal relationships between previously overlooked variables (Ringle, Schlägel, Sinkovics, & Richter, 2016; Urbach & Ahlemann, 2010). PLS-SEM makes fewer demands about sample size, and multivariate normality of data is not a pre-requisite; such unusual data characteristics are associated with data from social sciences (Hair, Sarstedt, et al., 2014). This assumption of PLS-SEM is important because in social and behavioral sciences there are many instances when data does not hold multivariate normal distribution, in these situations co-variance based CB-SEM or maximum likelihood estimation (MLE) is not recommended, rather variance-based SEM or PLS-SEM is recommended (Hair, Ringle, & Sarstedt, 2013). Furthermore, the methodological toolbox of PLS-SEM is increasingly becoming richer with the incorporation of various improvements and extensions, making usage and acceptability of this method (Richter, Cepeda-Carrion, Roldán, & Ringle, 2015).

Coming back to the software package, SmartPLS is a software package created for testing models using the PLS-SEM technique, offering a wide range of modeling options. In the words of Wold (1985) PLS-SEM is "a dialogue between the investigator and the computer" (p. 590). SmartPLS offers great usability as even novice users can draw the paths between variables and defined indicators of the variables using both formative and reflective techniques. The interactional user interface of SmartPLS allows the researcher to make tentative changes in the model to maximize predictive relevance. Also, SmartPLS comes with an interactive user interface, which allows it to include quadric effect and moderation effect without having to process data outside SmartPLS (Sarstedt & Cheah, 2019).

The usage of SmartPLS is primarily recommended when the model contains variables with formative indicators (Sarstedt et al., 2017). Another specialty of SmartPLS is the estimation of complex models with a smaller amount of data; this is accomplished by calculating correlations between indicators and the variables first and

later making regression between those variables (Ringle, Silva, & Bido, 2014). To conclude, SmartPLS is the most comprehensive software package available today for making PLS-SEM analyses (Henseler, 2017).

4.8.1 Mediation analysis

This study has its theoretical underpinning in self-determination theory (SDT) (Deci & Ryan, 1985b) and follows the basic model of SDT (Deci et al., 2017). The conceptual framework of the study (as depicted in Figure 3-1 chapter 3) involves a mediation process between independent variables (authentic leadership, personal mastery, job complexity) and dependent variable (workplace creativity) through a mediator (autonomous motivation). The mediation process helps unravel underlying causal processes, which may help build further complex and definitive models. This study followed the mediation process recommended by Preacher and Hayes (2004, 2008) and does not follow the tradition of Baron and Kenny (1986). The central assumption of Mediation analysis is that there is a significant relationship between the independent variable and outcome variable transmitted through a mediating variable. When testing for mediation effect in PLS-SEM, it is recommended that researchers should use the bootstrap technique to obtain necessary information about sampling distributions of data (Nitzl, Roldan Jose, & Cepeda, 2016). Bootstrapping is an inferential non-parametric technique that takes out several samples from the original data set with replacement. PLS-SEM determines each sub-samples' underlying path model (Carrión, Nitzl, & Roldán, 2017). Bias-corrected bootstrapping is a powerful technique for detecting mediation (Memon, Hwa, Ramayah, Ting, & Chuah, 2018). This study used the bootstrapping technique as it is a very rigorous and robust method of testing for mediation and is more suitable when doing mediation analysis with SmartPLS (Hair et al., 2013; Zhao, Lynch Jr, & Chen, 2010).

4.9 Chapter summary

This chapter detailed the usage of methodology used for the study, the justification for using post-positivistic paradigm, the research process, questionnaire design and instrumentation, study population, and sampling method. The next chapter will discuss the data analysis and present the results of the study.

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CHAPTER 5: RESULTS AND DATA ANALYSIS

5.1 Introduction

This chapter presents the analysis and empirical results of the study of hypothesis testing. It consists of two main sections. The first section is the preliminary data analysis, where procedures adopted for data purification are used. The second section presents a general description of the respondents. The third section contains the results of confirmatory composite analysis (CCA) deployed for hypothesis testing. A short summary marks the end of the chapter.

5.2 Preliminary data analysis

5.2.1 Data coding

After data collection was completed, a preliminary assessment of the completeness of data was conducted. The purpose of preliminary data analysis is to prepare data for further analysis. Data was edited for omissions, legibility, and consistency. Respondents answering more than seventy-five percent of the questionnaire were considered for the study, as recommended by Sekaran and Bougie (2003).

In the next step, raw data was imported from "Google Forms" to a data file in SPSS software for analysis. The precoding was employed to assign numerical values to the Likert-type scales used in the study. An ordinal form of numerical values was used to reflect the nature of the scale. Further, demographic variables were assigned numerical values. No particular coding scheme for assigning numerical values to demographic variables was used as each demographic variable was coded based on the specific scale requirement. Data coding is "the procedural function of assigning concise and specific values (either alpha or numeric) to data elements collected through surveys or other forms of research so that these data may be quickly and easily counted or otherwise processed an subjected to statistical analyses, most often using a computer" (Lavrakas,

2008, p. 102). Frequency analyses for all the values were conducted to locate anomalies and were correct accordingly.

5.2.2 Data screening

Data screening is essential to ensure that data is correctly prepared for analysis. Data screening is carried out to enhance the data's trustworthiness. One of the limitations of the self-reported survey is that sometimes the respondent fails to exert the effort, resulting in low-quality data or extreme values (e.g., outliers). Different statistical techniques are used for detecting unusual response patterns.

In survey research, missing values pose a significant problem. If not dealt with correctly, missing values can result in biased estimates, distorted statistical power, and invalidate conclusions (Acock, 2005). When the respondent fails to answer one or more of the survey questionnaire items, it results in missing values. Missing values are unavoidable in studies involving volunteer participants because individuals are free to skip questions and leave the study altogether whenever they like. The missing data values can be both voluntary and involuntary. Missing values related to demographic information is common because respondents sometimes consider such information private. Data screening revealed that a minimal amount of data entries involved missing values in this study. Missing data only amounted to less than three percent, and followed no particular pattern; hence can be attributed as missing completely at random (MCAR). If the amount of missing data is less than three percent, its consequences are insignificant (Schafer, 1999). Since there is an insignificant amount of missing data, the choice of method for replacing missing values may not have much effect. Therefore, variable mean replacement method was used for missing values. This method is most widely used and appropriate because it is based on mean responses for the variable (Hair, Black, Babin, & Anderson, 2019).

Outliers can be detected using both the single-construct technique and multiconstruct technique. This study used both techniques for detecting outliers. It is advisable to use more than one (i.e., visual and quantitative) identification method as one method can compensate for the other's weaknesses in detecting outliers (Edwards & Cable, 2009). Stem and leaf plot, box plots, and Z scores were used as single construct techniques, scatter plot, and Malahanobis D² distance was used as multi-construct techniques for detecting outliers. For the scatter plot, dependent and independent variables were plotted on the x-axis and y-axis, and values far from the centroid of data were regarded as outliers. The cutoff point for Z score was $Z < \pm 3.29$ (Tabachnick & Fidell, 2007). Z-score is a valid method for identifying outliers (Clark-Carter, 2014). Eight data entries were regarded as outliers and removed as a consequence to improve the regression model.

5.2.3 Normality test

The normality assumption of data plays a key role in determining the method for analysis of data. PLS-SEM does not require the data to be normally distributed. Testing normality of data is an important step, and data should be tested for both univariate and multivariate normality (Cain, Zhang, & Yuan, 2017).

The data was tested for both univariate and multivariate normality. Multivariate normality is an extension of univariate normality, where joint distributions of several variables are compared against a multivariate normal distribution instead of comparison of one variable with a univariate normal distribution. First, both univariate Skewness Kurtosis were calculated. The value for Skewness was beyond ± 1 , and Kurtosis was also outside the cutoff point ± 7 , violating the normality assumption (DeCarlo, 1997). Next multivariate normality was tested. There are several options for testing multivariate normality. This study used Mardia's measure for multivariate normality

(Mardia, 1970). Mardia multivariate skewness ($\beta = 3.61$, p<0.01) and Kurtosis ($\beta = 44.54$, p<0.01) were beyond the normality range (Hair, Black, et al., 2019). The Mardia multivariate normality test was performed for each variable's standardized scores using the web application available at <u>http://www.psychstat.org/kurtosis</u>. The usage of WebPower application for calculating multivariate normality is a valid method (Cain et al., 2017; Zhang & Yuan, 2018). Data for the study were not normally distributed in both the univariate and multivariate measures; therefore, due to non-normality consideration, PLS-SEM usage was warranted (Hair, Hult, et al., 2014).

5.2.4 Response rate

The minimum sample size determined for the study was 77 (as discussed in chapter 4). To acquire a significant number of responses for the study well above the minimum sample size, a total of 1000 respondents were approached and sent the questionnaire using the convenience method. The survey questionnaire was sent using an online survey tool, Google Forms. A total number of 359 responses were received back. This indicates a response rate of 35.9 percent. A total of 10 responses had more than twenty-five percent of questions unanswered, therefore, dropped from the analysis. Furthermore, a total of eight responses were identified as outliers in the data screening, therefore, discarded. The remaining number of responses was 341, which represents the effective response rate of 34.1 percent. Table 5.1 present the summary of the response rate.

	Number of questionnaires	Percent
Total respondents approached	1000	100
Total responses received back	359	35.9
Incomplete questionnaires	10	1.00
Responses containing outliers	8	0.80
Usable responses	341	34.1

 Table 5.1 : Response rate summary

Web-based survey have historically lower response rates as compared to other traditional modes due to several issues associated with internet security concern. For example, "junk mail" and "spam" and the element of anonymity (Sills & Song, 2002). A typical response rate for online surveys hovers around 18 percent (Gravetter & Forzano, 2011). The study's response rate is above the typical response rate for online surveys. One possible reason for the higher response rate could be the usage of convenience sampling and snowball technique using the respective organizations' personal contact and Human Resources department. In an interesting study, it was found that demographic characteristics and population type have an effect on web-based survey response rate for this study as well. Likewise, Ali, Li, and Latif (2020) reported 30.33 percent response rate in creativity research in the Pakistani context. Therefore, response rate for the study is deemed appropriate.

5.2.5 Non-response bias

Non-response bias (i.e., the number of people who failed to respond) is equally important as response rate in a survey study. One implication for non-response is that the results of the survey can change if the non-respondents respond. This effect is called the non-response error. Non-response error pertains that the information obtained from the respondents can be significantly different from the non-respondents. The only criteria for a good sample are to be a representative sample. This study used the "extrapolation" technique (Armstrong & Overton, 1977) for detecting and dealing with non-response error. In extrapolation technique, a comparison is performed between early respondents and late respondents. This test draws its strength from the argument that late respondents resemble non respondents (Collier & Bienstock, 2007). A total of 100 responses from early respondents and late responders were pair-wise compared using a paired sample t-test. A comparison between early respondents and late respondents shows no significant difference, indicating the absence of non-response error. Therefore, it can be inferred that response of those who responded are comparable to the target population. Table 5.2 exhibits the results for the paired sample t-test.

		Ν	Mean	Std	t-	Sig
				Dev	statistics	(2-tailed)
Creativity	Early	100	3.68	0.55	-1.43	0.154
	Late	100	3.79	0.64		
Autonomous motivation	Early	100	5.31	0.99	0.364	0.716
	Late	100	5.26	1.11		
Authentic leadership	Early	100	3.77	0.66	1.549	0.125
	Late	100	3.61	0.74		
Personal Mastery	Early	100	3.97	0.43	0.973	0.333
	Late	100	3.91	0.52		
Job complexity	Early	100	5.15	0.98	0.051	0.960
	Late	100	5.14	1.22		

 Table 5.2 : Paired sample t-test

5.3 Sample profile

The effective sample consisted of N = 341 respondents. Descriptive statistics were performed using software package IBM SPSS (version 25). The majority of the respondents were male (86.8%). Only 13.2 percent of the respondents were female which is below the ratio of female labor force participation in Pakistan. Female participation in workforce of Pakistan is 25 percent (World Bank, 2019). Shahzad (2014) also reported similar statistics about gender ratio in Pakistani software industry (i.e. Male=90%; Female=10%). Likewise, Hasan, Moin, and Pasha (2019) reported majority of the respondents were male in the Pakistani software development population (i.e. Male=84.09%; Female=15.91%).

Furthermore, 29.3 percent of the respondents were between the ages of 20-25, 46.3 percent between the ages of 25-30, 15 percent between 30-35, and 9.4 percent were above the age of 35. The majority of the respondents (61.3%) had a bachelor's degree,

followed by a master's degree (34.9%), 1.8 percent had an intermediate degree, 1.5 percent had PhD, and 0.6 percent had other education. Those with less than a year of experience comprised 9.4 percent of the sample, 31.4 had between 1 to 3 years of experience, 23.2 had a work experience of 3 to 5 years, 15.2 percent had between 5 to 8 years, and 20.8 percent had more than 8 years of experience. All the information is presented in Table 5.3 in figures and percentage of the total sample to facilitate interpretation.

Demographics	Number $(N = 341)$	Percentage	
Gender:			
Male	296	13.2	
Female	45	86.8	
Age group:			
20-25 Years	100	29.3	
25-30 Years	158	46.3	
30-35 Years	51	15	
More than 35 Years	32	9.4	
Level of education:	• ×		
Intermediate	6	1.8	
Bachelor	209	61.3	
Master	119	34.9	
PhD	5	1.5	
Other	2	0.6	
Years of experience:			
Less than 1 Year	32	9.4	
1-3 Years	107	31.4	
3-5 Years	79	23.2	
5-8 Years	52	15.2	
More than 8 Years	71	20.8	

 Table 5.3 : Respondent profile

5.4 Descriptive statistics

Descriptive statistics not only presents a simple way of visualizing the results but also improves comprehension by presenting them in a precise and meaningful manner (Janssens, Wijnen, Pelsmacker, & Kenhove, 2008). Descriptive statistics also provide a clear picture of results, and it is a good practice in business research (Hair, Hollingsworth, Randolph, & Chong, 2017). Indicators of the instrument of the study and their means and standard deviations are presented in Table 5.4. A five-point Likert-
type scale was used for the constructs of workplace creativity, authentic leadership, attitude towards color blue and personal mastery, with 5 being the positive response. A seven-point Likert-type scale was used for autonomous motivation, and job characteristics with 7 being the positive response. Table 5.5 presents the means, standard deviation, and correlations between the constructs. Overall, the constructs were correlated at the significance level of p<0.1 (2-tailed). Demographic variables of age, gender, level of education, and experience were not significantly correlated with the constructs of the study model.

Latent	Items	M	SD
Constructs			
	Demonstrated originality in my work.	3.71	0.878
	Took risk in terms of producing new ideas in doing the	3.72	0.861
	job.		
	Found new uses for existing methods or equipment.	3.74	0.851
Workplace	Solved problems that had caused others difficulty.	4.15	0.830
Creativity	Solved problems that had caused other difficulty.	3.99	0.862
-	Identified opportunities for new products/processes.	3.88	0.840
	Generated novel, but operable work-related ideas.	3.64	0.915
	Served as good role model for creativity.	3.65	0.886
	Generated idea revolutionary to our field.	3.43	0.988
	Because I personally consider it important to put efforts in	5.46	1.128
	this job.		
	Because putting efforts in this job aligns with my personal	5.41	1.244
A	values.		
Autonomous	Because putting efforts in this job has personal	5.28	1.261
Mouvation	significance to me.		
	Because I have fun doing my job.	5.17	1.440
	Because what I do in my work is exciting.	5.11	1.360
	Because the work I do is interesting.	5.20	1.424
	My leader clearly states what he/she means.	3.81	0.912
	My leader encourages others to voice opposing point of	3.74	1.068
	view.		
	My leader openly shares information with others.	3.84	0.961
	My leader expresses his/her ideas and thoughts clearly to	3.69	0.966
	others.		
Authentic	My leader describes accurately the way that others view	3.65	0.960
Leadership	his/her abilities.		
	My leader shows that he/she understand his/her strengths	3.65	0.933
	and weaknesses.		
	My leader is clearly aware of the impact he/she has on	3.60	0.976
	others.		
	My leader shows consistency between his/her beliefs and	3.78	0.837
	actions.		

Table 5.4 : Mean and Standard Deviation

Table 5.4 Continued

	My leader uses his/her core beliefs to make decisions.	3.63	0.886
	My leader is guided in his/her actions by internal moral	3.41	0.977
	standards.		
	My leader resists pressure on him/her to do things	3.81	0.958
	contrary to his/her beliefs.		
	My leader carefully listens to alternative perspective	3.63	0.967
	before reaching a conclusion.		
	My leader asks for ideas that challenge his/her core	3.75	0.946
	beliefs.		
	My leader objectively analyses relevant data before	3.66	1.018
	making a decision.		
	When I become interested in task, I try to learn as	4.26	0.729
	much about it as I can.		
	When I am learning something new, I try to understand	4.17	0.776
	it completely.		
	Even when I have worked hard on a task, I work	4.07	0.809
	because I want to completely understand what I am		
	doing.		
	I like to take on task assignments that challenge me.	4.05	0.766
	I am intellectually curious person.	4.04	0.752
	I prefer activities that provide me the opportunity to	4.26	0.733
	learn something new.		
	I am naturally motivated to learn.	4.14	0.740
	I set goals as a way to improve my performance.	4.15	0.782
Personal Mastery	If I already do something well, I don't see the need to	4.05	0.784
	challenge myself to do better.		
	When learning something new, I focus on improving	3.22	1.096
	my performance.		
	I compete with myself challenging myself to do	4.10	0.754
	things better than I have done before.		
	I set high standards for myself and work toward	4.05	0.801
	achieving them		
	I work hard at everything I undertake until I am	4.06	0.800
	satisfied with the result.		
	I do not set difficult goals for myself.	4.03	0.818
	My personal standards often exceed those required for	2.85	1.129
	the successful completion of a project.		
	I thirst for knowledge.	3.70	0.789
Attitude towards	I prefer blue to other colors.	3.24	1.092
Color Blue	I like the color blue.	3.57	0.960
	I like blue cloths.	3.50	0.975

Table 5.4 Continued

	How much variety is in your job that is to what extent	5.15	1.506
	does the job require you to do many different things at		
	work using variety of your skills and talents.		
	To what extent does your job involve doing a "whole"	5.06	1.500
	and identifiable piece of work? That is, is the job a		
	complete piece of work that has an obvious beginning		
	and end? Or is it small part of the overall piece or		
	work, which is finished by other people or by		
	automatic machine.		
	In general, how significant or important is your job?	5.17	1.560
	That is, are the results of your work likely to		
	significantly affect the lives or well-being of other		
	people.		
	How much autonomy is there in your job? That is, to	4.91	1.580
	what extent does your job permit you to decide on your		
	own how to go about doing the work		
	To what extent does doing the job itself provide you	4.97	1.540
	with information about your performance? That is	1.97	1.0 10
	does the actual work itself provide clues about how		
	well you are doing aside from any "feedback" co-		
Job Characteristics	workers or supervisors may provide		
	The job requires me to use a number of complex and	5 1 7	1 502
	high-level skills	5.17	1.002
	The job is not simple and repetitive	5 16	1 504
	The job provides me the chance to completely finish	5.10	1.501
	the piece of work I begin	5.20	1.510
	The job is arranged so that I do not have the chance to	5 27	1 514
	do an entire piece of work from beginning to end	5.27	1.517
	The job is one where a lot of other people can be	5.09	1 567
	affected by how well work gets done	5.09	1.307
	The job itself is not very significant or important in the	5 10	1 568
	broader scheme of things	5.10	1.500
	The job gives me considerable encortunity for	5.01	1.620
	independence and freedom in how I do the work	5.01	1.030
	The job denies me any change to yes my nemonal	5.02	1 621
	initiative on independent in complete out the vessely	5.05	1.021
	Initiative or judgement in carving out the work.	5.00	1 471
	Just doing the work require by the job provides many	5.00	1.4/1
	chances for me to figure out how well I am doing.	5.00	1 470
	The job itself provides very few clues about whether or	5.02	1.470
	not I am performing well.		

	Mean	Std	1	2	3	4	5				
1 CR	3.76	0.60	1								
2 AM	5.77	0.85	0.53	1							
3 AL	3.74	0.78	0.42	0.48	1						
4 PM	4.24	0.47	0.47	0.56	0.462	1					
5 JC	5.36	1.01	0.47	0.62	0.516	0.593	1				
Age			0.01*	0.10*	-0.61*	-0.79*	0.02*	1			
Exp			0.05*	0.10*	-0.04*	0.01*	0.08*	0.77	1		
Edu			0.01*	-0.18*	-0.01*	-0.05*	0.00*	0.30	0.25	1	
Gen			-0.09*	-0.11*	0.00*	-0.09*	-0.07*	-0.04*	-0.09*	0.18	1

Table 5.5 : Correlations between constructs

Note: CR is workplace creativity, AM is autonomous motivation, AL is authentic leadership, PM is personal mastery, JC is job complexity, Edu is Level of education, Exp is years of experience, Gen is gender. Age, Education level, and years of experience are range bound groups therefore no mean and standard deviation is provided. * = correlation is non-significant (p > 0.05 two-tailed)

5.5 Measurement model

A Structural equation model (SEM) has two components: measurement model and structural model (Hair, Hult, et al., 2014). A measurement model describes the connection between the directly measured variable and the corresponding latent variables and how well latent variables (constructs) are measured in terms of their empirical surrogates (indicators). In the two-step approach, measurement model assessment is the first stage when analyzing the SEM model (Anderson & Gerbing, 1988). It is the first step for assuring the accuracy of the SEM model (Fornell & Larcker, 1981). Measurement model assessment ensures that only reliable and valid constructs are used for structural path models. The measurement model defines the relationship between the construct and their indicators. The method frequently used for assessing the measurement model was exploratory factor analysis (EFA). Recent literature has specified the correct usage of EFA in determining measurement models. It is maintained that when there is an absence of prior hypotheses and patterns of measured variables, only then EFA is suitable (Hair, Howard, & Nitzl, 2020). The most up-to-date method for correct measurement model specification is confirmatory composite analysis (CCA). CCA is an "innovative set of procedures for specifying and assessing composite models" (Henseler & Schuberth, 2020, p. 147).

Once the relationship between the variables has been arranged in the form of a SEM model to test the hypotheses, the next step is to assess the reliability and validity of the measured employed. Measurement model is used for validating the instrument (that the instrument is measuring the construct it was designed to measure). Before testing the hypothesized relationship between variable a measurement model must hold (Cheng, 2001). For a measurement model to be correctly specified and tested, the epistemic relationship between the construct and its indicator must be clearly delineated based on the measurement theory (Sarstedt, Hair, Ringle, Thiele, & Gudergan, 2016). Likewise,

direction of causality is an important theoretical consideration in specifying correct measurement model (Jarvis, MacKenzie, & Podsakoff, 2003). For a formative construct, the direction of causality flows from indicators towards the construct, and for a reflective construct, the direction of causality flows towards indicators from the construct. All the constructs used in this study are theorized as reflective indicator constructs. Hair et al. (2020) suggest the following steps when executing CCA for the reflective measurement models. 1) estimate the indicator loading and their significance. 2) indicator reliability testing. 3) measure composite reliability of the constructs. 4) determine convergent validity of the construct. 5) estimate discriminant validity.

5.5.1 Indicator reliability

The first step of measurement assessment is evaluating the indicator reliability or outer loadings. The purpose of the indicator reliability test is, if indicators are consistent with the intended measurement (Urbach & Ahlemann, 2010). For this purpose, standardized loading for the items should be above 0.708 and the associated t-statistics beyond ± 1.96 for a two-tailed test to be significant (Hair et al., 2011). The indicators below the loading of 0.70 should only be removed if the deletion contributes to improving composite reliability and keeping in mind their contribution to the content validity (Hair et al., 2011). Indicators with indicator loadings till 0.60 can be retained if the average variance extracted (AVE) is above the value of 0.50 (Byrne, 2016). One indicator from workplace creativity (CR4 = 0.611) was removed to improve AVE score of the construct. Two indicators from the personal mastery construct (PM 10 = 0.063, PM 15 = 0.196) were removed because they were below the criteria for indicator retention, and AVE was calculated with the remaining indicators. The results in the second run achieved satisfactory results. When ensuring the measurement model for a reflective construct, indicators can be removed without changing the underlying structure of the variable (Jarvis et al., 2003) and to ensure that the construct is

responsible for more than half of the variance of its indicators (Hair, Hult, et al., 2017). Eliminating indicators with smaller loadings to increase AVE is recommended (Hair, Hult, et al., 2014; Ramayah et al., 2016).

Construct	Dimensions	Items	Loading	Cronbach	CR	AVE
(2 nd order)				Alpha (α)		
Creativity		CR1	0.721	0.859	.890	.504
		CR2	.0691			
		CR3	0.675			
		CR5	0.657			
		CR6	0.735			
		CR7	0.750			
		CR8	0.750			
		CR9	0.697			
Autonomous						
Motivation		AU1	0.779	.889	0.915	0.643
		AU2	0.802			
		AU3	0.779			
		AU4	0.783			
		AU5	0.836			
		AU6	0.831			
Authentic		RT	0.887			
Leadership		SA	0.894	-	0.943	0.790
1		IM	0.902			
		BP	0.923			
	RT	AL1	0.840	0.826	0.896	0.742
		AL3	0.887			
		AL4	0.857			
	SA	AL5	0.850	0.830	0.898	0.746
		AL6	0.878			
		AL7	0.863			
	IM	AL8	0.795	0.795	0.867	.621
		AL9	0.868			
		AL10	0.708			
		AL11	0.772			
	BP	AL12	0.768	0.778	0.857	0.601
		AL13	0.807			
		AL14	0.810			
		AL2	0.713			
Personal		DL	0.944	-		
Masterv		MG	0.915		0.935	0.865
	DL	PM1	0.741	0.891	0.913	0.569
		PM2	0.748		0.710	0.007
		PM3	0.747			

 Table 5.6 : Indicator loadings and measurement model

		PM4	0.803					
		PM5	0.650					
		PM6	0.797					
		PM7	0.796					
		PM8	0.739					
	MG	PM9	0.772	0.873	0.905	0.617		
		PM11	0.823					
		PM12	0.842					
		PM13	0.849					
		PM14	0.801					
		PM16	0.601					
Note: BP is balanced processing, IMP is internal moral perspective, RT is relational transparency, SA is self-awareness. DL is desire to learn MG is mastery goals.								

5.5.2 Composite reliability

Mere face validity is not considered enough evidence of validity when using SEM. Therefore, a more precise assessment of validity needs to be devised. When assessing reflective measurement model, internal consistency reliability must be established (Hair, Matthews, Matthews, & Sarstedt, 2017). Previously Cronbach alpha (a) was largely used for measuring internal consistency reliability. Using this approach for measuring internal consistency reliability was not without criticism, such as "Cronbach's alpha is riddled with problems stemming from unrealistic assumptions" (McNeish, 2018, p. 412). In the later understanding, Cronbach alpha (α) alone is not considered a satisfactory technique of measuring internal consistency reliability. An alternate measurement is used for this purpose, known as "omega reliability" or "composite reliability" (CR) (Hair et al., 2020). CR is a weighted measure and more precise than Cronbach's alpha (F., Sarstedt, & Ringle Christian, 2019). CR is recommended and more appropriate for internal consistency reliability because it considers the differential weights of indicators, whereas, Cronbach's alpha assigns equal indicator weights (Hair, Matthews, et al., 2017). Another consideration is that both Cronbach's alpha and CR use sum scores instead of construct scores. Therefore, Cronbach's alpha should be used as the lower limit of reliability because it underestimates the true reliability (Sijtsma, 2009) and CR should be used as the upper limit because of its tendency to overestimate the internal consistency reliability (Hair, Hult, et al., 2014).

A general rule of thumb for both Cronbach's alpha and CR is that their values should be above 0.70 and below 0.95 (Hair et al., 2020). Cronbach's alpha and CR are reported in table 5.6. The values for both Cronbach's alpha and CR are within the acceptable parameters (i.e.,>0.70; 0.95<), indicating adequate internal consistency reliability.

5.5.3 Convergent validity

Average variance extracted (AVE) is the metric used for measuring convergent validity. It was developed by Fornell and Larcker (1981) as a measure of total amount of variance that can be attributed to the construct with respect to the amount of variance attributed to the measurement error. The total observed variance consists of two parts, explained variance and unexplained variance. The unexplained variance is the measurement error, and the explained variance is the variance caused by the latent variable. AVE is the measure of "how much variance is shared by the construct's indicator in measurement model" (Sørensen & Slater, 2008, p. 203). In other words, it is the measure of error-free variance between a multi-item construct and its indicators. AVE is calculated by averaging the construct's indicator reliabilities, and the minimum acceptable value of AVE is 0.50 (Hair et al., 2020). It means that convergent validity is achieved when the construct shares an average of fifty percent variance of its indicator's sans measurement error.

The acceptable value for AVE is greater than 0.50 (Hair et al., 2020). The value of AVE above 0.50 indicates that the latent variable is responsible for more than fifty percent of the variance captured by the observed variable (Fornell & Larcker, 1981). The AVE values for all the constructs of the study were above the cutoff point of 0.50

except workplace creativity construct in the first run. One indicator (i.e., CR4) was dropped from the measurement model to achieve an appropriate level of AVE for workplace creativity. Table 5.6 presents the AVE level for all the constructs of the study with adequate internal consistency.

5.5.4 Discriminant validity

Discriminant validity is the degree to which constructs are distinctive from each other. The underlying assumption to discriminant validity is that if the latent construct is truly distinctive, then they should not be correlated (Duarte & Raposo, 2010). Discriminant validity is achieved when "shared variance within a construct (AVE) exceeds the shared variance between the construct" (Hair et al., 2020. p, 104). Discriminant validity is of particular importance as a mechanism for preventing multicollinearity in all types of research that involve latent variables. If the study is proceeded with without addressing the issue of discriminant validity, it will render the result of the study questionable and misleading (Hamid, Sami, & Sidek, 2017).

Typically three methods are used for assessing discriminant validity, cross-loadings (Hair, Hult, et al., 2014), Fornell-Larcker criteria (Fornell & Larcker, 1981), and Hetrotrait-monotrait (HTMT) ratio of correlation (Henseler, Ringle, & Sarstedt, 2015). Fornell-Larcker and cross-loadings have been generally the dominant method for assessing discriminant validity in SEM analysis (Henseler et al., 2015).

Cross-loadings also called the "item level discriminant validity," is the most liberal approach of measuring discriminant validity (Hair, Sarstedt, Ringle, & Mena, 2012). Discriminant validity as per cross-loading is established "when each measurement item correlates weakly with the all other constructs except for the one to which it is theoretically associated" (Gefen, Straub, & Boudreau, 2000, p. 193). Table 5.7 presents item-level cross-loadings. It is evident that the indicators' factor loadings on the

assigned constructs (construct dimensions) are higher as compared to other indicator's

factor loadings.

Items	RT	SA	IMP	BP	AM	CR	DL	MG	СМ
AL1	0.840	0.610	0.594	0.678	0.455	0.421	0.395	0.345	0.471
AL3	0.887	0.600	0.606	0.707	0.389	0.326	0.343	0.330	0.412
AL4	0.857	0.638	0.635	0.645	0.382	0.355	0.288	0.308	0.388
AL5	0.657	0.85	0.654	0.677	0.299	0.273	0.270	0.285	0.355
AL6	0.594	0.878	0.615	0.65	0.376	0.317	0.331	0.379	0.410
AL7	0.601	0.863	0.693	0.653	0.370	0.311	0.323	0.376	0.387
AL8	0.538	0.608	0.795	0.567	0.367	0.260	0.333	0.329	0.394
AL9	0.596	0.684	0.868	0.658	0.345	0.315	0.297	0.341	0.358
AL10	0.463	0.458	0.708	0.475	0.191	0.200	0.18	0.204	0.224
AL11	0.626	0.615	0.772	0.700	0.435	0.348	0.402	0.429	0.434
AL12	0.504	0.560	0.642	0.768	0.351	0.336	0.284	0.332	0.339
AL13	0.588	0.615	0.610	0.807	0.359	0.314	0.328	0.344	0.423
AL14	0.691	0.648	0.614	0.810	0.389	0.345	0.278	0.291	0.366
AL2	0.649	0.542	0.519	0.713	0.319	0.294	0.242	0.270	0.358
AU1	0.336	0.243	0.276	0.287	0.779	0.461	0.466	0.455	0.481
AU2	0.315	0.264	0.318	0.308	0.802	0.412	0.423	0.447	0.551
AU3	0.326	0.291	0.308	0.330	0.779	0.380	0.413	0.427	0.481
AU4	0.379	0.365	0.341	0.380	0.783	0.369	0.357	0.391	0.436
AU5	0.407	0.356	0.358	0.390	0.836	0.469	0.374	0.413	0.498
AU6	0.497	0.412	0.463	0.493	0.831	0.512	0.482	0.498	0.548
CR1	0.371	0.297	0.305	0.351	0.366	0.721	0.361	0.365	0.377
CR2	0.272	0.255	0.256	0.301	0.387	0.691	0.227	0.299	0.362
CR3	0.276	0.220	0.260	0.282	0.376	0.675	0.243	0.287	0.282
CR5	0.303	0.213	0.201	0.279	0.355	0.657	0.340	0.285	0.345
CR6	0.303	0.255	0.244	0.282	0.433	0.736	0.379	0.410	0.366
CR7	0.335	0.233	0.266	0.265	0.399	0.750	0.287	0.316	0.375
CR8	0.301	0.290	0.301	0.336	0.431	0.750	0.345	0.365	0.329
CR9	0.262	0.207	0.217	0.272	0.337	0.697	0.237	0.252	0.260
PM1	0.247	0.268	0.290	0.243	0.342	0.205	0.741	0.492	0.411
PM2	0.292	0.290	0.285	0.285	0.399	0.244	0.748	0.508	0.435
PM3	0.296	0.247	0.302	0.246	0.349	0.294	0.747	0.512	0.388
PM4	0.345	0.275	0.343	0.253	0.429	0.361	0.803	0.552	0.406
PM5	0.216	0.173	0.218	0.183	0.323	0.330	0.650	0.441	0.356
PM6	0.335	0.316	0.348	0.358	0.427	0.363	0.797	0.605	0.449
PM7	0.309	0.268	0.273	0.307	0.429	0.398	0.796	0.644	0.444
PM8	0.336	0.299	0.295	0.311	0.456	0.374	0.739	0.621	0.389
PM9	0.329	0.364	0.335	0.313	0.473	0.346	0.615	0.772	0.398
PM11	0.286	0.312	0.326	0.347	0.476	0.345	0.611	0.823	0.466
PM12	0.319	0.323	0.337	0.319	0.487	0.389	0.618	0.842	0.457

Table 5.7 : Cross loadings

Table 5.7 Continued

PM13	0.264	0.281	0.323	0.313	0.435	0.406	0.604	0.849	0.457
PM14	0.315	0.298	0.332	0.310	0.398	0.358	0.588	0.801	0.475
PM16	0.291	0.334	0.355	0.280	0.293	0.315	0.359	0.599	0.367
CM1	0.491	0.444	0.454	0.479	0.625	0.476	0.544	0.557	1.000
Note: RT is relational transparency, SA is self-awareness, IMP is internal moral perspective, BP is									
balanced processing, AM is autonomous motivation, DL is desire to learn, , MG is mastery goals, and CM									
is job com	is job complexity								

It was reported by Hair, Sarstedt, Pieper, and Ringle (2012) that more than two third of the articles in marketing studies were using Fornell & Larcker criteria of discriminant validity. Fornell and Larcker (1981) argue that a latent construct can be deemed distinct if it is responsible for more variance in its assigned indicators than its shared variance with other constructs of the model. Fornell & Larcker criteria is satisfied by comparing the AVE of each construct with the squared correlations of other construct of the model. If AVE is greater than the squared correlations then Fornell & Larcker criteria holds (Fornell & Larcker, 1981). Fornell & Larcker criteria of discriminant validity is not without its criticism. It has been criticized for its lack of sensitivity when performing a PLS-SEM analysis (Rönkkö & Evermann, 2013). Table 5.8 contain Fornell-Larcker test.

	Authentic	Autonomous	Workplace	Job	Personal			
	Leadership	Motivation	Creativity	Complexity	Mastery			
Authentic	0.889							
Leadership								
Autonomous	0.492	0.802						
Motivation								
Workplace	0.433	0.545	0.710					
Creativity								
Job	0.521	0.625	0.476	1.00				
Complexity								
Personal	0.465	0.578	0.477	0.592	0.930			
Mastery								
Note: Square root of average variance extracted (SQRT-AVE) are shown in the bold on								
the diagonal line, whereas other entries are intercorrelation of constructs.								

Table 5.8 : Fornell-Larcker test for discriminant validity

HTMT is a new method for testing discriminant validity. Henseler et al. (2015) proposed that HTMT is a more sensitive test for assessing discriminant validity. In a Monte Carlo simulation, they found that HTMT has a sensitivity rate of 97 to 99 percent as compared to cross-loadings (0 %) and Fornell & Larcker criteria (20.82 Testing discriminant validity using HTMT is recommended in SEM application (Hair et al., 2020). The cut off values for HTMT ratio are recommended at ranging from 0.85 to 0.90 (Hair et al., 2020). Additionally, it was recommended to use confidence intervals as an additional significance test for further assessing HTMT ratio (Franke & Sarstedt, 2019). The confidence intervals can be obtained using bootstrapping procedure. If the confidence intervals straddle the value of 1 between them it indicates a lack of discriminant validity (Henseler et al., 2015). HTMT ratios are presented in table 5.9. The values of HTMT for all the constructs are below the cut off values of 0.85 and bias corrected intervals do not straddle the value of 1 between them indicating adequate discriminant validity as per HTMT criteria. It is evident from HTMT ratios presented in Table 5.9 that neither of the HTMT ratios are above the cutoff point of 0.85 nor the lower limit and upper limit of confidence intervals straddle the value of 1 between them, indicating sufficient discriminant validity among constructs of the model.

	Authentic	Autonomous	Workplace	Job	Personal			
	Leadership	Motivation	Creativity	Complexity	Mastery			
Authentic								
Leadership								
Autonomous	0.54							
Motivation	(0.435, 0.643)							
Workplace	0.486	0.616						
Creativity	(0.362,0.590)	(0.510, 0.722)						
Job	0.544	0.660	0.512					
Complexity	(0.434,0.639)	(0.584, 0.732)	(0.404, 0.615)					
Personal	0.529	0.664	0.557	0.645				
Mastery	(0.401, 0.646)	(0.568, 0.744)	(0.441, 0.667)	(0.546, 0.730)				
Note: Values in parenthesis contain bootstrap bias-corrected (95%) confidence interval								
(LL,UL) at 0.05 significance level. All values in bold represent HTMT ratio of								
correlations (HTMT 0.85).								

 Table 5.9 : HTMT ratio

5.6 Multicollinearity

Structural model evaluation relies on multiple regression analysis, therefore, high multicollinearity is a concern that needs to be addressed before proceeding forward with structural model analysis (Hair et al., 2020). Collinearity indicates that two variables are perfect linear combination of each other. Multicollinearity in a regression model occurs when the latent exogeneous variables have correlations of sufficient magnitude with each other (Young, 2017). Multicollinearity can lead to inflation/deflation of beta coefficients and standard errors (Mason & Perreault, 1991). Hair et al. (2020) suggest two methods for detecting multicollinearity when performing PLS-SEM analysis, Variance inflation factor (VIF) values, and bivariate correlations. VIF is an index for measuring the inflation of regression coefficient as a result of multicollinearity. VIF is a widely used tool for identifying the amount of collinearity among regressor variables (Shieh, 2011). This study used the value of VIF to calculate multicollinearity. Table 5.10 presents the VIF values for the constructs. All of the values are below the VIF threshold of 3.0 indicating the absence of multicollinearity (Hair et al., 2020).

Variable	VIF
Authentic leadership	1.447
Autonomous motivation	1.000
Job complexity	1.746
Personal Mastery	1.624

5.7 Common method Variance

Common method variance (CMV) can be defined as "variance attributable to measurement method rather than to the construct of interest" (Bagozzi & Yi, 1990). There is a wide belief among social science researchers that CMV is a potential problem when all the variables have been rated by a single respondent. CMV in single source

data "is often a problem and researchers need to do whatever they can do to control for it" (Podsakoff et al., 2003, p. 900). CMV can inflate or deflate the relationship between two constructs compared to the true values, caused by the covariance due to adopted measurement approach (Rönkkö & Ylitalo, 2011). Minimizing the effect of CMV needs a comprehensive strategy that is initiated from study design and continued throughout the data collection. And also can be dealt with through statistical strategies after data collection is completed. Podsakoff et al. (2003) categorize the method for controlling CMV into following categories: 1) Harman's single factor; 2) Partial correlation procedures; 3) various method factor designs; 4) Correlated uniqueness model; 5) Direct product model.

Single factor tests (e.g., Harman's single factors test) have been criticized for its low sensitivity for detecting CMV (see Podsakoff, MacKenzie, & Podsakoff, 2012). While method factors design cannot be used in PLS because of the design limitations at measurement model specification stage, measurement error considerations, and measurement theory difficulties (Rönkkö & Ylitalo, 2011). Both Harman's single factor and marker variable has remained the dominant methods of choice for detecting CMV in the business research (Tehseen, Ramayah, & Sajilan, 2017). Marker variable technique was used in this study for detecting and controlling for CMV along with other design level steps. Marker variable is specifically designed PLS-based technique for detecting and measuring CMV. Marker Variable is a partial correlation procedure that include defining a marker variable a priori to data collection. When included in the construct correlations matrix, marker correlation can single out the correlation caused solely by the method variance. A priori Marker variable was chosen instead of measured method effect and general factor score due to its suitability in PLS based environment (Rönkkö & Ylitalo, 2011).

For minimizing the effect of CMV in this study, both procedural and statistical controls procedures were used. First, different types of behavioral anchors were used for measuring dependent and independent variables in order to discourage the response consistency. A statement of anonymity was included at the beginning of the study to minimize the social desirability bias. No personal data was asked from the respondents through which the respondents can be identified. This served as another attempt to control for measured method effect (i.e. social desirability bias). A marker variable was included in the questionnaire to be later used for detecting CMV.

A theoretically unrelated construct with the substantive variables of the study, "attitude towards color blue" was selected because it was specifically designed to serve as a marker variable (Simmering, Fuller, Richardson, Ocal, & Atinc, 2015). The procedure adopted for detecting the CMV was as follows. First base line model was analyzed without controlling for method variance. Next marker variable was included as predictor with all the endogenous constructs of the study. The modified model that includes marker variable was analyzed again. Calculate the Value of R² for the inner model analysis. The results of modified model show that there was no significant difference (i.e., R² autonomous motivation = 0.477 (before and after); R² workplace creativity = 0.298 (before and after)) between the R² after introducing the marker variable, indicating the absence of CMV. Path coefficients for the marker variable were also insignificant (blue \rightarrow autonomous motivation = 0.021; p>0.05; blue \rightarrow workplace creativity = -0.011; p>0.05).

Likewise, full collinearity test was also performed as an additional measure for detecting common method bias. Kock (2015) devised this method of full collinearity "as a comprehensive procedure for the simultaneous assessment of both vertical and lateral collinearity" (p. 7). Full collinearity method is a potent method of detecting common

method bias and was successful in detecting common method bias in situations where confirmation factor failed to detect it (Kock, 2015). The results of full collinearity test suggest that common method bias was not a problem in the study data as levels of VIF were below the desire level (i.e., VIF ≤ 3.3).

5.8 Control variable

The central pillar of any type of research is to isolate the factors influencing the phenomena of interest and at the same time control for the effect of any other extraneous variables that may influence the under-investigation relationship. Statistical control of non-focal variables is a viable and widely practiced exercise among organizational behavior researchers. Including control variable in the study model is considered a safe and statistically conservative practice based on the principle of "purification" (Carlson & Wu, 2012). This study used years of experience and education level as control variables as age, tenure (years of experience), gender, and education level are commonly used control variables in organizational behavior research (Bernerth & Aguinis, 2016). Years of experience and education has previously shown to have a relationship with workplace creativity (Dong, Bartol, Zhang, & Li, 2017; Setiawan, 2017), therefore, these control variables were used in order to rule out the variance in the dependent variable beyond independent variables of the study. The plausible logical explanation for including education level is that education stimulates and facilitates creative problem solving processes (VanTassel-Baska & Stambaugh, 2006) and it provides with the flexibility and dexterity to integrate knowledge across diverse domains for a given situation (Tan, Teo, & Chye, 2009). Experience has complex relationship with creativity in the literature (Simonton, 2004a). Mainly two explanations are given for this complex relationship. First, it is suggested that as the employee matures in the job he becomes less enthusiastic and avoids trying novel and nontraditional solutions to problems (Alsrour & Al-Oweidi, 2013). Second, employees

with more accumulated knowledge are more adequately equipped for responding to different circumstances (Tien, Chang, & Kuo, 2019). Age and gender were not used as control variable because the underpinning theory of the study (i.e., self-determination theory) states that basic psychological needs are universal among all genders and age groups. Multiple regression is a useful tool when assessing the effect of more than one control variables on a given relationship between two variables. But SEM offers the advantage of including both measurement and structural model in the analysis (Spector, 2020). The results show that level of education, years of experience, age and gender have a minimal effect on the value of R^2 when included in the model (i.e., education level = 0.03; years of experience = 0.03; age = 0.02; gender = 0.03). As all these control variables did not have any significant effect and did not change the results, they were removed from the model, and base line model was retained for further analysis.

5.9 Structural model

The second part of a PLS-SEM model is also referred to as "path model" or "inner model" or "structural model". The structural model represents the "association between the LVs (latent variables) as linear equation system" (Lohmoller, 1988, p. 125). Once the reliability and validity are ensure in the measurement model, then structural model should be proceeded (Hair et al., 2011). Measurement model is the relationship between the indicators, and structural model specifies the relationship between the constructs of the SEM model. Structural model specifies the direction of the relationship between constructs. Structural model comprises of endogenous variable and exogenous variable and the relationship between these variables. Exogenous variables are independent variables and are note explained by any other construct of the study, whereas endogenous variables are explained by the exogeneous variables of the model. One general assumption of the PLS-SEM structural model is the linearity of the relationship between constructs of the model (Henseler, Hubona, & Ray Pauline, 2016). Two stage approach was used for testing the structural model and hypothesis testing. Latent variable scores from the stage one were used in the second stage (Sarstedt, Hair, Cheah, Becker, & Ringle, 2019). Structural model parameters were obtained using 4999 bootstrap subsamples. Figure 1 shows the first stage PLS-SEM model with indicator loadings for the dimensions of the constructs. Figure 5.2 shows the second stage PLS-SEM model where dimensions are treated as indicators for the latent constructs.



Figure 5-1 : SmartPLS first stage analysis



Figure 5-2 : PLS second stage analysis

5.9.1 Path coefficients

One it has been decided that collinearity is not a problem path coefficients can be proceeded with (Hair et al., 2020). Empirical research is usually interested in the size and significance of the relationship between the constructs. These relationships are called path coefficients. Path coefficients are standardized regression coefficients in PLS-SEM model. Path coefficients are the strength and direction of the relationships between constructs (Vinzi, Trinchera, & Amato, 2010). Table 5.11 present the path coefficients, and the confidence intervals. The recommended size of 4999 bootstrap samples was used (2-tailed) (Henseler, 2017). Path coefficients are interpreted as the change in the dependent variable as a result of one unit change in independent variable when all other independent variables are held constant (Henseler et al., 2016). The closer the value of path coefficient to 1 the stronger it has a role in predicting the dependent variable. And the closer its values is to 0 the weaker it is considered in predicting the endogenous variable (Hair et al., 2020). Table 5.11 shows the values of path coefficients and associated p-values and confidence intervals. All the p-values are below the defined α -level and confidence intervals do not straddle a 0 between them indicating the significance of all path coefficients.

Table 5.11 : Path coefficients

Predictor		Predicted	Path (β)	Confidence	
				interval	
Authentic leadership	\rightarrow	Autonomous motivation	0.169*	0.062, 0.274	
Personal mastery	\rightarrow	Autonomous motivation	0.279**	0.174, 0.387	
Job complexity	\rightarrow	Autonomous motivation	0.372**	0.268, 0.465	
Autonomous motivation	\rightarrow	Workplace creativity	0.545**	0.455, 0.633	
* p < 0.05, ** p <.001					

5.9.2 Coefficient of determination (R²)

Once the path coefficients are examined for significance, the next step is to determine the coefficient of determination or the value of R^2 . Coefficient of determination is "a measure of in-sample prediction of all endogenous constructs" (Hair et al., 2020, p. 106-7). It is the amount of total variability in the dependent variable caused by the independent variables. R^2 score is used for measuring the model's predictive accuracy (Ramayah et al., 2016) and it is the most frequently used measurement for accessing structural model predictive accuracy. Scores of R^2 vary between 0 and 1, higher the score the higher the model's predictive accuracy. One important point regarding R^2 is that it is a measure of model's predictability for the study sample, therefore, the value of R^2 should not be generalized to the whole population outside the study sample (Sarstedt, Ringle, Henseler, & Hair, 2014). The value of R^2 as a measure of model's predictability have been embraced across many disciplines. But the for achieving a minimum explanatory power the value of R^2 should be above a certain level (Urbach & Ahlemann, 2010).

Literature suggests different rules of thumb for interpreting the value of R^2 . Cohen (1988) suggest the value of R^2 at 0.26, 0.13, 0.02 as substantial, moderate, and weak respectively. The value of R^2 for workplace creativity is 0.298 and can be deemed as substantial. It means that 29.8 percent of the variance in workplace creativity was due to authentic leadership, personal mastery, job complexity, and autonomous motivation combined. In other words, the exogenous variables are responsible for substantial variance in workplace creativity. The value of R^2 for autonomous motivation stood at 0.477 and can be construed as substantial as per the above criterion. It signifies that a total of 47.7 percent of the variance is accounted for due to exogenous variables (i.e., authentic leadership, personal mastery, job complexity). Another rule of thumb by (Hair, Hult, et al., 2014) suggests values of R^2 at 0.75 = substantial, 0.50 = moderate

and 0.25 = weak. As per this criterion the value of R² for workplace creativity can be termed as weak and moderate for autonomous motivation. However, Wooldridge (2015) argues that it is usual for R² to have lower values in social sciences when analyzing regression equations in cross-sectional studies and such lower values of R² cannot be deemed useless outrightly. Table 5.13 presents the results of R² for the endogenous variables of the study.

Stone-Geissier (Q2) index score was used to test the predictive relevance of the study model. Q2 index assesses if the data points of indicators in a reflective measurement model of an endogenous construct can be predicted accurately (Geisser, 1975). Stone-Geissier index for predictive relevance can be accessed using blindfolding procedure in SmartPLS. Blindfolding technique systematically removes and predict data points of indicators in the reflective measurement model of endogenous construct, then the original values are compared with the predicted values to assess if the model has predictive accuracy (Ramayah et al., 2016). The data points are removed based on the omission distance or the value of D during the blindfolding procedure. The value of D can be any number between 5 and 12 (Chin, 2010), given the reminder is a round number after sample size is divided with the omission distance. The blindfolding procedure for this study was conducted using cross-validating redundancy method as recommended in the literature (Sarstedt, Ringle, Smith, Reams, & Hair, 2014). Omission distances for blindfolding were kept at 9 for the procedure. the value of Stone-Gessier (O2) for workplace creativity and autonomous motivation was 0.137 and 0.284 respectively. Both the values are positive and greater than zero, indicating adequate predictive relevance of the study model (Hair, Hult, et al., 2017). Table 5.13 shows the values of Q2 against the respective endogenous constructs.

Next, the effect size (Cohen's f^2) was calculated. Cohen's f^2 is used to determine the relative impact of a predictor construct on the endogenous variable in terms of \mathbb{R}^2 (Cohen, 1988). The value of f^2 is calculated by comparing the value of \mathbb{R}^2 , when one of the predictor constructs is removed from the model. The difference in the value of \mathbb{R}^2 with and without the predictor construct is the effect size of that construct. Values of f^2 at 0.02, 0.15, 0.35 are interpreted as weak, medium, and large (Cohen, 1988). SmartPLS software package provides a report of the effect size in its outputs. Table 5.13 presents the values of f^2 as an index of effect size. The value of f^2 for authentic leadership, personal mastery, and job complexity were 0.038, 0.092, and 0.151 respectively when autonomous motivation was the endogenous construct. The effect size can be construed weak for authentic leadership and personal mastery, and medium for job complexity in explain the value of \mathbb{R}^2 for autonomous motivation. Furthermore, the value of f^2 for autonomous motivation was 0.424 when workplace creativity was endogenous construct. Meaning that autonomous motivation's contribution is of medium strength when explaining the value of \mathbb{R}^2 for workplace creativity.

In addition to R^2 and Q^2 , PLS predict was used to determine the predictive performance of the study model. Predictive performance denotes that degree to which a given set of constructs can predict an exogenous variable (Shmueli, Ray, Velasquez Estrada, & Chatla, 2016). For determining out of sample predictive power procedures laid down by Hair, Risher, et al. (2019) was followed. Table 5.12 presents the results of the PLS predict analysis. Shmueli et al. (2016) suggest using k = 10 (k = number of fold cross validation) subgroups for PLS predict settings. The prediction error distributions were observed first in order to select the appropriate type of prediction statistics. Prediction error distributions for the exogenous variables' indicators were found to be highly non-symmetrical therefore, Mean absolute error (MAE) was chosen as prediction statistics. Mean absolute error (MAE) measures the average magnitude of the errors in a set of prediction without considering their direction (over or under). That means MAE is the average absolute difference between the predictions and the actual observations, with all the individual differences having equal weights. As per the evaluation criteria that if minority of the exogenous variable indicators in PLS predict analysis have greater prediction error in comparison with naïve LM scores, this points towards a medium predictive power (Hair, Risher, et al., 2019). When the value of PLS MAE were compared with LM MAE (linear model) it was found that majority of LM MAE > PLS MAE. As shown in the table 5.12 ten indicators out of fourteen yielded greater prediction errors indicating a medium predictive power of the study model for autonomous motivation and workplace creativity. Similarly, the corresponding Q^2 predict for outcome variables stood at 0.462 for autonomous motivation and 0.27 for creativity. Since the value of Q^2 for both the exogenous variables is above the value of 0 suggesting adequate predictive relevance.

5.9.3 The importance-performance map analysis (IPMA)

The importance-performance map analysis (IPMA) extends the results of PLS-SEM by also taking the performance of each construct into account. As a result, conclusions can be drawn on two dimensions (i.e., both importance and performance), which is particularly important in order to prioritize managerial actions (Hock, Ringle, & Sarstedt, 2010). IPMA differs from PLS-SEM results as it does not display the values of R^2 values of the endogenous latent variables in the PLS-SEM path models, instead it displays the performance values of each latent variables. Another important aspect of IPMA is that it shows the unstandardized and rescaled outer weights of the measurement models regardless if they are formative or reflective instead of displaying the standardized outer loadings or weights.

Importance performance analysis (IPMA) at construct level was conducted to determine the importance of three constructs that is, autonomous motivation as a direct predictor and authentic leadership, personal mastery, and job complexity as indirect predictors. The study follows the guidelines by Ringle and Sarstedt (2016) for performing IPMA. Before the actual IPMA, requirements for IPMA were checked. All the indicators had same scale direction, therefore no need to reverse code any of the construct. Outer weight estimates were positive and significant. The target construct was workplace creativity (63.147). The results show that autonomous motivation (03.27) was the most useful of all the constructs for autonomous motivation. It was not surprising to the direct predictor autonomous motivation has particularly high importance than indirect predictors as per the theoretical assumptions of the study. SDT suggests that autonomous motivation is proximal variable through which other variables influence the outcome. When comparing indirect predictors with each other, it was found that personal mastery (0.17) is considerably prominent among the indirect predictors such as authentic leadership (0.082) and job complexity (0.11). Table 5.12 contain the IPMA results, and figure () shows the graphical presentation of construct level importance and performance for workplace creativity.

	Importance	Performance
Autonomous motivation	0.327	68.519
Authentic leadership	0.082	67.424
Personal mastery	0.171	69.686
Job complexity	0.11	64.44
Mean Values	0.1725	67.51725

 Table 5.12: Importance performance map analysis (IPMA)

		Cor	nstruct prediction s	ummary					
	O ² predict								
Autonomous 1	motivation	0.4	62						
Creativity		0.2	7						
	Indicators prediction summary								
	PLS M	AE	LM MAE	Q ² _predict	Diff				
AU4	1.009		1.052	0.235	-0.043				
AU5	U5 0.927		0.956	0.282	-0.029				
AU2	0.825		0.854	0.316	-0.029				
AU6	0.903		0.896	0.392	0.007				
AU1	.0774		0.789	0.282	-0.015				
AU3	AU3 0.868		0.908	0.27	-0.04				
CR3	CR3 0.663		0.356	0.104	-0.026				
CR1	CR1 0.64		0.661	0.17	-00.21				
CR5	R5 0.646		0.692	0.13	-0.046				
CR2	CR2 0.667		0.683	0.129	-0.016				
CR9	CR9 0.787		0.775	0.093	0.012				
CR7	CR7 0.691		0.678	0.148	0.004				
CR8	0.678		0.668	0.153	0.01				
CR6	CR6 0.608		0.631	0.166	-0.023				

Table 5.12 : Construct prediction summary

5.10 Hypotheses testing

While testing for hypothesis, all the uni-direction relationship were supported such that hypothesis one (H1) authentic leadership positively predicts autonomous motivation (authentic leadership \rightarrow autonomous motivation; $\beta = 0.169$; p <0.05; t-value = 3.156; 95%; CI [0.064, 0.272]). In other words, authentic leadership is responsible for 16.9 percent variance in autonomous motivation. Likewise, personal mastery positively predicts autonomous motivation (personal mastery \rightarrow autonomous motivation; $\beta = 0.279$; p <0.05; t-value = 4.967; 95%; CI [0.166, 0.390]), and also job complexity significantly predicts autonomous motivation (job complexity \rightarrow autonomous motivation; $\beta = 0.372$; p <0.05; t-value = 7.293; 95%; CI [0.263, 0.468]), thus, hypothesis H2 and H3 were supported. It means personal mastery and job complexity explain 27.9 percent and 37.2 percent of variance in autonomous motivation respectively. Hypothesis four (H4) was also supported as autonomous motivation positively predicts workplace creativity (autonomous motivation \rightarrow workplace creativity; $\beta = 0.545$; p <0.05; t-value = 11.564; 95%; CI [0.451, 0.636]). In other words, autonomous motivation is responsible for more than half (i.e., 54.5 %) of the variance in workplace creativity.

5.11 Mediation analysis

The indirect relationship between exogenous variable and endogenous variable are tested using mediation analysis technique (Henseler, Ringle Christian, & Sinkovics Rudolf, 2009). The central assumption of mediation analysis is that there is a significant relationship between the independent variable and outcome variable transmitted through a mediating variable. The mediation process is an important concept that is aimed at understanding the underlying process of empirical phenomenon. It is necessarily a process that determines the link between the causal chain of two latent variables (Fiedler et al., 2011). This section tests the indirect relationship between the endogenous variables (authentic leadership, personal mastery, job complexity) and the endogenous variable (workplace creativity) mediated by the process variable (autonomous motivation). Literature delineates different mediation techniques. Piecemeal or casual steps approach is a famous mediation analysis technique. Causal steps approach has been subject to criticism in a significant body of literature (see Preacher, Rucker, & Hayes, 2007; Zhao et al., 2010). One of the most important criticisms of piecemeal approach is that it requires a significant relationship between independent and dependent variable, if there is no significant relationship between independent and dependent variable, mediation is considered unmaintainable. Such prerequisites for mediation are flawed both logically and statistically (Preacher et al., 2007). In this study approach recommended by Hayes (2013) and does not test for partial or full mediation.

When investigating the mediation process due diligence should be exercised and the logical basis on which the mediation process is based, should be backed by solid theoretical reasoning. The mediation process for the study is based on the selfdetermination theory (Deci & Ryan, 1985b) which provided the bases for the indirect relationship between the personal and environmental factors with workplace creativity with a unique type of motivation (i.e. autonomous motivation). When testing for mediation effect in PLS-SEM, bootstrap should be used for sampling distributions, specifically, bias-corrected bootstrapping is a powerful technique for detecting mediation (Memon et al., 2018; Nitzl et al., 2016). This study used 4999 bootstrap subsamples for mediation analysis.

All three mediation hypotheses H5, H6, and H7 were supported such that, H5, autonomous motivation mediates the relationship between authentic leadership and workplace creativity (authentic leadership \rightarrow autonomous motivation \rightarrow workplace creativity; $\beta = 0.092$; p <0.05; t-value = 2.885; 95%; CI [0.033, 0.158]). Similarly, H6, autonomous motivation significantly mediates the relationship between personal mastery and workplace creativity (personal mastery \rightarrow autonomous motivation \rightarrow workplace creativity; $\beta = 0.152$; p <0.05; t-value = 4.643; 95%; CI [0.091, 0.220]). H7 was also supported that the relationship between job complexity and workplace creativity was mediated by autonomous motivation (job complexity \rightarrow autonomous motivation \rightarrow workplace creativity; $\beta = 0.203$; p <0.05; t-value = 5.940; 95%; CI [0.137, 0.272]). Table 5.12 presents a summary of the hypotheses' decisions. Table 5.13 provides the hypotheses testing result.



Figure 5-3 : Hypotheses visualized.



Figure 5-4 : IPMA

Table 5.13 : Hypothesis Decisions

	Hypothesis statement	Decision
H1	Authentic leadership positively affects autonomous motivation.	Supported
H2	Personal mastery positively affects autonomous motivation.	Supported
H3	Job complexity has a positive relation with autonomous motivation.	Supported
H4	Autonomous motivation positively affects employee creative behavior.	Supported
H5	Autonomous motivation mediates the relationship between authentic leadership and employee creative behavior.	Supported
H6	Autonomous motivation mediates the relationship between personal mastery and workplace creativity.	Supported
H7	Autonomous motivation mediates the relationship between job complexity and workplace creativity.	Supported

Table 5.14 : Hypothesis testing results

	Relationship	β	SE	<i>t</i> -value	CI-LL	CI-UL	Decision	\mathbb{R}^2	Q2	f^2
H1	AL→AM	0.169	0.054	3.156	0.064	0.272	Supported	0.477	0.284	0.038
H2	PM→AM	0.279	0.056	4.967	0.166	0.390	Supported	-	-	0.092
H3	JC→AM	0.372	0.051	7.293	0.263	0.468	Supported	-	-	0.151
H4	AM→CR	0.545	0.047	11.564	0.451	0.636	Supported	0.298	0.137	0.424
H5	AL→AM→CR	0.092	0.032	2.885	0.033	0.158	Supported	-	-	-
H6	PM→AM→CR	0.152	0.033	4.643	0.091	0.220	Supported	-	-	-
H7	JC→AM→CR	0.203	0.034	5.940	0.137	0.272	Supported	-	-	-
Note: AL is authentic leadership, AM is autonomous motivation, PM is personal mastery, JC is job complexity, CR is workplace creativity										

5.12 Chapter summary

In this chapter, SmartPLS software package was used to analyze the data. The latent variables of authentic leadership, personal mastery, job complexity and workplace creativity were analyzed using the two-step approach. In the first step, measurement model for all the latent variables of the study demonstrated adequate validity, reliability and internal consistency. Also, the measurement model showed acceptable convergent and discriminant validity. In the second step, structural model assessment exhibited satisfactory results. When analyzing the effect of independent variables of authentic leadership, personal mastery, and job complexity on workplace creativity through autonomous motivation following observations were made.

The direct relationships between all the exogenous variables (authentic leadership, personal mastery, job complexity, and autonomous motivation) with endogenous variables (workplace creativity) were significant and meaningful. Likewise, the theorized mediation relationships for all three endogenous variables (authentic leadership, personal mastery, and job complexity) were also significant.

CHAPTER 6: DISCUSION AND CONCLUSION

6.1 Introduction

This chapter discusses the findings derived in chapter five and presents the discussion of the hypotheses based on the research questions outlined in chapter three. The first section of the chapter provides an overview of the research. In the next section, findings of the study are examined in light of the existing literature and if they are consistent or inconsistent with the previous studies. In section three, the theoretical and practical implications of the study are discussed. Section four delineates the limitations of the study. The last section highlights the future research directions, and a brief conclusion ends the chapter.

6.2 Overview

Creativity is the ultimate economic resource (Florida, 2010). Organizations, businesses, and even nations can gain and maintain competitive advantage with the help of creativity (Anderson et al., 2014). A great amount of emphasis is placed on creativity in modern times as it is considered the key element for organizational survival (Magadley & Birdi, 2009). The source of creativity for an organization is its employees. It is the employees who are responsible for this precious resource (Oldham & Cummings, 1996). Creative employees not only contribute to organizational survival but also create value for the organization. Organizations need employees who can generate novel and useful ideas regarding products, services, processes, and procedures. Creativity research in the organizational setting has been going on since the 1950s. But it has accelerated in recent times, mainly due to the complexity of the environment in which organizations operate today (Runco, 2004b).

Previously, creativity was thought to be a personality attribute that cannot be manipulated (Batey & Furnham, 2006; Furnham & Bachtiar, 2008; Gough, 1979;

McCrae, 1987). Personality stream of research has not lost interest ever since (Zhang et al., 2020) and has proved to be a topic of timeless interest (Mammadov, 2020). Along with the personality stream, the researchers believed that there could be other factors responsible for inducing creative behavior in individuals as creativity cannot be restricted to just a personal quality. One important prerequisite was identified as the motivation for indulging in creative behavior, along with creativity and domain-specific skills (Amabile, 1983). Motivation was perhaps the most important factor serving as the driver for creative behavior, as identified in the componential model of creativity (Amabile, 1988). Then interactionist school of thought believes that multiple factors from the environment and personality inclinations can induce creative behavior (Woodman et al., 1993). So, the latest understanding is that creativity is not a result of one single factor, but it is produced due to multiple complicated interactions between factors from the environment and within the individual. This philosophy provides the basis for the current study.

The study's broader objectives were: 1) to identify the antecedents of employee creative behavior from the environment and personality sphere; 2) to examine the mediating role of autonomous motivation between environmental factors and personality inclinations and employee creative behavior. In pursuance of these objectives, a research model was developed on theoretical foundations of the self-determination theory (Deci & Ryan, 1985b). The study model was formed on the blueprint of the basic self-determination theory model (Deci et al., 2017), which posits that contextual factors from the environment and within the individual serve as need fulfillment and need thwarting mechanisms. In case of basic need fulfillment, these factors lead to a unique type of motivation called autonomous motivation, resulting in workplace behaviors like employee creative behavior. Two contextual factors from the environment (i.e. authentic leadership and job complexity) and one individual difference

(i.e. personal mastery) were identified. The reason for choosing two factors from the employee environment (one from the social context and one from job context) instead of one was because the research suggests that two elements can better explain employee outcomes than one factor (Chiaburu et al., 2013). Together these elements from the environment and within the individual are posited to results in autonomous motivation and further employee creative behavior. Furthermore, autonomous motivation is posited to serve the medium through which these factors influence employee creative behavior.

The basic theoretical model of self-determination theory was then used to construct a framework for the study, which further tests seven hypotheses to answer the study's research questions as follows.

- 1. What is the relationship between authentic leadership and autonomous motivation?
- 2. What is the relationship between personal mastery and autonomous motivation?
- 3. Does job complexity predict autonomous motivation?
- 4. What is the relationship between autonomous motivation and employee creative behavior?
- 5. Does autonomous motivation mediate the relationship between authentic leadership and employee creative behavior?
- 6. Does autonomous motivation mediate the relationship between personal mastery and employee creative behavior?
- 7. Does autonomous motivation mediate the relationship between job complexity and employee creative behavior?

Table 6.1 presents the summary of the hypotheses developed based on the research questions of the study.
Hypothesis statement		Decision
Direct relationships		
H1	Authentic leadership positively affects autonomous motivation.	Supported
H2	Personal mastery positively affects autonomous motivation.	Supported
H3	Job complexity has a positive relation with autonomous	Supported
	motivation.	
H4	Autonomous motivation positively affects employee creative	Supported
	behavior.	
Mediation		
H5	Autonomous motivation mediates the relationship between	Supported
	authentic leadership and employee creative behavior.	
H6	Autonomous motivation mediates the relationship between	Supported
	personal mastery and workplace creativity.	
H7	Autonomous motivation mediates the relationship between job	Supported
	complexity and workplace creativity.	

Table 6.1 : Hypothesis summary of employee creative behavior antecedents.

The first three and seventh hypotheses were related to the direct relationship between employee creative behavior and its antecedents. Based on the summary presented in table 6.1, authentic leadership positively predicts employee creative behavior, and findings also support the positive relationship between personal mastery and employee creative behavior. Likewise, job complexity positively affects employee creativity, and results also confirm that autonomous motivation positively predicts employee creative behavior.

The next three hypotheses (H₅, H₆, H₇) test the indirect relationship between three exogenous variables and employee creative behavior. As shown in the hypotheses summary (Table 6.1), the indirect relationship between authentic leadership and employee creative behavior through autonomous motivation is supported. The relationship between personal mastery and employee creativity through autonomous motivation was also significant hence supported. Furthermore, autonomous motivation mediates the relationship between job complexity and employee creative behavior.

Overall, the study results fully support the self-determination theory mechanism where environmental factors (social and job-related) and individual differences contribute to an individual's self-determination. In other words, when an individual is self-determined or autonomously motivated, he is more likely to exhibit creative behavior.

6.3 Discussion of the findings

6.3.1 Antecedents of the employee creative behavior

Research Question 1: What is the relationship between authentic leadership and autonomous motivation?

Structure, technology, culture, and strategy are a few of the most important aspects of an organization, but leadership is undoubtedly the most crucial influence. Leadership shapes the systems and pattern of authority that influence the core values of the organization. Like other organizational outcomes, leadership is the key influence on employees' willingness to engage in creative problem solving and their capability to exhibit creative behaviors (Mumford, Scott, Gaddis, & Strange, 2002). Formal leadership in organizations is associated with authority. A few of the characteristics of creative individuals, such as the need for autonomy, control over job-related decision making, high achievement need, and intrinsic motivation, do not apparently fall in line with the traditional view of authority and leadership (Hemlin, Allwood, Martin, & Mumford, 2013). Qualities of individual associated with creativity, such as professionalism, autonomy, and expertise, tend to neutralize the effect of leadership (Mumford et al., 2002). Leadership has been studied in detail with its relationship to follower's creativity, as it is the most important part of the employee environment and plays a critical role in shaping it (see Shalley & Gilson, 2004). Leaders influence their followers by exhibiting certain types of behaviors called leadership styles. Literature

suggests that different leadership styles have different types of relationship with employee creativity. For example, empowering leadership (Zhang & Bartol, 2010), transformational leadership (Koh, Lee, & Joshi, 2019; Rosing, Frese, & Bausch, 2011), Servant leadership (Yang et al., 2017).

Leadership's role in motivating the follower to attain organizational objectives is unmatchable (DuBrin, 2010). This study proposed that authentic leadership style can be the most effective style in autonomously motivating his followers. This postulation was based on the theoretical argument that the individual is autonomously motivated when acting as per his authentic values and interest. And authentic leaders provide an autonomy-supportive environment, listen to dissent, transparent flow of information is ensured, and the authentic values of leaders reverberate with the followers. It was expected that an authentic leadership style would positively affect his followers' autonomous motivation. The study confirms these theoretical assumptions. Based on study findings, it was observed that authentic leadership has a direct positive relationship with autonomous motivation ($\beta = 0.169$; p <0.05; t-value = 3.156; 95%; CI [0.064, 0.272]). A few previous studies like Ahmad, Zafar, and Shehzad (2015) have investigated authentic leadership's role in intrinsically motivating his followers in Pakistan's higher education sector employees. But to the best of our knowledge, the present study is the first to investigate the relationship between authentic leadership and autonomous motivation empirically. However, many researchers have suggested this relationship theoretically. For example, Ilies et al. (2005) suggest that authentic leadership promotes his followers' intrinsic motivation. Miniotaite and Buciuniene (2013) propose that an authentic leader facilitates extrinsic motivation's internalization, which may autonomously motivate his followers. An authentic leader is naturally leaned towards autonomous motivation. This can be gauged from the words of George, Sims, McLean, and Mayer (2007) that for an authentic leader, "the key is to find a balance

between your desires for external validation and the intrinsic motivation that provides fulfillment in your work" (p. 135).

The study confirms the hypothesized relationship. Therefore, the first research question met an expected answer, and the relationship as hypothesized, authentic leadership positively predicts employee creative behavior, supported.

Research Question 2: what is the relationship between personal mastery and autonomous motivation?

During the 20th century, creativity as a personality attribute had been explored to its length and breadth. Decades of research have documented the direct relationship between personality traits and creativity, be it creative personality (Gough, 1979), divergent thinking ability (McCrae, 1987), intelligence, or big-five personality traits (Furnham & Bachtiar, 2008). Stable personality traits have remained a curiosity ever since. Researchers have not lost interest in exploring different personality dispositions with creative behavior to date (e.g., Zhang et al., 2020). It is an evergreen research area in individual creativity domain (Mammadov, 2020).

However, the latest understanding about creativity is that it does not solely depend on biological personality characteristics, but rather on the interaction of certain cognitive and motivational personality traits coupled with a facilitating environment that induces creative behavior, i.e., the interactionist perspective (Woodman et al., 1993). Personality, no doubt, has an important role to play in the creative endeavor because personality traits lower the behavioral thresholds (Feist, 2010b). However, personality and motivation orientations are so entangled together that motivation is considered another layer of personality (John, Tanner, & Eric, 2013). When studying behavior in organization, motivational traits cannot be ignored. The motivational orientation of an individual affects his cognitive abilities, such as abstract thinking, reasoning, planning, comprehension, and problem-solving. The central tenet of this assumption is that individual differences in personality translate into differences in motivation, and subsequently, variance in desired behavior. Therefore, when studying creative and its motivational mechanisms, an individual's motivational orientation cannot be ignored. Motivational traits are "stable, trans-situational individual differences in preferences related to approach and avoidance of goal-directed effort expenditures" (Heggestad & Kanfer, 2000, p. 753). One of the motivational traits is personal mastery. It belongs to approach complex and underscores an individual's approach towards learning and skill acquisition. Motivational traits are an area that has been seldom explored in relation to creative behavior and how it affects the motivation of individuals for creative behavior. Therefore, one of the research questions was to test the relationship between personal mastery and autonomous motivation.

Individuals high on personal mastery orientation tend to be intrinsically motivated because of their high drive for learning and excellence, and their personality inclinations, when coupled with identified regulation, translate into autonomous form of motivation. Identified regulation is the form of motivation where behavior is voluntary but not originating from inside the individual but is performed because of its subjective value. Behavior resulting from identified regulation is considered important by the individual even though it is not enjoyable (Deci et al., 2017). Learning is a cognitive resource-intensive task and requires effort on the learner's part (Jalani & Sern, 2015), but individuals high on personal mastery tend to acquire new skills and knowledge because they want to achieve excellence. Hence, people with personal mastery orientation are intrinsically motivated and feel motivated because of the importance of the learning endeavor (i.e., identified regulation). This study proposed that individuals with personal mastery orientation are more likely to be autonomously motivated and

hypothesized that personal mastery positively predicts autonomous motivation. The results of the study confirm the hypothesized relationship ($\beta = 0.279$; p <0.05; t-value = 4.967; 95%; CI [0.166, 0.390]). The analysis of the findings demonstrated the theorized relationship could be verified empirically. This study was the first to investigate the said relationship. No other studies have investigated the relationship between personal mastery and autonomous motivation to the best of our knowledge.

There is a dearth of empirical studies investigating the relationship of motivational traits (e.g., personal mastery) with different behavioral outcomes. As rightly put by Kanfer and Heggestad (1997) that individual differences in motivational traits have been treated as "a distant and not well-liked relative attending a family reunion" (p. 13). One study was found to have linked personal mastery with identified regulation, where it was found that identified regulation was positively linked with personal mastery orientation and was a function of support for autonomy (Kim, Schallert, & Kim, 2010). However, a theoretically similar construct, "learning goal orientation," has previously been studied in relationship with different motivation types. Though learning goal orientation and personal mastery are conceptually different constructs as specified in chapter two, they share a good amount of similarities. Learning goal orientation has shown a positive relationship with intrinsic motivation (Leung, Chen, & Chen, 2014). In another study, learning goal orientation was moderating the relationship between task difficulty and intrinsic motivation (Steele-Johnson, Beauregard, Hoover, & Schmidt, 2000). Therefore, personal mastery being a similar theoretical construct having a positive relationship with autonomous motivation, is not beyond expectations.

Hence, it is confirmed that personal mastery orientation positively affects autonomous motivation, settling the second research question.

Research question 3: What is the relationship between job complexity and autonomous motivation?

Undoubtedly, work is the most salient part of an individual's adult life, spanning over most of his biological life, during which he learns, develops, and matures. Characteristics of work (i.e., the structure, content, and configuration of work) have a key contribution to employee experience of activity and task performance. It is a key driver to foundational outcomes like employee prosocial behavior, creativity, wellbeing, turnover, leader-follower relationship, and other voluntary and compulsory activities inside and outside the organization (Grant, 2012a; Kanfer et al., 2008). Routine work is uninteresting, monotonous, and unexciting compared to the work that offers greater skills and knowledge application (Parker, 2014).

In comparison with a simple job, a complex job widens the range of behaviors required for successful performance and encourages the application of greater cognitive inventory, which leads to creativity (Shalley & Gilson, 2004). The interlink between job complexity and motivation is visibly evident because complex jobs allow the performer to use skill variety, provide complete information about the task being performed, be viewed as impactful, give freedom to the performer, and remit feedback for the correct performance, hence containing all the ingredients of interesting and motivating work. Complex jobs are challenging, ambiguous, difficult, lack a formal structure, and require the application of sophisticated skills to perform (Humphrey, Nahrgang, & Morgeson, 2007), resembling problems requiring creative solutions.

Literature shows, jobs with complex characteristics have motivational consequences, particularly intrinsic motivation (Coelho & Augusto, 2010; Joo & Lim, 2009). It would not be wrong to say that jobs are more complex than they ever were. As discussed, complex jobs are challenging and require greater skills application. Especially jobs in

the information technology sector; they are complex, knowledge-intensive, and require diverse skill applications (Gu & Tong, 2004). Complex jobs are proposed to usher greater intrinsic motivation (Oldham & Cummings, 1996). Jabagi, Croteau, Audebrand Luc, and Marsan (2019) draw upon the self-determination theory and propose that creative professionals (virtual creative work based workers) may feel more intrinsically motivated when their work is complex and exciting, also, work with complex characteristics may allow for the fulfillment of basic psychological needs.

Consequently, based on the interlink between job complexity and motivation, we proposed that job complexity affects motivation positively, especially in the need-based environment as defined under self-determination theory. This study postulated that a complex job fulfills all three basic psychological needs (need for autonomy, competence, and relatedness) of an individual, making him self-determined or autonomously motivated. It is logical to see a link between job characteristics and motivation. However, investigating the relationship between a complex job and autonomous form of motivation was of particular importance. The main reason for exploring this relationship was to validate the self-determination perspective that environmental factors such as work characteristics lead to a self-determined form of motivation. Another reason was to build upon the existing evidence of the relationship between intrinsic motivation and job complexity and extend it further to autonomous motivation, which contains internalized elements of extrinsic motivation, lending support to the appropriate usage of extrinsic motivation. Based on the findings of the study, it was confirmed that job complexity positively predicts autonomous motivation $(\beta = 0.372; p < 0.05; t-value = 7.293; 95\%; CI [0.263, 0.468])$. In other words, the employees who have complex jobs as compared to routine jobs are more likely to feel autonomously motivated. Autonomous motivation is a combination of intrinsic, identified, and integrated regulation. The value of the path coefficient for job

complexity is $\beta = 0.372$, which means job complexity is responsible for 37 percent variance in autonomous motivation. When compared with other two exogenous variables of the study, authentic leadership ($\beta = 0.169$) and personal mastery ($\beta =$ 0.279), job complexity explains the largest amount of variance in autonomous motivation. These results indicate that the job characteristics have the largest contribution in autonomously motivating an individual, more than other environmental factors such as leadership and personality inclination. One possible explanation for this phenomenon could be that the work characteristics effectively fulfill an individual's basic psychological needs (need for autonomy, competence, and relatedness). This study's theorization of job complexity is based on the unweighted average index of job characteristics model of (Hackman & Oldham, 1975). Job characteristics include five job characteristics of skill variety, task identity, task significance, autonomy, and feedback. All these dimensions of the work can effectively fulfill an individual's basic psychological needs at work, helping him become self-determined or autonomously motivated. Since work-life makes up the major part of an individual's adult life, its dominant effect on individual self-determination is understandable.

The results of the study find favorable precedents in the literature for the intrinsic motivation part. For example, in a Korean study among diverse sectors (manufacturing, finance, construction, and trading), employees felt more intrinsically motivated when they had complex jobs (Joo & Lim, 2009). However, no study has so far explored the linkage between autonomous motivation with job complexity. This study is among the pioneers to produce evidence of the said relationship. The third research question finds that job complexity positively affects autonomous motivation.

Research Question 4: Does autonomous motivation predicts workplace creativity?

The interlink between motivation and creativity remains at the foundation of modern creativity research. Motivation is perhaps the instrumental concept which brought creativity out of the personality domain in the first place. Componential theory of creativity (Amabile, 1988) proposed that motivation is the primary driver for the individual's creative performance. However, it suggested only a specific type of motivation (intrinsic motivation) as the facilitator and the other type (extrinsic motivation) as the inhibitor of creative performance. Ever since, the debate about the efficacy of intrinsic motivation versus extrinsic motivation has brought forth many interesting perspectives about the nature of the relationship between motivation and creativity.

Intrinsic motivation was thought to be the only type of motivation that can facilitate creativity because creative performance is initiated from the inside and cannot be influenced from the outside (Amabile, 1988). Outside influences such as reward or punishment have controlling properties hence acting only to the detriment of creative performance (Amabile, 1998). The notion that intrinsic motivation is good and extrinsic motivation is bad for creativity held its ground for a long time, but the latest understanding suggests that both intrinsic and extrinsic motivation, when combined, can better explain employee creative behavior (Amabile & Pratt, 2016). Autonomous motivation is a unique type of motivation that encompasses elements of both intrinsic and extrinsic motivation, and integrated regulation. The concept of autonomous motivation is based on Self-determination theory (SDT) (Deci & Ryan, 1985b). SDT declassified the motivation from the classic intrinsic and extrinsic motivation dichotomy and explained that motivation is much more complex. SDT proposes that when an

individual's basic psychological needs (need for autonomy, relatedness, and competence are fulfilled, he becomes self-determined or autonomously motivated. An autonomously motivated individual is more likely to exhibit heuristic behaviors likes employee creativity (Gagné & Deci, 2005).

Based on these theoretical postulations, this study tested the relationship between autonomous motivation and workplace creativity such that autonomous motivation positively predicts creativity. The results suggest that autonomous motivation positively predicts creativity ($\beta = 0.545$; p < 0.05; t-value = 11.564; 95%; CI [0.451, 0.636]). By the effect of these results, it can be confirmed that autonomously motivated individuals are more likely to indulge in heuristic behaviors like workplace creativity. The relationship between intrinsic motivation and workplace creativity has been confirmed in various meta-analyses (e.g., da Costa et al., 2015; de Jesus, Rus, Lens, & Imaginário, 2013). While some other studies have recommended the usage of both intrinsic and extrinsic motivation to attain a synergistic effect for general performance enhancement, for example, a forty-year meta-analysis confirmed that intrinsic motivation was more closely linked with the jobs requiring more cognitive effort (i.e., creativity). In contrast, extrinsic motivation was instrumental in inducing performance on repetitive tasks and recommend a well-synchronized usage of both motivation types to achieve greater performance (Cerasoli et al., 2014). However, empirical studies linking autonomous motivation and workplace creativity are rare; for example, autonomous motivation was found to have a positive relationship with creativity among Chinese students (Liu et al., 2013). Another study among Chinese students found autonomous motivation and creativity (fluency, flexibility, originality) were positively correlated (Ren et al., 2017). In a more recent study, Fischer et al. (2019) investigated the effect of intrinsic motivation and specific external reward systems on workplace creativity and found that extrinsic reward, when used in combination with intrinsic motivation, produces better results. All these studies are in line with the current study's findings, hence providing support for the study findings. Therefore, the research question, whether autonomous motivation predicts workplace creativity and is settled with a favorable answer.

Research Question 5: Does autonomous motivation mediate the relationship between authentic leadership and workplace creativity?

Authentic leadership was proposed as one of the environmental factors that can induce workplace creativity in this study. The theoretical and empirical support for this hypothesis was found in numerous studies (Chaudhary & Panda, 2018b; Rego et al., 2012, 2014); Shang et al. (2019). The debate about the efficacy of authentic leadership's ability in inducing workplace creativity over and above other leadership styles is at the maturation stage (Hoch et al., 2016). For example, a recent meta-analysis shows, authentic leadership has the largest association with employee creativity when compared with eleven other styles of leadership, namely, transformational leadership, transactional leadership, servant leadership, ethical leadership, humble leadership, empowering leadership, entrepreneurial leadership, supportive leadership, benevolent leadership, authoritarian leadership, and destructive leadership (Hughes et al., 2018). Other studies have also pointed towards the positive relationship between authentic leadership and creative behavior among different Pakistani populations, i.e., banking sector employees (Zubair & Kamal, 2015), nurses and health care workers (Anwar, Abid, & Waqas, 2020), telecom industry employees (Imam, Naqvi Muhammad, Naqvi Sajid, & Chambel Maria, 2020), overseas employment promoter agencies employee (Zeb, Abdullah Nor, Hussain, & Safi, 2019) academic staff of higher education institutions (Ahmad, Zafar, & Shehzad, 2015), project-based non-governmental organization staff (Mubarak & Noor, 2018a).

However, the exact route or the process through which authentic leadership affects employee creative behavior is an area requiring attention (Rego et al., 2014). Especially, if a more comprehensive understanding of the relationship between authentic leadership and creative behavior is required, then the underlying process through which this relationship works needs to be unearthed. This study proposed a mediation process based on self-determination theory (SDT) (Deci & Ryan, 1985b) and proposed a mediation path based on a unique type of motivation, called autonomous motivation. Autonomous motivation is a combination of intrinsic and extrinsic motivation and can be better than intrinsic motivation alone (Gagné & Deci, 2005). This study tried to integrate the componential theory of creativity (Amabile, 1988), SDT, and authentic leadership theory by proposing this mediation path. Because authenticity in itself entails the idea of self-determination and the latest understanding of creativity requires a more comprehensive type of motivation which SDT already has in its arsenal. Therefore the proposed mediation process appeals to the logic.

The results of the study confirm the hypothesis ($\beta = 0.092$; p <0.05; t-value = 2.885; 95%; CI [0.033, 0.158]). These findings confirm the hypothesis that autonomous motivation mediates the relationship between authentic leadership and employee creative behavior. In other words, the effect of authentic leadership on followers' creative behavior travels through autonomous motivation. The said relationship was investigated for the first time to the best of our knowledge; therefore, the study results find support in parts from the literature. For example, Leroy et al. (2015) suggest that authentic leadership contributes towards the basic psychological needs of their followers, leading towards self-determination. In another study, the mechanism between authentic leadership practices and employee functioning was investigated. It was confirmed that authentic leadership practices play a substantial role in inducing autonomous motivation of employees, which further leads to enhanced job functioning

(Levesque-Côté et al., 2021). However, the studies investigating the role of autonomous motivation as a process variable between authentic leadership and employee creativity are scant. In a first, this study confirms the mediating role of autonomous motivation between authentic leadership and employee creativity. The results of the study confirm the hypothesized relationship in research question five, therefore, settling it with the logically expected explanation.

Research Question 6: Does autonomous motivation mediates the relationship between personal mastery and workplace creativity?

Creativity as a personality attribute is a topic of everlasting research interest (Mammadov, 2020). Creativity and personality are treated as close affiliates among the research community. An individual's personality is a product of time and space thus varies in great detail. Factors internal to an individual, such as motivation and personality differences, play an important role in explaining an individual's true creative potential. Motivation is not only one of the most persistent and enduring topics in employee performance literature (Kanfer, Frese, & Johnson, 2017) but also in workplace creativity literature (Amabile & Pratt, 2016). Motivation is identified as the most important predictor of employee creative behavior in a long tradition of workplace creativity research. The importance of motivation (intrinsic motivation) can be gauged from the fact that the most influential model of employee creativity, the componential model of creativity (Amabile, 1998), declares intrinsic motivation as the necessary condition, absence of which deems the whole model redundant. Although the relationship between intrinsic motivation and workplace creativity as a creativityinducing mechanism has been studied in detail in recent times (de Jesus et al., 2013) but the results are inconclusive in some cases (Grant & Berry, 2011). The latest understanding of workplace creativity calls for a more comprehensive approach that

departs from the traditional view to investigate the relationship's underlying structures and nature (Amabile & Pratt, 2016).

In an attempt to inculcate the contemporary understanding of workplace creativity, this study sets out to test the latest model of self-determination theory (SDT) (Deci & Ryan, 1985b), where the individual difference of personal mastery and workplace creativity was tested using the mediating mechanism of autonomous motivation, a unique type of motivation defined under SDT. The relationship between personality and creativity has been studied to its length and breadth in the past century; however, the relationship's exact nature and the underlying mechanism remain an area of curiosity. This study theorized motivation, precisely autonomous motivation, to be the process variable through which personal mastery effect workplace creativity. Individuals high on personal mastery are self-motivated and have a taste for excellence in their work (Kanfer & Heggestad, 1997), similar to the qualities of autonomously motivated individuals defined under SDT. Therefore, it was hypothesized that individuals high on personal mastery tend to be autonomously motivated and exhibit creative behavior. The results of the study confirm the hypothesized relationship between personal mastery and workplace creativity mediated by autonomous motivation ($\beta = 0.152$; p < 0.05; t-value = 4.643; 95%; CI [0.091, 0.220]). In other words, the effect of personal mastery on workplace creativity is transmitted through autonomous motivation. The mediation path hypothesized in this study was confirmed. The relationship between personal mastery and employee creative behavior mediated by autonomous motivation was investigated for the first time to the best of our knowledge. However, the results find support from literature in parts, such as Ren et al. (2017) identified autonomous motivation as the mediator between parental control and creativity among adolescence. Hon (2012) concluded that a sense of autonomous motivation plays an important role in predicting employee creative behavior, and the relationship between empowering leadership, climate of creativity, and coworker support and employee creativity was mediated by autonomous motivation. In another study, autonomous motivation was positively linked to Chinese high school students' creativity (Liu et al., 2013). In a more recent study, parental autonomy support contributed towards adolescents' creativity through autonomous motivation (Chen, Zhang, et al., 2021).

The study results confirmed the hypothesized relationship and demonstrated that autonomous motivation mediates the relationship between personal mastery and employee creative behavior, therefore, settling research question six.

Research Question 7: does autonomous motivation mediate the relationship between job complexity and workplace creativity?

Work design is an area of considerable significance for organizations. Its consequences flow through all levels of employees and the organization. Researchers have consistently recognized the salience of work characteristics and their motivational consequences over the years (Parker et al., 2017). As a result, there have been calls for investigating the interplay between work characteristics, motivation, and important job outcomes such as workplace creativity (Anderson et al., 2014; Hammond et al., 2011). Job characteristics are considered a significant predictor of work motivation (Humphrey et al., 2007). Job characteristics model JCM (Hackman & Oldham, 1976) was among the first to emphasize the importance of intrinsic motivation through critical psychological states created by job characteristics. Since then, various studies have identified a positive relationship between work characteristics and intrinsic motivation (e.g., Hans & Gupta, 2018; Isfahani, Bahrami, & Torki, 2013). Some studies have used motivational potential score MPS (a composite score of job characteristics model) as a measurement for intrinsic motivation (Zhao, Ghiselli, Law, & Ma, 2016).

It is a settled debate that job characteristics can influence employee work motivation. Moreover, job characteristics can have critical implications for work motivation; for example, simple work has been identified as demotivating, alienating, and unproductive (Dysvik & Kuvaas, 2011), resulting in boredom and monotony, and lower job satisfaction. In contrast, work that involves more diversified tasks is viewed as a remedy for such problems (Parker, 2014). In addition, an enriched and complex job is more likely to induce greater intrinsic motivation when compared to a simple job (Chae & Choi, 2018). In contrast to intrinsic motivation, the interplay between extrinsic motivation and job characteristics has been largely overlooked. Recently, there have been calls to investigate the type of jobs and their motivational implications with an embedded extraneous reward system (i.e., pay for performance) (Gerhart & Fang, 2015). Moreover, how different job characteristics (or their combination in the form of job complexity index) can facilitate self-determination, where the performer internalizes the extrinsic regulation, has received even lesser attention till recently (Zaman, Nawaz, Javed, & Rasul, 2020). The self-determination perspective also considers complex jobs more meaningful and fulfilling (Gagné & Deci, 2005). Therefore, it was about time that intrinsic motivation reasoning is modified with a more inclusive type, including intrinsic and extrinsic motivation. Autonomous motivation is the type of motivation comprised of intrinsic and internalized extrinsic motivation. This study proposed that complex jobs may result in autonomous motivation, further leading to important work outcomes such as employee creativity.

The componential model of creativity (Amabile, 1996) terms intrinsic motivation as the driver for workplace creativity. It posits that intrinsic motivation can play the role of mediator between individual-level factors and employee creativity. Three prerequisites for creativity as per the componential model are; 1) domain-relevant skills, 2) creativityrelevant skills, 3) task motivation. Task motivation is the motivational link between the work and the outcome (i.e., creativity). Therefore, much research attention has been given to the intrinsic motivation route of employee creativity. However, it has been identified that relying solely on the intrinsic motivation rationale of job characteristics neglects many details of the relationship between workplace creativity and job characteristics (Coelho & Augusto, 2010). Therefore, an autonomous form of motivation is proposed as a more inclusive type of motivation, and job complexity has long been considered an antecedent of employee creativity (Shalley & Gilson, 2004). This study connects the logical dots between job complexity (a simple additive index score of job characteristics) and workplace creativity by suggesting autonomous form of motivation as the process variable in this relationship and proposed autonomous motivation as the underlying mechanism through which job complexity and creativity are connected. The results of the study confirm the proposed relationships that autonomous motivation mediates the relationship between job complexity and employee creativity ($\beta = 0.203$; p < 0.05; t-value = 5.940; 95%; CI [0.137, 0.272]). This can be said that complex jobs induce autonomous motivation, which further leads to workplace creativity. The mediation path hypothesized in this study was confirmed through these results.

These results find support from literature in parts, as the proposed relationship was not tested previously to the best of our knowledge. The first part of the relationship job complexity \rightarrow autonomous motivation finds literature support limited to intrinsic motivation only (Isfahani et al., 2013). The second part of the relationship has autonomous motivation \rightarrow employee creativity finds more support comparatively (Chen, Zhang, et al., 2021; Liu et al., 2013; Ren et al., 2017). The relationship between intrinsic motivation and workplace creativity is very well documented in the literature. For example, a literature review of twenty years from 1990 to 2010 establishes a positive relationship between intrinsic motivation and workplace creativity (de Jesus et al., 2013). Also, the relationship between job complexity and workplace creativity is well-documented (Audenaert, Vanderstraeten, & Buyens, 2017; Chae & Choi, 2018; Shalley et al., 2009). But the underlying mechanism between this relationship needed more clarification. This study provides much-needed evidence that autonomous motivation mediates the relationship between job complexity and employee creativity. The explanation for this relationship can be that a complex job not only intrinsically motivates the performer but has features that can help internalize the extrinsic motivation. It provides the opportunity to exercise skill variety, dispenses information about the work's significance, allows autonomy, and provides appropriate feedback, hence satisfying the need for competence, affiliation, and autonomy. Basic need satisfaction helps internalize extrinsic motivation (Deci & Moller, 2005).

Therefore, this study confirms the hypothesized relationship and settles the seventh research question with a favorable answer.

6.4 Implications of the study

The study furthers the understanding of workplace creativity and its antecedents. This section will lay down the important theoretical, methodological, and managerial implications of this research.

6.4.1 Theoretical contribution

This study provides various crucial implications for theory. First, workplace creativity literature is expanded through this study, which undertook to investigate the contribution of personal and environmental factors in predicting workplace creativity and the underlying mechanisms through which these factors affect workplace creativity.

This doctoral study revealed a distinctive mechanism based on self-determination theory (Deci & Ryan, 1985b) that assimilates two disparate workplace creativity research streams. The study revealed a unique type of motivation based on selfdetermination theory (SDT), autonomous motivation. Autonomous motivation is a combination of extrinsic and intrinsic motivation. In the current study, autonomous motivation serves as a manifestation of the combination of two distinct yet contradictory streams of creativity research, one based on SDT and the other on learned industrious theory LIT (Eisenberger, 1992). Autonomous motivation, as defined under SDT, is an inclusive type of motivation that incorporates both intrinsic and extrinsic motivation. This finding provides anecdotal evidence that intrinsic and internalized extrinsic motivation can predict employee creative behavior when used in combination with each other.

Furthermore, the doctoral research integrated the SDT literature and componential theory of creativity (Amabile, 1983) by employing the theoretical framework of SDT and the mediating mechanism of autonomous motivation. The componential theory of creativity solely relied on intrinsic motivation as a means for inducing creativity.

However, there were calls for incorporating the extrinsic motivation to attain a synergistic effect (Amabile & Pratt, 2016). This doctoral study uses SDT framework for explaining employee creative behavior to overcome this predicament and proposes SDT framework as a more appropriate theory for explaining employee creative behavior. The research suggests that two theories are interconnected, and by integrating the two theories, a greater understanding of the overall workplace creativity phenomenon can be gained.

The findings of the study highlighted the critical role of leadership (authentic leadership), motivational trait of personal mastery, and job complexity in enhancing employee creative behavior. The study revealed that when environmental factors such as leadership support and complex job settings are combined with certain motivational dispositions of individuals in a basic psychological need-based environment, they can explain creativity much better as compared to any single factor. These findings enhance the viability of SDT's framework for explaining complex phenomenon such as workplace creativity.

Additionally, the current study added four important variables (authentic leadership, personal mastery, job complexity, and autonomous motivation) to the nomological network of workplace creativity. The evidence shows that authentic leadership, personal mastery, and job complexity positively predict employee creative behavior. By unraveling these antecedents of workplace creativity, the study provides new avenues of research surrounding workplace creativity. Moreover, the study extends the scope of SDT by testing these environmental and personal factors in the SDT framework. Besides, the study contributed to the overall understanding of employee creative behavior by extending the antecedent network of workplace creativity and adds value to the literature.

Another theoretical implication of this doctoral study is the understanding of the mechanism through which the proposed antecedents (authentic leadership, personal mastery, job complexity) affect employee creative behavior. The study identified autonomous motivation as the mediating variable. The significant mediating relationship suggests that autonomous motivation facilitates employee creative behavior induced by leadership support, personal mastery orientation, and job complexity. The underpinning theory postulates that when an individual's three basic psychological needs (need for autonomy, relatedness, and competence) are fulfilled, he becomes autonomously motivated. The evidence suggests that leadership support and job complexity, when coupled with an individual's motivational orientation of personal mastery, can fulfill basic psychological needs and make him autonomously motivated. Therefore, it can be deduced that organizations should create an environment that facilitates autonomous motivation among their employees through leadership support and jobs with appropriate characteristics.

Finally, this research used the structural equation modeling (SEM) method for statistical analysis of the study model. The study is among the few workplace creativity studies which use SEM as a statistical tool. Using SEM, this study demonstrated the joint effect of authentic leadership, personal mastery, and job complexity on employee creativity through autonomous motivation. The usage of SEM allowed for testing the hypothesized model simultaneously, which is tantamount to the robustness of the study model and consequently the theory on which the study is based.

6.4.2 **Practical implications**

Firstly, the current study tested an empirical research model based on SDT for software houses employees' creativity. The model tested the effect of leadership support, job complexity, and personal mastery orientation on motivation and employee creativity in the software development industry. Software development industry is a fast-paced and cut-throat industry where continuous creativity is essential for the survival and functioning of an organization. The study provides evidence that organizations need to address the basic psychological needs of employees through leadership support, appropriate job design, and nourishment of their learning tendencies for them to be more autonomously motivated and creative.

This study identified authentic leadership style, personal mastery orientation, and job complexity as antecedents of workplace creativity through a motivational mechanism of autonomous motivation. These findings highlight the importance of leadership support, individual motivational disposition, and appropriate job type for employee motivation and creative performance. Therefore, it would be crucial for organizations to align their policies and practices to enhance and realize the creative potential of their employees. Organizations must revisit their policies, if they want to survive and perform in the long run, as creativity is the only source of gaining and maintaining long-term competitive advantage (Anderson et al., 2014).

The results of this doctoral study confirm that leadership plays a crucial role in inducing employee creative behavior, as noted earlier that leadership is the most crucial factor in the organizational realm (Maguad & Krone, 2009). The study suggests that organizations need to create such an environment where leadership is committed to fostering creativity. The leadership's commitment needs to be seen at all levels of the organization for creativity with much emphasis on originality and authenticity. The communications between leadership and employee of the organization need to be two-way, and leadership should present their own originality and authenticity and an example for the followers. Leadership should exhibit the values of authentic leadership such as openness, veracity, honesty, and build trust with the followers. An authentic

leader is a proponent of integrity, genuineness, and originality, and by exhibiting such character, he inspires his followers to replicate his actions. Organizations should realize that it is the leadership's support through which employees can become autonomously motivated and realize their creative potential. Authentic leadership has been shown to fulfill the basic psychological needs of an individual and make him autonomously motivated (Cerasoli et al., 2014).

The results demonstrate that job complexity positively predicts autonomous motivation and employee creative behavior. This observation will enable the business professionals to understand that a complex job with elements such as skill variety, task identity, task significance, autonomy, and feedback is essential for creativity enabling job environment. It would also help the managers and specialists in the field understand that routine work is determinantal to employee creative behavior. Whereas a complex job that allows the utilization of a wider skill variety, informs them about the significance of work, affords greater autonomy, and provides ample feedback, keeps the employees motivated by helping them fulfill basic psychological needs. Creative organizations must incorporate these recommendations when designing jobs for their employees, especially in the software development industry, which requires continuous creativity.

Additionally, organizations and practitioners can develop strategies in line with the findings of the study. For example, it was found that complex jobs can provide opportunity for the employee to indulge in creative behavior and simple and routine jobs are not comparable in creative potential. By providing such a work design that can afford the employee with ample autonomy, and constructive feedback an organization can enhance the creative potential of the its employees. Another aspect of the study findings was that identified regulation can be internalized and become part of the value

system of the individual. Based on these findings it is recommended that job significance can accelerate the internalization of extrinsic motivation.

Furthermore, regarding hiring implications, this study investigated the motivational orientation of individual employees and its effect on motivation and workplace creativity. It was found that individuals with personal mastery orientation are more likely to be autonomously motivated and thus indulge in creative behavior. The identification of such a motivational trait warrants the screening of individuals with such dispositions. Understanding the motivational orientation of employees at the recruitment and selection stage will result in a workforce capable of honing their knowledge skills and abilities to the level of creative requirement of the job in the software industry. Because employees are the sole source of creativity for an organization, employees high on personal mastery orientation are more capable of showing creative behavior than employees who score lower on personal mastery orientation. Therefore, an identification method of employees scoring high on personal mastery should be devised, and appropriate learning opportunities for such employees should be made available.

Finally, the study indicates that autonomous motivation is an important predictor of employee creative behavior. Employees who are autonomously motivated are more likely to show creative behavior.

6.5 Limitations

Limitations are the study design features where parameters for the applications or the consequences of the study's results are defined. Although this investigation makes many theoretical and practical contributions, there are still limitations regarding generalizability, research design, data collection procedures, and reporting that should be delineated.

First, the research was conducted among the employees of the software development industry of Pakistan. This research lends a unique insight into the software development industry with regard to employee creative behavior, and the study's implications are noteworthy. However, the settings in which the study was conducted have generalizability implications. Similar results are yet to be seen in other cultures, areas, and sectors other than the software industry. This study used 341 responses from the population of software developers. Therefore, a larger sample may validate the study's findings among other sectors of the economy where creativity is required as a basic skill.

Second, the study was based on a cross-section design, as deemed appropriate at the time of the investigation. The study model is prediction-based and involves a mediation process. There is a significant debate in the literature for and against using cross-sectional research designs when investigating the mediation process. It is argued that the cross-sectional study design is of limited causal value. However, when exploring new relationships, cross-sectional research design can successfully provide initial evidence. The model presented in this study consists of relationships between variables that are new and seldom explored before. A longitudinal study design can confirm the study's findings and the pattern of relationships among the study's variables. A longitudinal design can provide reliable evidence about the causal implications of the study model.

Thirdly, the data for the study was collected from a single respondent using a selfreport method. Self-report source for data collection is not uncommon in organizational behavior studies. It is to be noted that self-report can be a valuable data source when reporting the internal states of an individual, for example, attitude, feelings, affect. However, this form of data collection is susceptible to common method variance. In order to minimize the incident of common method variance, measures (e.g., marker variable and procedural measures) were adopted to detect and control for common method variance. The results show the absence of common method variance. However, such limitations are inherent to the self-report method. The mixture of self-report and objective data can serve as a remedy for this problem.

Finally, the absence of more rigorous design such as multi-level modeling was not used in the study for time and resources constraints. Also, multi-level modeling is not recommended when using cross-sectional survey design.

6.6 Delimitation

Delimitations are the self-imposed restrictions or limits a researcher uses to define the boundaries of research according to its scope. Following are delimitations as defined by the scope of the current study.

- 1. The study population was limited to the employees working in the software industry of Pakistan, i.e., workers of organizations operating in four major cities of Lahore, Karachi, Islamabad, and Faisalabad. The reason for limiting the population to these four major cities was available resources, accessibility, and local circumstances. As such, the findings shall apply to the software development industry of Pakistan.
- 2. The study model of the study is based on Self-determination theory (SDT). The basic psychological needs measurement was not performed as it is implied in the theoretical framework of SDT. Therefore, explicit measurement of basic psychological needs was not directly relevant.
- 3. Autonomous motivation is a combination of intrinsic motivation, identified regulation, and integrated regulation. Integrated regulation was not measured as literature tells us that integrated regulation cannot be measured separately from intrinsic motivation.

6.7 Conclusion

To conclude, the study synthesized SDT and componential theory of creativity and tested the effect of authentic leadership, personal mastery, and job complexity on workplace creativity through autonomous motivation. The integration of these two research streams offered a unique theoretical lens through which the role of environmental and personal factors in predicting employee creative behavior can be examined. The theoretical model built for the study was tested empirically. Seven research questions were framed in consonance with the research objectives. Further, seven hypotheses were developed and tested in line with the research questions. All hypotheses were found statistically significant. Results of the study show that authentic leadership style coupled with complex jobs and motivational orientation of personal mastery leads to autonomous motivation that further leads to employee creative behavior.

The study provides empirical evidence of the effectiveness of authentic leadership style along with personal mastery and job complexity in predicting employee creativity. The results show that all of the independent variables have a significant positive effect on employee creative behavior. Further, the study shows that the relationship between authentic leadership, personal mastery, and job complexity is mediated by autonomous motivation. The study findings approve the usage of the self-determination framework for predicting workplace creativity.

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