Stuck in a rut – Can I try something different? The role of intrinsic motivation and mood in the creative performance of ICT professionals

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Business Studies

in

Human Resource Management

at Massey University, Albany,

New Zealand

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2018

Abstract

In a hyper-competitive and knowledge-based economy, creativity and innovation are considered as the lifeblood of success for ICT firms. Literature suggests that intrinsic motivation and positive mood drive the creative performance of employees. Nonetheless, the mechanism through which creativity antecedents influence the creative performance of IT professionals is seldom examined. Furthermore, the assertion that intrinsic motivation and positive mood – through motivational-affective mechanisms – spur employee creativity has rarely been tested. Therefore, drawing on Self-Determination theory, Cognitive Evaluation theory and Componential theory of creativity, the current study examines the relationship between specific creativity antecedents (job flexibility, perceived supervisor support for creativity, creative role identity and creative self-efficacy), intrinsic motivation, positive mood and creative performance of IT employees. Partial-least-squares based structural equation modeling (PLS-SEM) was conducted using survey data collected from 157 IT professionals working in various organisations, including both multinational corporations and tech start-ups, in United States (USA). The results suggested that job flexibility, perceived supervisor support for creativity, creative role identity and creative self-efficacy positively and significantly influence creative performance of IT professionals. Specifically, both intrinsic motivation and positive mood were found to mediate the relationship between personal and contextual factors (creativity antecedents) and employee creativity, thereby playing a role of chain mediators. The findings highlight the significance of motivational-affective mechanisms underpinning employee creativity. Implications of the results for theory and practice are also discussed.

Acknowledgements

‘Being original is definitely not easy, but it’s the best way to improve the world around us’ – I vividly remember Adam Grant saying this fervently in his now very famous and most viewed TED talk on ‘original thinking’. This is what struck my mind and propelled me to embark on a journey to explore and comprehend the mechanisms that underpin creative behavior and actions. Along with this striking vignette, the quest to learn new things and incessantly ask questions – inculcated in me by my loving parents, my friends and peers and my teachers right from childhood – helped me to complete this onerous but exciting journey. I am extremely grateful and forever indebted to all the people that have supported me through my research journey.

First and foremost, I would like to express my deepest gratitude to my primary supervisor and advisor, Professor Tim Bentley for his consistent support, patience and guidance. I believe, I have been incredibly fortunate to have an advisor who gave me the liberty to explore my ideas and helped me find my passion in research. He not only taught me to trust my ideas but also encouraged me to learn new ones by providing me an opportunity to be a part of the ‘Healthy Work’ research group and involving me in national level research projects like the New Zealand Workplace barometer. I cannot thank him enough for supporting my application for the Massey Masterate Scholarship and expeditiously completing all the paperwork even when he was in Europe, inundated with his research duties. Tim, is an epitome of what I endeavour to become as a teacher, researcher, colleague and mentor.

Special thanks to Massey University, School of Management, particularly, Professor Stephen Kelly (Head of school) and Associate Professor Bevan Catley (Associate head of school) for awarding me the Massey University Masterate Scholarship which encouraged me to sedulously pursue my research study.

I feel immensely privileged to have been a beneficiary of Dr. Nazim Taskin’s – my co-supervisor – tutelage and wisdom. He has provided me his unique insights on how to develop surveys and test models and has always been generous in extending his helping hand. He truly has been my valuable statistical guru. In addition, he has taught me to focus on the strengths

of my research and to tackle its flaws by thinking about the different approaches one can adopt to solve a problem. Thanks, Nazim for being a great mentor.

My heartfelt thanks to Dr. Darryl Forsyth and Dr. Natalia D'souza for their thought-provoking and insightful lectures during my first year at Massey University. Their interesting classes – filled with lots of practical and real-life examples – helped me build a solid foundation in research methods, provided me with vital research skills needed to complete research projects and ameliorated my critical writing skills.

I would also like to sincerely thank my employer KITE and my manager Terry Swanson for their immeasurable support, both in terms of providing work flexibility and unending encouragement to pursue my dreams. A number of friends who accompanied me on this journey have made my time in graduate school much more delightful by encouraging me to celebrate every accomplishment along the way. Thank you for your hilarious jokes (sometimes silly) and crazy anecdotes that helped me get through the obstacles to blue skies. I am grateful to have had the ear and advice of my buddies, particularly Onn, Parin, Michael and Rakhi.

Last, but certainly not the least, thank you to my most favorite people in this world (Mom, Dad, Sister and bro-in law) – my loving family for their unswerving support, consistent motivation and unconditional love. Mama and Papa, thank you for being my pillar, for putting us first, for inculcating in me a strong work ethic and discipline and for always encouraging me to be resourceful. Thank you Shilpa, my adorable sister, for always believing in me and standing by my side. I would not have been where I am today without all your sacrifices and hard work for our family. I really admire what you and Ashwin have accomplished as young entrepreneurs. I dedicate this thesis to you. None of this would have been possible without your love and support.

For all that has been, Thanks. For all that will be, Yes.

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Chapter 1: Introduction

1.1 Research Background

David Gross, winner of the Nobel accolade in Physics in 2004, was once asked what the vital traits are that distinguish highly creative scientists from less creative ones. He ardently replied, "Curiosity and Tenacity are the best drivers of discovery. The most successful and eminent scientists are the ones who are exhorted by curiosity" (Lamb, 2017). Gross's perspicacious response elucidates the importance of intrinsic motivation – the motivation to work on a task/problem because one intrinsically finds it exciting, intriguing, challenging, satisfying and involving (Amabile, 1983, 1996) – to be creative and innovative at work. There is a plethora of research highlighting the fact that people tend to be more creative when they are predominantly intrinsically motivated rather than by external rewards, incentives, expected evaluation, and competition from peers, all of which constitute extrinsic motivation (Shin & Zhou, 2003; Zhang & Bartol, 2010; Shalley et al., 2004). Emphatically, this doctrine of intrinsic motivation not only applies to just scientific creativity, but also to business creativity. Among all businesses, the dogma of intrinsic motivation is crucial to knowledge organisations like Information and Communication Technology (ICT) firms as their financial success vastly relies on ground-breaking innovation.

As prominent ICT firms face tumultuous and continuous change due to rapid technological advancements, burgeoning international competition, government regulations and changes in client demands and preferences, it has become important for these organisations to be highly innovative in their product/service design and development. However, the literature underscores that individual creativity is a prerequisite for all organisational innovation (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Considerable empirical evidence suggests that individual employee creativity can substantially augment organisational efficiency, innovation, productivity, and survival, thereby helping organisations to flourish in the wake of today's hypercompetitive environment (Nonaka, 1991; Amabile, 1996, Gilson, 2008; Zhou & Hoever, 2014). Since creativity is the first step in innovation and innovation is crucial for the corporate success of ICT firms, it is immensely important to investigate the factors that can foster a culture of creativity in these organisations. Conventionally, researchers have focused only on the psychological or individual characteristics of employees to understand creative

performance (Amabile 1997; Mackinnon, 1965), but contemporary researchers have argued that in order to completely understand the antecedents of creativity, a more holistic approach – one including both personal (individual) and contextual (work environment) factors – is essential (Oldham & Cummings, 1996; Amabile 1996; Dewett, 2007).

In the last decade or so researchers have identified a range of individual factors (knowledge & skills, openness to experience, creative personal identity, proactive personality, job self-efficacy) and workplace factors (job autonomy, job complexity, supportive leadership, perceived organisational support) that foster employee creativity (Oldham & Cummings, 1996; Zhou & George, 2001; Tierny & Farmer, 2004; Dewett, 2007). Although the literature is replete with studies exploring the relationship between conventional personal factors (like job self-efficacy, openness to experience) and employee creativity; and between traditional contextual factors (like job autonomy, POS, job complexity) and creative performance, there is a dearth of studies investigating the influence of some of the newly identified personal factors (like creative-role identity, creative self-efficacy) and contextual factors (like job flexibility, supervisor support) on employee creativity. Thus, the current study aims to examine the influence of creative role identity, creative self-efficacy (personal factors), job flexibility and supervisor support (contextual factors) on the creative performance of ICT employees. Furthermore, these factors were chosen particularly because they are believed to have significant impact on technological creativity, specifically applicable to the ICT sector.

According to Amabile's componential theory of creativity (1996, 1997), even when employees have conducive individual and contextual factors, they still won't be successful in generating creative solutions until they have high intrinsic motivation. Componential theory posits that, although domain and creativity relevant skills may enhance employee's creativity, it is intrinsic motivation that is more inconsistent and therefore is significantly prone to the influence of employee's work environment (Amabile 1988, 1996). Thus, it will be extremely onerous even for a highly creative employee to perform effectively if the work environment is deleterious to his/her intrinsic motivation (Liu, Jiang, Shalley, Keem & Zhou, 2016). Building on componential theory, Shalley et al. (2004), in their exhaustive review of creativity research, postulated that individual and workplace factors may influence the creative performance of ICT employees via their effects on employees' intrinsic motivation. Though the literature consistently posits that intrinsic motivation mediates the relationship between creativity antecedents and creative performance, very few studies have actually tested it. And the ones

that have investigated the mediating role of intrinsic motivation generated rather inconsistent results: Shin and Zhou (2003) found partial mediation and Shalley and Perry-Smith (2001) found no significant mediation. In addition, albeit Shalley et al. (2004) have emphasized that intrinsic motivation may underpin creativity, they also mentioned that there may be alternative mediating mechanisms (like involving multiple mediators) through which individual and workplace factors can affect employee creativity.

Literature on mediation testing suggests that if the hypothesized mediator shows partial mediation or no mediation effect between the antecedent and the outcome variables then either the theoretical framework is incomplete, or it is incorrect (Zhao, Lynch, & Chen, 2010). Thus, it was of paramount importance to identify the loopholes in the theoretical framework posited and tested by previous creativity researchers. In order to do so, a comprehensive review of the existing studies on creativity was conducted. Upon reviewing the colossal amount of literature, it was discovered that creative cognition is mood sensitive (Davis, 2008). Tasks of creative thinking are affectively charged and usually involve intricate cognitive processes which are moulded by, occur concurrently with, and influence emotional experience (Amabile, Barsade, Mueller, & Staw, 2005). According to Amabile, Goldfarb and Brackfield (1990) and Amabile (1983, 1996), employees who are intrinsically motivated are more likely to experience positive mood states while doing work and these pleasant mood states aid creative thinking, thereby enhancing their creative performance at work. This suggests that increased intrinsic motivation leads to increased positive affect which further leads to increased employee creativity. Thus, the current study postulates that intrinsic motivation and positive mood will act as chain mediators through which personal and contextual factors will affect employee creativity.

Although few contemporary studies have individually explored the mediating role of intrinsic motivation (Shin & Zhou, 2003), and that of positive mood (Madjar, Oldham & Pratt, 2002) between creativity antecedents (individual & contextual factors) and employee creativity, none of them have tried to explore the chain mediation effect of these two variables between creativity antecedents and outcomes. Also, most of the research on creativity has been conducted in the context of pharmaceutical R&D labs, manufacturing firms and the hotel industry, while there is a dearth of studies investigating the creative behaviour of ICT workers in the tech sector. Thus, the current study aims to address these gaps in the literature by examining the chain mediation effect of intrinsic motivation and positive mood through which individual (creative role identity and creative self-efficacy) and contextual (job flexibility and

supervisor support) factors affect the creativity of tech workers, with the help of a conceptualized model.

1.2 Problem Statement

Innovation is considered to be the catalyst and fuel for economic growth. Economic indicators and statistics suggest that the competitiveness of any knowledge-based economy depends on its technological innovation (Akcigit, Grisby & Nicholas, 2017). The 19th and 20th centuries – considered the golden age of inventions – saw an incessant growth of the technology sector across the OECD nations. This cutting edge technological advancement led to the creation of Silicon Valley, a global powerhouse of innovation, which made America the pre-eminent digital nation of the world (Fox, 2014). The prodigious success of major firms in Silicon Valley like Facebook, Apple, Microsoft and Amazon, has motivated many other companies across the world to reproduce their success mantra and to invest colossally in ICT-related research and development (Hamel & Getz, 2004). This massive investment in information technology and software companies by venture capitalists across the world has harnessed a sudden mushrooming of disruptive innovation, thereby making the ICT sector a significant contributor to the global economy.

According to the Bureau of Economic Analysis (BEA), the ICT industry made a gargantuan contribution of 1.94 trillion dollars to the US economy in 2016. Further, the software industry alone had a profound impact of 1.14 trillion dollars on US GDP, adding 10.5 million jobs across the country and thereby comprising almost 18.7% of the total economic growth (Forrest, 2017). Similar trends were observed in the European Union, where the ICT sector added a total value of 593 billion euros accounting for 4.2% of EU GDP in 2014 (EU's digital progress report, 2017). Even 11,000 New Zealand IT services firms made a whopping 3.6-billion-dollar contribution to the country's GDP in 2016 by employing 29,700 people in this sector (MBIE, 2016). Furthermore, it was the leading sector in terms of investment in pioneering R&D that year (MBIE, 2016), investing some $436 million. All of this indicates that the ICT sector is the cornerstone of economic growth across all the developed countries in the world. Additionally, research suggests that innovation doesn't occur in a vacuum. Creative ideas and solutions are the raw material imperative for organisational innovation, and companies that are adept at evoking creativity from their employees are likely to gain a competitive advantage in the market (Audia & Goncalo, 2007).

Though creativity and innovation has helped Silicon Valley and the tech sector as a whole to reach the pinnacle of success, recent data indicates that technological creativity and innovation are being stifled by a range of factors (like long working hours, lack of job flexibility, low intrinsic motivation and lack of supervisor support), thereby attenuating the pace of economic growth in the 21st century (Akcigit et al., 2017). Thus, in order to amplify technological innovation, especially in the IT industry, it is immensely important to understand the factors affecting the creativity of employees in these firms. In addition, since all innovations stem from creative ideas, successful implementation of these novel ideas, programmes or activities is likely to influence psychological cognizance of innovation within ICT firms. This will significantly augment the intrinsic motivation of employees or a team to produce great ideas and to develop them beyond their juvenile state (Amabile et al., 1996). Therefore, the current study aims to investigate the antecedents and mediating mechanisms underpinning the creativity of ICT workers.

1.3 Purpose of Study and Research Objectives

In a knowledge-based economy, 'creative thinkers' or knowledge workers are viewed as the cornerstone to the competitiveness of a firm. The creativity of these knowledge workers is vitally important to incredibly competitive and dynamic industries like the ICT industry (Chae, Seo & Lee, 2013). In the information technology industry, organisations consider creative ideas as a golden key to leverage internal resources and maximize revenue (Chung, Lee & Choi, 2014). Ideas that are hackneyed or trite are anathema to the CEOs of these firms, as creativity and innovation in the ICT sector is tantamount to organisational success. Furthermore, the power of software has made the information technology industry a fertile ground for innovation. The development of Web 2.0, social networking services (Facebook, Twitter, YouTube, Instagram, Tumblr) and cloud computing has connected human beings and enhanced communication between them in a way that no one would have ever imagined (Chung et al., 2014). This meteoric innovation and fierce competition have drastically increased the stakes for these firms to maintain a competitive edge in the market. For these and other reasons, employee creativity in the ICT industry is one of the most fascinating fields of research. Thus, **the first objective** of this study is to better understand the factors and mechanisms that can augment employee creativity in ICT firms.

The **second objective** of this research is to investigate the influence of various personal and contextual factors on employee creativity. A vast body of creativity literature indicates that personal/individual characteristics and traits influence creative performance at work (Oldham & Cummings, 1996). Some of these personal characteristics include openness to experience, introversion/extroversion, job self-efficacy, proactive personality etc. In addition to individual factors, recent research highlights that contextual/organisational factors play a more vital role in influencing employee creativity (Amabile, 1996). Characteristics of the job or work setting like job complexity, job autonomy and relationship with or support from coworkers and supervisors would all be considered contextual factors. Though there are several contextual and personal factors that affect employee creativity, the current study is specifically interested in understanding the impact of job flexibility, perceived supervisor support for creativity (contextual factors) and creative role identity, creative self-efficacy (personal factors) on the creative performance of ICT employees. The critical reason for choosing these four constructs is that both scholarly literature and practitioners suggest that these factors might significantly influence creativity of highly skilled knowledge workers like software developers, programmers, data scientists, UX (user experience) and UI (user interface) designers, cybersecurity and artificial intelligence engineers by altering the degree to which they apply various strategies that facilitate creative problem solving at work (Conti et al., 2001; Dewett, 2007). Additionally, there has been a scarcity of studies in the past examining the influence of these four factors together on the creative performance of tech workers. In fact, the present study would be the first one to examine the influence of job/workplace flexibility on employee creativity.

Further, drawing on Amabile's componential theory of creativity and Deci and Ryan's self-determination theory, researchers have posited that almost all contextual factors and some personal factors influence employee creativity through their effect on employee's intrinsic motivation (being interested in and enjoying one's job tasks) to perform a work task or activity (Shalley et al., 2004). Scholars have long asserted that employees who experience high levels of intrinsic motivation are likely to be more creative at work because such motivation enhances their propensity to be risk taking, inquisitive, adventurous, cognitively flexible and tenacious in the face of challenges (Utman, 1997; Zhou & Shalley, 2003), all of which aids the generation of creative ideas. This insinuates that intrinsic motivation acts as a mediator between creativity antecedents and employee creativity. Though many researchers have tested this hypothesis in the past, very few have obtained positive results. Most of the studies found partial mediation

or no mediation at all between the antecedents and employee creativity. This motivated me to investigate the missing links or loopholes in the existing theoretical framework proposed by previous researchers. Thus, the **third objective** of this study is to identify other missing variables that might act as potential mediators and to find alternative mediation mechanisms that might thoroughly explain the influence of creativity antecedents on employee creativity.

Upon exhaustively reviewing the extant creativity literature it was concluded that workplaces are emotionally charged environments and that human decision making and problem solving are not just influenced by task requirements and organisational environment but also by mood states (affective influences), which, in part, are moderated by past experiences (Amabile et al., 2005). This is to suggest that mood states or affective processes have critical consequences for problem solving, information processing and behaviour (George & Zhou, 2007; Kaufmann, 2003; Schwarz, 2000, 2002). Ambalie et al. (1990) argue that, according to componential theory, employees who are high on intrinsic motivation tend to be playful with ideas, are more willing to take risks and are more likely to be deeply engrossed in the task/activity at hand. Therefore, because these employees wholeheartedly enjoy their jobs and engage in them to fulfill their passion, their intrinsic motivation will lead to development of positive mood states which in turn will significantly enhance their creative performance at work. On the contrary, extrinsically motivated employees who are more concerned about achieving their extraneous goals, are less likely to be immersed in the activity and thus may experience little to no positive affect while doing their work (Amabile et al., 1990). This indicates that high intrinsic motivation leads to a high positive affect which in turn leads to enhanced employee creativity. Thus, the current study posits that intrinsic motivation and positive mood will act as chain mediators in the process by which creativity antecedents affect the creative performance of ICT workers.

Moreover, contemporary research has highlighted the influence of affect or mood states on a range of organisational outcomes like efficiency, productivity and task quality (George, 1991; George & Zhou, 2007; Staw, Sutton, & Pelled, 1994). Although some studies examining the relationship between affect and creative performance have appeared in the recent literature (Madjar, Oldham & Pratt, 2002; George & Zhou, 2007; Davis, 2009), there is still a paucity of research investigating employee creativity as an outcome influenced by affect. Thus, the **primary objective** of this research is to investigate the chain mediation effect of intrinsic motivation and positive mood through which personal and contextual factors influence the

creativity of ICT workers. In short, it aims to test the links/relationships between creativity antecedents, intrinsic motivation, positive mood and employee creativity within an ICT environment at the individual employee level. If the proposed hypothesis for chain mediation is supported, this would be the first test of all these links in the Information Technology/Silicon Valley context (specially in software development, cybersecurity and artificial intelligence) or elsewhere.

1.4 Thesis structure

Figure 1 provides an outline of the thesis structure. Remenyi and Bannister (2012) suggested that a conventional thesis comprises of six main chapters – the introduction, literature review, research methodology, data analysis, findings and conclusions, limitations and future research. Building on the format recommended by Remenyi and Bannister (2012) the current thesis is also divided into six main chapters. First, the Introduction chapter highlights the background of research, problem statement, purpose of study and research objectives/contributions. Second, the Literature Review chapter provides a comprehensive review of the creativity literature highlighting the definition of creativity, importance of creativity and innovation to the ICT sector, personal and contextual factors influencing creativity and the role of intrinsic motivation and positive mood in the creative performance of ICT employees. It also presents the theoretical/conceptualized model of employee creativity and the hypotheses to be tested. Third, the Research Design and Methodology chapter gives an overview of the research design, data collection process and ethical considerations. Fourth, the Data Analysis & Results chapter discusses the various statistical methods used for data analysis, the results of hypotheses testing for direct effects and mediation effect and throws light on the crucial aspects involved in a positivist study: mainly validity, reliability and common method bias. Fifth, the Discussion chapter focuses on the discussion of results, their theoretical and practical implications, limitations and suggestions for future research. Sixth and last, the Conclusion chapter provides a summary of key empirical findings and contributions of the study.

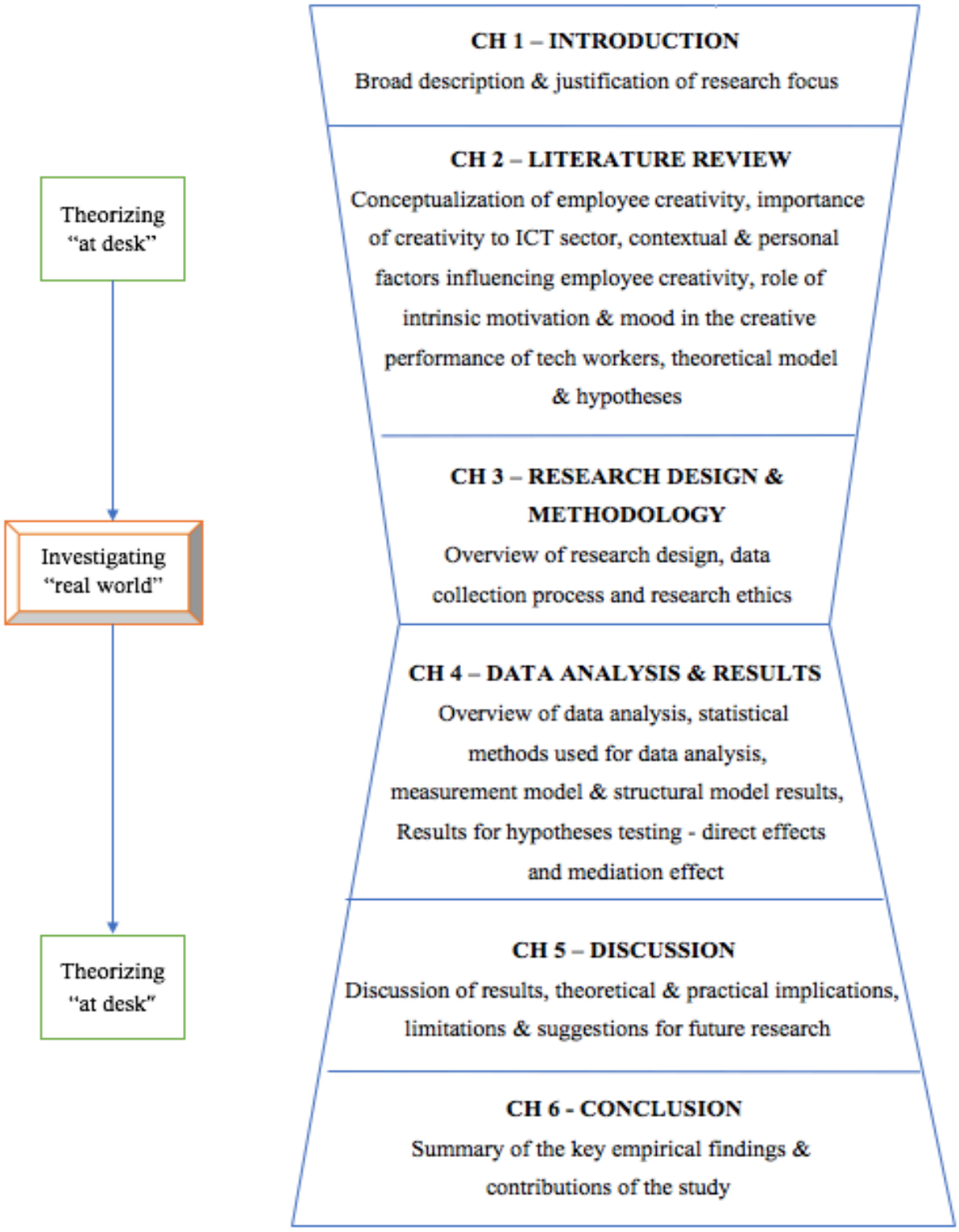


Figure 1. Thesis Structure

Chapter 2: Literature Review

2.1 Introduction

In order to understand the mechanisms through which various creativity antecedents influence creativity of ICT employees, this chapter reviews the existing literature on employee creativity, its conceptualizations and theory development. It then highlights the role of Self-Determination theory, Cognitive evaluation theory and Componential theory of creativity as a theoretical framework in developing the proposed conceptualized models. Further, it gives an in-depth analysis of the influence of specific contextual (job flexibility and perceived supervisor support for creativity) and personal factors (creative role identity and creative self-efficacy) on the creative performance of ICT employees by proposing suitable hypotheses. Lastly, it elucidates the role of intrinsic motivation and positive mood as chain mediators between creativity antecedents and creative performance.

2.2 Conceptualizations of Employee Creativity

Creativity is an intricate and diffuse construct and, therefore, has been defined in a range of ways by scholars. Some definitions focus on creative processes while others on creative outcomes (Davis, 2009). The pivotal difference in the way which researchers define creativity primarily depends on their paradigm and perception of creativity (Runco & Pritzker, 1999). Conventional researchers, mostly from the 1950s to the 1970s, treated creativity as a cause because they believed people's creativity motivates them to behave in a certain way or that creative processes yield products (Wertheimer, 1945; Koestler, 1964), whereas contemporary researchers, mostly from the 1980s to the present, view creativity both as a cause and as an effect or result. According to modern scholars, a person or employee is considered to be creative only if he produces novel and useful ideas or products by using creative processes (Amabile 1983; Shalley, Gilson & Blum, 2000; Madjar et al., 2002). Thus, the most prominent and widely recognized definition today is the one given by Amabile (1983) which includes both the components. According to Amabile (1983, p. 318), creativity is the formulation of solutions or responses that are "1) novel and appropriate, correct, useful or valuable to the task at hand and 2) the task should be heuristic (open ended) rather than algorithmic (having only one clear path to solution)".

This conceptual definition of creativity not only focuses on novelty and usefulness – two hallmark aspects of creativity – but it also emphasizes the nature of the task (whether it is heuristic or algorithmic). Amabile asserts that tasks that are straightforward, effortless and have a fairly simple path to a single solution are algorithmic in nature and thus cannot spur creative performance. On the contrary, tasks that are heuristic – ones which do not have a lucid and easily discernible path to a solution, the ones for which algorithms don't exist yet – allow room for fluency, originality and flexibility, thereby permitting employees to display creativity (Amabile et al., 1990). In addition, a crucial distinction between algorithmic and heuristic tasks is that algorithmic tasks have clearly recognized goals whereas heuristic tasks may or may not have conspicuously identified goals (Amabile, 1996). Therefore, researchers suggest that problem discovery is a critical part of creative activity, as in most cases, heuristic tasks do not have clearly recognized and defined goals (Campbell 1960; Amabile 1983).

In simple terms, creativity is defined as the development, conceptualization and production of ideas about services, products, procedures or practices that are novel and useful to the organisation (Amabile, 1988, 1996; Shalley, 1995; Zhou & Shalley, 2003). Only ideas that are unique in comparison to other ideas currently available in the public domain of the organisation are considered novel. Further, ideas that have a possibility of generating a direct or indirect value for the organisation, either immediately or in the long term, are deemed useful (Shalley et al., 2004). Considering this definition, the literature suggests that creativity can be incremental that advances on existing ideas or it can be radical like drastic breakthroughs of completely eccentric and disruptive ideas which lead to the development of new products (Basadur, 1992; Herbig & Jacobs, 1996; Houtz et al., 2003; Mumford & Gustafson, 1988; Proctor et al., 2004). However, the definition does not make any presumptions about which ideas (incremental or radical) are relatively more lucrative, as in certain situations organisations might consider radical ideas as advantageous, whereas in others more incremental ideas might be desirable. Additionally, there is ample empirical evidence that asserts that creative ideas may be generated at any rung of the corporate ladder and by employees in any job position (Madjar et al., 2002; Shalley et al., 2000).

Amabile (1996) argues that although creativity is primarily assessed by normative criteria (where the creativity judges or observers have no prior awareness of the creator's knowledge), the inclusion of an algorithmic-heuristic dimension in the conceptual definition makes it

essential to include ipsative criteria as well. Ipsative criteria require creativity aficionados to have information and prior knowledge about the creator in order to evaluate the extent to which the idea/solution proposed is novel and useful within the pertinent comparison population and whether the task is heuristic or not (Amabile, 1983, 1996). Hence, in the past decade most studies have used ratings or feedback by pundits who have expert knowledge within the field of interest – in most cases supervisors – to measure creativity (Shalley et al., 2004). Particularly, field studies have largely relied on supervisors' evaluation of employee creativity (George & Zhou, 2001; Tierney & Farmer, 2002) and on the contrary, most laboratory studies have used cognoscenti to judge and rate the creative ideas produced by research participants (Zhou, 1998; Shalley, 1995). In addition, few field studies have used objective methods to measure employee creativity such as employees' personal ratings of their own creativity, technical reports, patent disclosures and ideas submitted to coworkers and managers in suggestion programmes (Oldham & Cummings, 1996; Tierney, Farmer & Graen, 1999).

After defining creativity, it is also crucial to understand the fundamental difference between creativity and innovation. Employee creativity refers to the production of novel, appropriate and useful ideas whereas innovation refers to the successful implementation of these ideas to produce products or services. Furthermore, even if employees have shared these creative ideas and information with their coworkers and supervisors, they won't be classified as innovation unless and until they are successfully implemented at the unit or organisation level (Amabile 1996; Mumford & Gustafson 1988). Therefore, in essence, creativity can be considered as the seed for all subsequent innovation (Amabile et al., 1996; West & Farr, 1990). However, it is important to note that the current study focuses exclusively on employee creativity and not on organizational innovation.

2.3 Importance of Creativity and Innovation to Tech sector

Just a decade ago, the most successful and profitable company in the world in terms of market capitalization was the energy behemoth ExxonMobil (Wald, 2018). Today, the tech quintet, Apple, Amazon, Facebook, Alphabet (Google) and Microsoft, have far surpassed the energy giants in terms of both total revenue and profit. Gone are the days when energy firms ruled the valuation charts because the rise of tech companies have switched the leadership position of stock-market dominance (Goldstein, 2016). According to LaMonica (2017), the five top tech titans are now collectively worth a staggering $3.3 trillion, against individual valuations of Apple ($824 billion), Alphabet ($773 billion), Microsoft ($708 billion), Amazon ($690 billion) and Facebook ($510 billion). The figure below indicates the quarterly income comparison for these five tech giants.

Looking at these figures, one might wonder what the secret recipe is for the success of these American tech mammoths. Prominent researchers like Prof Jerry Wind of the Wharton business school and Teresa Amabile of the Harvard business school suggest that the primary mantra for the success of these tech firms is “their passion for incessant and disruptive Creativity that leads to corporate Innovation”. Both practical and empirical evidence suggests that organisations who can envision and act on the opportunities for change through creativity and innovation in the hypercompetitive and volatile corporate environment can not only survive but also be incredibly successful and even prosper when confronted with unpropitious and fluctuating economic conditions (Hodgkinson, 2015). Businesses, especially in the tech sector, which do not produce creative and innovative ideas or solutions become stale, pedestrian, uncompetitive and, even worse, unprofitable over time (Allen, 2014). A common theme across all these successful tech companies is that they are engaged in groundbreaking innovation by breaking the mould and thinking outside of the box, to an extent that most of it has been extremely disruptive. For example, Amazon, led by Jeff Bezos, disrupted the entire publishing industry by selling books online at very low prices and by pleasing customers with its hyper-efficient service. Then it went on to disrupt the entire mail-order industry by changing the way customers shop across the world (Robischon, 2017). This insinuates that perpetual innovation is not only necessary to survive in the tech/IT industry, but it is also immensely important to stay competitive and generate lucrative financial profits.

However, innovation does not happen by itself in isolation. The literature highlights that there can be no innovation without creativity, as creativity is the seed of innovation. While creativity

is the generation of novel and useful ideas or solutions, innovation involves implementation of this creativity i.e. of the new idea, process, solution or product. Thus, creativity is the driving force behind innovation and goes hand in hand with it (Amabile, 1996). Since pioneering innovation is so crucial for success in the IT industry and creativity is the prerequisite to innovation, it becomes vital for tech companies to enhance the creativity of their employees so that it can serve as a raw material for trailblazing innovation.

Both the academic literature and practical evidence suggests that most businesses in the tech industry try to manage creativity. However, empirical evidence or research findings indicate that creativity is largely unmanageable and the businesses that are incredibly creative are the ones that don't try to manage it; rather they try to foster or encourage it. So, how can IT firms become better breeding grounds for creativity? One of the best places to start would be workplace/job flexibility. In order to understand this, imagine an employee being forced to be in a stuffy office all day and asked to come up with creative ideas. Do you think novel ideas would more likely pop up into his mind if he is shackled within the dreary grey cubicles of his office or if he is at the top of a hill, or a bustling café, or a lively pub or near a calm waterfall or river? Well, one might think it's a no brainer, obviously one is likely to come up with unique ideas when he is at a place that inspires him or serves as his creative muse. Yet businesses fail to realize this and rather ask their employees to assemble around massive boardroom tables to produce or brainstorm creative ideas/solutions. They fail to understand that one can't schedule inspiration because it is totally unreasonable to expect the next big idea to randomly appear in a brainstorm on Monday afternoon at 2.30. Thus, the literature suggests that firms should provide their employees job flexibility in the form of flexible hours (flextime), location (flexplace), holidays, scheduling and planning or sabbaticals so that the employees can tap into their intrinsic motivation, follow their passion and come up with creative ideas or solutions to complex problems.

Moreover, Zhou (2003) asserts that one of the crucial aspects necessary to foster a culture of creativity at work is supervisor/manager support for creativity. This can be in the form of developmental feedback, creativity-relevant information or allowing them to spend 10-20% of their work time on their own pet projects (something that they are passionate about and might be unrelated to work). This might seem unreasonable and frivolous to employers but Gmail & Google Maps, two of Google's most valuable products, were results of 20% time spent on pet projects (Allen, 2014). This indicates that factors that influence intrinsic motivation of IT

employees can significantly enhance their creative performance at work. Though these ideas have been theoretically proposed by researchers, very few of them have been empirically tested. Thus, the current study aims to test the influence of factors like job flexibility and supervisor support for creativity on creativity of tech workers, and to develop a comprehensive model linking creativity antecedents with creativity outcomes.

2.4 Theoretical Framework: Linking Creativity Antecedents, Intrinsic Motivation, Mood and Employee Creativity

For all we know, there is no single phenomenon that reflects the propensity of employees to be creative at work as much as intrinsic motivation. Several studies over the last decade have highlighted that employees who are intrinsically motivated are more likely to be creative at work (Amabile, 1988, 1996; Deci & Ryan, 1985; Zhou & Shalley, 2003). In order to understand the influence of intrinsic motivation on employee creativity, we need to explicate and comprehend **self-determination theory (SDT)** which is considered as the bedrock of motivation research. At the heart of the theory is the distinction between two key types of motivation predicated on the goals or reasons that lead to an action (Deci & Ryan, 1985). Intrinsic motivation refers to an impetus or inspiration to do a task and be engaged in it because it is inherently interesting or pleasurable and not due to any external prods, constraints or rewards that might result because of it (Deci, 1975; Deci & Ryan, 1985). Conversely, motivation that is spurred by external outcomes or pressures is referred to as extrinsic motivation.

Intrinsic motivation is considered to be a pervasive and critical form of volitional activity in humans (Deci & Ryan, 2000). The literature suggests that right from birth, humans display a ubiquitous willingness to learn, and are playful, agog and inquisitive to try new things without requiring any adventitious incentives to do so (Deci & Ryan, 1987). The proclivity to readily assimilate, take a keen interest in novelty and to apply creative ideas is not restricted to childhood but is a vital aspect of human nature that influences persistence, well-being and performance even during the working epoch of human life. This insinuates that humans are intrinsically motivated to be curious and playful with creative ideas not only during their childhood days in school and college but also during their careers at work (Ryan & Deci, 2000). However, given the fact that employees are naturally equipped with intrinsic motivational dispositions, empirical evidence suggests that it can be quickly sabotaged by a range of non-supportive work conditions and thus, perpetuation and augmentation of this inherent proclivity requires a supportive work environment (Ryan & Deci, 2000; Dewett, 2007). Therefore, to explore the socio-contextual conditions that evoke or subdue this intrinsic motivation, Deci & Ryan (1985) proposed a sub-theory within SDT which is called **cognitive evaluation theory (CET)**.

According to CET, employees have a basic psychological need for competence (self-efficacy)

and thus, interpersonal and social events like feedback, rewards and communications that advance and assist such feelings of competence will enhance their intrinsic motivation at work. Further, it suggests that contextual conditions like effectance-promoting feedback, desirable challenges and freedom from ignominious and denigrating supervisor evaluations will also aid intrinsic motivation of employees (Deci & Ryan, 1985). Particularly, CET highlights that feelings of competence would not advance intrinsic motivation of employees unless they are coupled with autonomy and flexibility, which provide a sense of control to employees (Dewett, 2007). Thus, to maintain or augment high levels of intrinsic motivation both the competence (self-efficacy) and autonomy (flexibility) needs of the employees should be satisfied (Deci & Ryan, 2000). Though much of the empirical studies in the past have focused on and corroborated the effects of contextual factors that either sustain or thwart employees' needs for autonomy and competence, thereby enhancing their intrinsic motivation, few contemporary studies suggest that even individual's personal factors (like inner resources or identity) that elicit feelings of competence and autonomy can aid their intrinsic motivation (Deci & Ryan, 1985). Therefore, it is posited that personal and contextual factors that will satisfy employees' needs for competence and autonomy will enhance their intrinsic motivation. Fig 2, below, explains the process by which intrinsic motivation influences creativity according to self-determination theory.

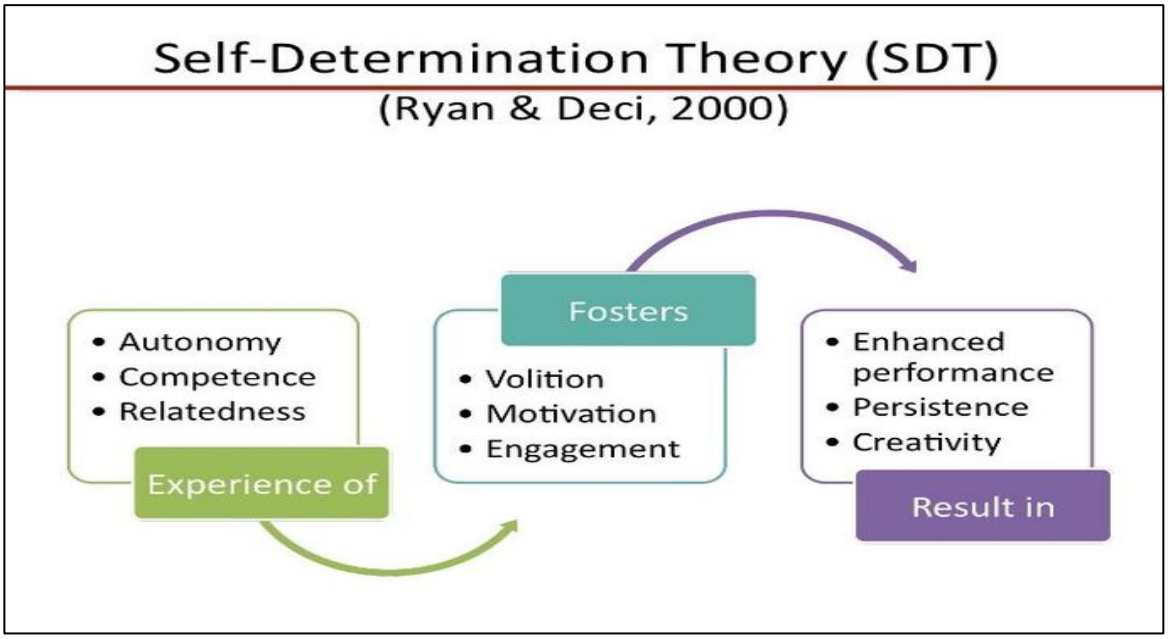


Figure 2. Self-Determination theory (Deci & Ryan, 1985, 2000)

Building on Ryan & Deci's SDT & CET, Amabile (1983, 1996) developed one of the most prominent and widely accepted theories of employee creativity – called the **componential theory/model of creativity.** The componential theory is a comprehensive model of creativity which suggests that both socio-environmental (workplace) and psychological (individual) components are essential for an employee to produce creative ideas/solutions at work. According to the theory, the creativity of an employee could be influenced by three 'within the individual' or personal factors/components: domain relevant skills, creativity relevant processes and intrinsic motivation (see figure 3) and these components are regarded as extremely vital for producing creative outcomes in any given domain. The external/contextual component, 'outside the individual' that affects creativity is particularly the social environment at work (Amabile, 2016). The theory suggests that there is a high propensity for an employee to be creative when his domain relevant skills (expertise) and creativity-relevant processes (creative thinking skills) overlap with his strong intrinsic motivation and that higher the level of each of these three components, the higher will be the creative performance of the employee. This imbrication of the three components is called 'creativity intersection' as depicted in figure 3.

Domain relevant skills refer to the proficiency and competence in the pertinent domain or domains and include technical skills, knowledge, intelligence, expertise and talent. In the ICT industry this would include expertise in programming, web designing, mobile app development or software engineering. These skills satisfy the competence (self-efficacy) needs of employees thereby enhancing their intrinsic motivation and provide the raw material which employees can use to build upon and produce creative ideas (Amabile 2012, 2016). Creativity-relevant processes refer to personality characteristics and cognitive processes that are favourable to risk-taking, autonomy, knowledge of heuristics for generating ideas and trying new approaches to problem-solving. Cognitive processes usually include thinking broadly with an ability to use a wide array of information and making eccentric associations between different categories of data. Personality characteristics or traits are the ones that encourage employees to take bold risks, be adventurous and eschew conformity in order to generate creative outcomes (Amabile, 2016). The last within the individual component of this model is intrinsic motivation which refers to the passion of performing a task or solving a problem primarily because it is involving, interesting, satisfying or challenging rather than undertaking it because of extrinsically motivating factors like incentives, rewards or evaluation.

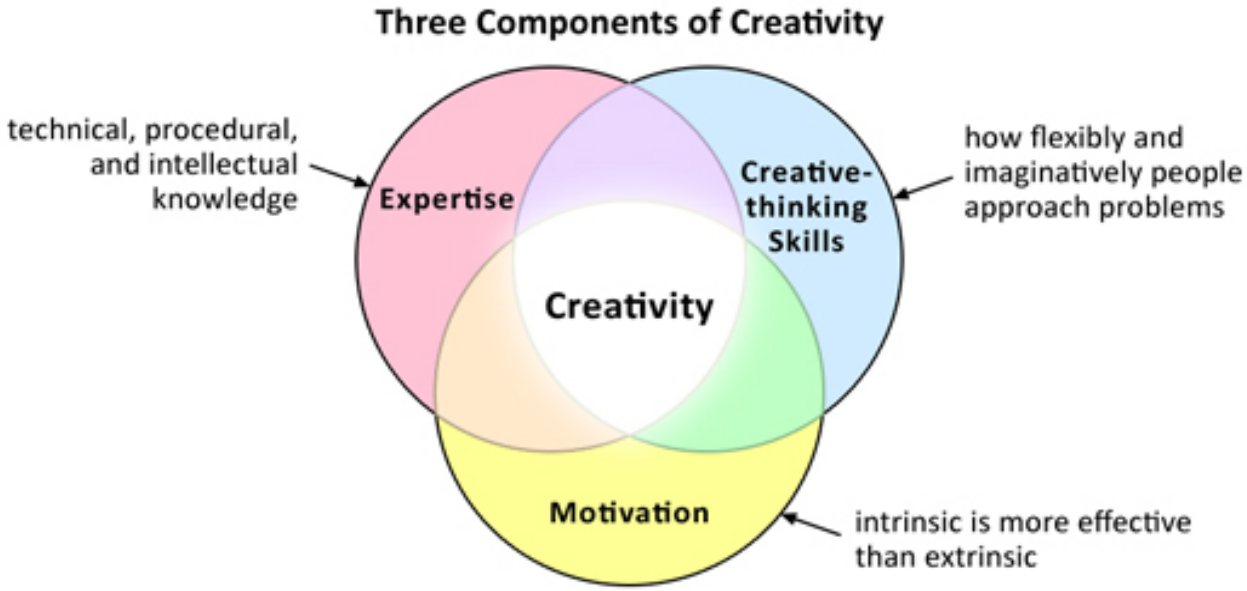


Figure 3. Amabile's Componential theory of Creativity (Amabile, 1998, p. 82)

Amabile (1996) considered intrinsic motivation so crucial to creativity that she proposed 'Intrinsic Motivation Principle of Creativity' as the core tenet of componential theory. According to this doctrine, employees are most creative when they are motivated and attracted to their work mainly by the enjoyment or satisfaction of the work itself and not by extrinsic motivators (Amabile, 1996). In fact, employees who are motivated by external goals like rewards or competition are less likely to be creative. Thus, the model specifically emphasises the significance of intrinsic motivation in employee creativity and posits that personal and contextual factors (creativity antecedents) influence creative performance of employees through their intrinsic motivation (Shalley et al.,2004; Dewett, 2007).

Additionally, componential theory also highlights the importance of mood and affect in the creativity of employees. Amabile (1983,1990) argues that, according to the componential model, intrinsic motivation can influence creative performance by both cognitive and affective mechanisms. Intrinsically motivated individuals are likely to be playful with ideas, deeply engrossed in the task at hand and more willing to take risks because they are free of extraneous and impertinent goals. They explore new cognitive pathways, are more audacious in trying unorthodox approaches to problem solving and sometimes engage in behaviours not pertinent to attaining a solution (Amabile et al, 1990). Therefore, since they perform the activity primarily for the pleasure of engaging in it, these employees are more likely to experience a positive mood/affect while doing their work. On the contrary, employees who are extrinsically motivated are more concerned about the extrinsic goals (like rewards or positive evaluation) to

be achieved and hence, are not as deeply engaged in the activity. They tend to use prosaic methods for problem solving, feel less free to take risks and depend upon hackneyed cognitive pathways for idea generation. Therefore, they may experience little to no positive affect/mood while working, as compared to intrinsically motivated employees. This insinuates that creativity antecedents influence intrinsic motivation of employees which further influences their mood/affective experiences at work that consequently influences their creative performance.

Furthermore, the theoretical framework and a massive amount of empirical evidence indicates that employee creativity is a function of employee's personal traits or characteristics and the surrounding contextual environment in which he/she works. When certain personal characteristics of employees match with the supportive work environment around them their propensity to produce creative ideas flourishes, thereby enhancing their creative performance (Shalley at al., 2004). Therefore, the current study includes both personal and contextual factors as antecedents to creativity. There are several personal characteristics that influence employee creativity like proactive personality, openness to experience, job self-efficacy, creative personal identity, extroversion/introversion and so on but the factors included in the current study are creative role identity and creative self-efficacy. Creative role identity refers to an employee's internalized set of role expectations with the importance of being committed to perform creatively in the current role (Farmer, Tierney & Kung-McIntryre, 2003), whereas, creative self-efficacy reflects an employee's confidence or belief that he/she can produce creative outcomes or solutions (Tierney & Farmer, 2002).

Further, there is an array of contextual factors that are elements of the work environment, not part of the individual, which significantly affect the creativity of employees. But the ones chosen for this study involve job flexibility (which includes flextime, flexplace and autonomy) and perceived supervisor support for creativity (feedback, encouragement and support that one receives from their immediate supervisor or manager). The cardinal reason for choosing these four factors specifically is that they are expected to affect the creativity of employees in highly creative knowledge roles like computer programming, software and app development, cybersecurity and artificial intelligence engineering by impacting the degree to which they apply sundry procedures or strategies that may aid creative idea generation (Shalley et al., 2004). Further, the theoretical framework discussed in the section provides a sound and logical justification for the influence of these four factors on the creative performance of ICT

professionals. In addition, there have been very few studies in the past exploring the impact of these four factors together on employee creativity, particularly in the ICT context.

Hence, drawing on the componential theory, SDT and CET, the current study posits that personal and contextual factors (that satisfy employees needs for competence, autonomy and resources) will lead to an increase in intrinsic motivation of employees and this enhanced intrinsic motivation will lead to the development/experience of positive mood states at work, which will further enhance the creative performance of ICT workers. This postulate suggests that intrinsic motivation and positive mood act as chain mediators between creativity antecedents and employee creativity. Though it is stated and explained more formally in the hypotheses & theoretical model chapter that will follow, the general conceptualized model can be depicted as follows.

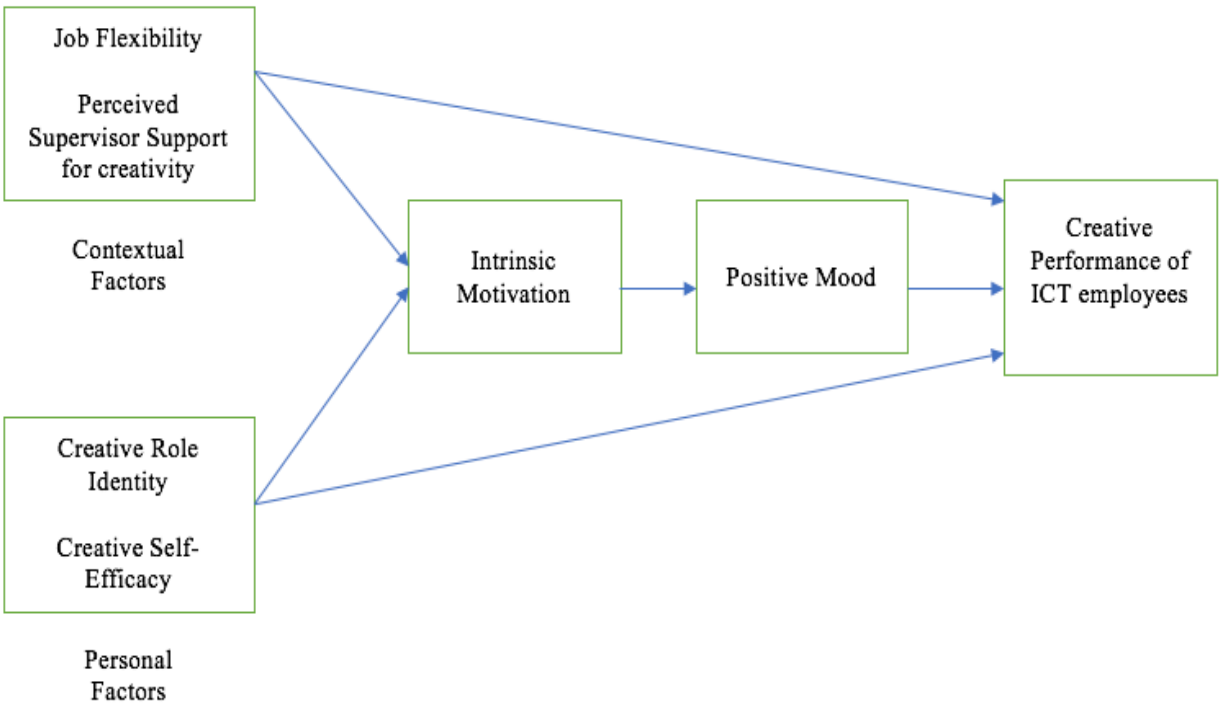


Figure 4. Overview of the Conceptual Model

2.5 Contextual Factors affecting Creative Performance of ICT professionals

Conventionally, researchers have focused only on personal or psychological characteristics of employees to understand creativity. But many contemporary studies have highlighted that the influence of environmental or contextual factors, particularly workplace factors, on employee creativity is ineluctable. A plethora of recent studies have indicated that the work environment surrounding an individual employee and his team plays a crucial role in fostering or thwarting creativity and innovation at the workplace (Amabile et al., 1996; Oldham & Cummings, 1996; Dewett, 2007; Shalley et al., 2004; Zhou, Wang, Song & Wu, 2017). An exhaustive review of creativity literature conducted by Shalley et al. (2004) suggests that a myriad of contextual factors like job autonomy, job complexity, perceived organisational support, perceived supervisor support or encouragement, relationships with coworkers and coworker support, rewards, organisational culture, leadership or management style, etc. directly or indirectly affect creative performance of employees. However, as explained in the theoretical framework section, the current study precisely focuses on investigating the impact of **job flexibility and perceived supervisor support** on the creative performance of ICT employees, first, because of the pertinence of these two factors in the IT services industry (especially Silicon Valley) and second, because there is very little empirical research conducted to explore the role of these two factors in creativity of IT knowledge employees. Specifically, this study will be the first to examine the influence of job flexibility on employee creativity.

2.5.1 Perceived Supervisor Support for creativity and related hypotheses

In digital and high-tech, knowledge-work intensive organisations – like Facebook, Microsoft, Google & Apple - ingenious and perspicacious employees strive indefatigably to be both creative and productive in generating new ideas, new services, new ways of doing business, new products and new processes (Amabile, Schatzel, Moneta & Kramer, 2004). Although there is an array of factors that impinge on employees' experience of the environment they work in, one of the most direct and influential is plausibly the leadership of the teams in which these employees work. The immediate supervisors/leaders who guide and provide feedback, delegate responsibilities and evaluate their work, encourage and provide support, aid or restrain their access to information and resources play a vital role in enhancing or impeding the creative performance of ICT employees (George & Zhou, 2007). The literature provides some compelling evidence that employee creativity is related to employees' perceptions of the work environment created by their immediate supervisors/managers/leaders, and specifically their

discernments of instrumental (task-oriented) and socio-emotional (relationship-oriented) support (Oldham & Cummings,1996; Diliello, Houghton & Dawley, 2011). However, surprisingly, there is a paucity of studies exploring the impact of supervisor/leader behaviour on employee creativity (Mumford et al., 2002).

Perceived supervisor support for creativity refers to the extent to which employees form perceptions that their immediate supervisor provides constructive feedback, supports and encourages their novel or unpopular ideas, values and recognizes their contributions, treats them with respect, dignity and kindness and in general, cares about their well-being (Madjar et al., 2002; Kim, Hon & Lee, 2010). Amabile's (1996, 2012) most comprehensive componential theory of creativity specifically emphasizes and outlines the role of the perceived work environment in influencing employee creativity. It postulates that perceived supervisor support for creativity plausibly enhances when a supervisor helps foster an environment that is open to eccentric and unique ideas, serves as an erudite role model, recognizes individual employee contributions, helps in setting aspirational goals, shows confidence in the subordinates and the workgroup and provides developmental feedback. In addition, supportive supervisors also tend to be effective communicators, to be zealous and passionate, able to formulate a clear direction without being controlling and to be solicitous of their subordinates (Diliello et al., 2011). Several studies have also linked supervisors' prowess to assist open and honest interactions between employees, to enhance trust among the team members and to provide goal clarity to impressions of supervisor support (Bailyn, 1985; Getzels & Csikszentmihalyi, 1976; Shalley, Gilson, & Blum, 2000; Tierney & Farmer, 2002).

Kouzes & Posner (1995) assert that supportive supervisors facilitate and enhance the creative performance of employees by eliminating inflexible and bureaucratic procedures, encouraging diversity of opinion, disruption and dissent to challenge the status quo and sharing valuable creativity-relevant information. Thus, when employees receive creativity-relevant feedback and information from their supervisors they are encouraged to produce more creative ideas as they view their creativity to be appreciated and valued by their supervisors. Two contemporary studies by George and Zhou (2001) and Zhou (2003) highlighted that when supervisors provided their employees job autonomy and developmental feedback their creative performance drastically increased. On the contrary, when supervisors adopted a close monitoring and controlling feedback style, the creativity of these same employees was thwarted

even in the presence of highly creative coworkers. All of this indicates that as perceived supervisor support for creativity increases, employee creativity increases.

According to Amabile et al. (2004), supervisor support should comprise of both instrumental (task-oriented) and socio-emotional (relationship-oriented) support. Supervisor task support includes providing resources and equipment to perform a task or activity, elucidating role expectations and key performance indicators used to evaluate creative task performance, ameliorating processes that assist the accomplishment of tasks, collating information, providing developmental feedback and aiding creative problem solving. Whereas supervisor relations support includes providing support and encouragement for new ideas, valuing and appreciating employee's efforts even though some of their ideas failed, improving interpersonal relations by building trust and loyalty among team members (Wang & Cheung, 2009). For employees to pursue the formulation and implementation of avant-garde and unconventional ideas it is immensely important for the supervisor/leader to provide resource/task-oriented support to them in the form of developmental feedback, equipment and material and access to valuable information (Wang & Cheung, 2009). Additionally, according to SDT and CET, when supervisors provide developmental feedback to employees, they engage in a feedback style which is informational in nature and this informational feedback equips employees with necessary creativity-relevant skills and processes that consequently ameliorate their creative performance at work. Thus, in accordance with the informational perspective of CET, this supervisor task support satisfies the self-efficacy and competence needs of the employees, thereby boosting their confidence to produce creative solutions (Deci & Ryan, 1985, 2000).

In addition to supervisor task support, supervisor relations support also influences employee creativity (Amabile et al., 2004). When a supervisor values and recognizes the achievements and contributions of his subordinates, from the CET perspective, this recognition and appreciation also helps to build a feeling of competence and self-efficacy in them. This tenet was further corroborated by Redmond, Mumford & Teach (1993) research which indicated that when supervisors satisfy their subordinates' needs for self-efficacy it helps the subordinates to gain creative problem-solving skills and to develop high-quality strategies, both of which further enhances their creative performance at work. Moreover, since creativity involves perpetual generation of new ideas, there is a great likelihood that most of these new ideas might not work out. Failure of these ideas is inexorable and thus, can easily lead to frustration and

disappointment. Supervisor relations support can help employees to resuscitate and overcome these negative emotions which will lift their spirits and therefore, augment their creative performance (Wang & Cheung, 2009). Based on these arguments the following hypothesis is proposed.

H1: Perceived supervisor support for creativity is positively related to the creative performance of ICT employees, such that as perceived supervisor support for creativity increases, the creative performance of ICT employees will also increase.

Further, according to the intrinsic motivation principle of cognitive evaluation theory and componential theory, supervisor support and behaviour affects employee creativity also through its influence on employee intrinsic motivation (Zhou 2003; Shalley et al., 2004). Cognitive evaluation theory posits that perceived supervisor support (contextual factor) affects intrinsic motivation through two aspects: informational and controlling. The comparative prominence of these two aspects is key to determining whether perceived supervisor support will have a positive or negative effect on employee intrinsic motivation (Zhou, 2003). In fact, the literature proposes that supervisor developmental feedback affects intrinsic motivation through informational aspects of supervisor support, whereas supervisor close monitoring influences intrinsic motivation through controlling aspects of supervisor support (Coelho, Augusto & Lages, 2011; Amabile et al., 2004; Zhou, 2003). Supervisor developmental feedback refers to the degree to which supervisors provide beneficial and valuable creativity-relevant information to their subordinates so that they can gain new skills, learn and improve their creative performance at work. When a supervisor engages in such informational practices they equip employees with behaviourally-relevant information which helps employees to improve and enhance their performance in the future without any pressure for achieving a particular outcome (Deci & Ryan, 1985, 2000; Zhou, 2003). This competence-relevant information makes employees feel encouraged and supported, thereby boosting their intrinsic motivation.

Conversely, supervisor close monitoring refers to the degree to which supervisors keep a close watch on their subordinates to make sure that they perform the tasks in expected ways, be subservient and follow all the instructions and do not try unconventional strategies that the supervisor might disapprove of (Zhou, 2003). When supervisors closely monitor their subordinates, the employees feel that their actions, feelings and thoughts are constantly being

controlled, watched and evaluated. This constant supervision and control makes employees very perturbed about doing something that their manager might disapprove of and will eventually distract them, making them feel that they are no longer the source of their own thoughts or actions. This coerces the employees to do certain things in a way they don't desire, creating an impression of external locus of causality for behaviour and thus, subverts their intrinsic motivation. This insinuates that when perceived supervisor support is high in the form of supervisor developmental feedback, intrinsic motivation of employees increases. However, when perceived supervisor support is low in the form of supervisor close monitoring, employee intrinsic motivation decreases. Based on these arguments, the following hypothesis is proposed.

H2: Perceived supervisor support for creativity is positively related to employee intrinsic motivation, such that as perceived supervisor support increases, intrinsic motivation of ICT employees will also increase.

2.5.2 Job Flexibility and related hypotheses

In order to understand the influence of job flexibility on employee creativity, it is first and foremost important to understand and throw some light on the work culture of the Tech sector, in particular, the powerhouse of creativity – Silicon Valley.

Work Culture of the Tech sector and Silicon Valley

"Do you know how to tell you are doing the job? If you are in the office everyday early in the morning by 4 am, talking in to a tape recorder and writing notes on scraps of paper, having a knot in your stomach and a rash on your skin, are losing sleep and losing touch with your wife and kids, having no appetite or sense of humour, and feeling that everything might turn out wrong, then you're probably doing the job." – said famous Silicon Valley Venture Capitalist Keith Rabios, quoting NFL football coach Bill Walsh, in his lecture on startups in Stanford University (Tiku, 2017).

Silicon Valley touts itself as being "eccentric and trailblazing" and thus, its priesthood endorses a very peculiar kind of grit. While all other industries have realized the importance of work-life balance and job flexibility in improving employee productivity and performance, Silicon Valley (IT/tech sector) has taken a starkly different approach of branding workaholism as a mantra for startup success (Lyons, 2017). The buzz word used by tech nerds for workaholism in their internet-centric community is 'hustle'. It has gone so far that techies now buy coffee mugs and T-shirts with slogans saying "Dream, hustle, profit, repeat" and "Outgrind, outhustle, outwork everyone." An entrepreneur and angel investor, Gary Vaynerchuk, who has 1.5 million twitter followers usually preaches to his acolytes that they should be working 18 hours a day without taking any vacations, days off or time off (Lyons, 2017). Allegories of Tech billionaire Elon Musk, founder and CEO of Fortune 500 company, Tesla, reflecting utmost devotion, like the tale of him sleeping on a bean bag next to his desk in order to launch his start up and get it off the ground, are narrated vehemently by wannabe Zuckerbergs and other venture capitalists. This rhapsodising of clocking long hours in the office has led young techies to believe that hard work is tantamount to success (Tiku, 2017). In the tech industry, work ethic is a perennial subject, which has its own parochial take on the bootstrapped path one should follow to reach the topmost rung of the socio-economic ladder. This ideology and culture of hustling, which is a euphemism for trickledown workaholism for some, has become so

powerful and ingrained that it not only celebrates efforts leading to stress and burnout, but often requires it (Fowler, 2017). Hanson and Fowler (2017) argue that in some companies, founders and management explicitly ask employees to work long hours in the office while others implicitly require them to work 10 to 14 hours a day. Employees who refuse to commit to these long workdays are deemed as 'cultural misfits' or 'not passionate' and in some cases, are also denied promotions (Tiku, 2017).

To add further, some tech companies like Yahoo and HP have in fact reversed their job flexibility policies recently by asking all their remote workers to return to the office (Kaneshige, 2013). The changes were made in the wake of the appointment of new CEO, Marissa Meyer, who believed that employees often compromise on the quality of work when they telecommute or work from home. She sent an internal memo to all the employees that read: "Speed and quality are often sacrificed when we work from home. We need to be one Yahoo!, and that starts with physically being together." All of this insinuates that the tech industry fails to understand that creative ideas are produced when an employee is inspired and motivated, not necessarily between the conventional hours of 9 to 5, Monday through Friday. A plethora of empirical evidence suggests that long working hours and lack of workplace/job flexibility leads to stress, burnout, impaired performance, reduced productivity, absenteeism, high turnover, mental and physical health issues, depression, negative organisational citizenship behaviours, alcohol and drug use, and even suicide (Perrewé, 1991; Wright & Smye, 1996; Happel, Pinikahana & Martin, 2003; Spurgeon, Harrington & Cooper, 1997; McGrath, Reid & Boore, 2003; Vander Colff & Rothmann, 2009; Yong & Yue, 2007; Fothergill, Edwards & Burnard, 2004). On the contrary, contemporary research indicates that workplace flexibility and flexible work arrangements are associated with improved work-life balance, reduced stress and burnout, high productivity and performance, reduced work-family conflict, increased job satisfaction and reduced psychological distress (Kelly et al., 2008; Behson, 2005; Kossek & Thomson, 2015; Kossek, Lautsch & Eaton, 2006; Hill et al., 2008; Kossek, Rudderman, Brady & Hannum, 2012). Since, workplace/job flexibility has been associated with many positive work outcomes, it will be interesting to understand whether it has any significant influence on employee creativity or not.

Definition, Theoretical underpinnings and hypotheses

Though a substantial number of studies have explored the influence of job flexibility on employee productivity, performance, work-life balance and work-family conflict (Sánchez,

Pérez, Carnicer & Jiménez, (2007); Van der Voordt, 2004; Hoeven & Zoonen, 2015), there is a dearth of literature examining its impact on employee creativity. Some empirical studies in the past have explored the role of job autonomy (degree of freedom and discretion over how to carry out the job task) on employee creativity (Dewett, 2007; Liu et al., 2016), but none of them have investigated the influence or effect of job flexibility (flextime, flexplace, compressed week, telecommuting) on the creative performance of employees. An extensive and rigorous search on Google Scholar and SCOPUS was conducted to identify whether any studies have tried to explore the association or relationship between these two constructs, but none were found. Thus, the current study aims to understand the impact of job flexibility on employee creativity.

In order to understand the influence of job flexibility on creative performance, it is crucial to conceptualise and define it. Job flexibility as a construct is viewed and interpreted by different researchers in different ways and thus, there are a plethora of definitions proposed for it. In the past decade scholars have defined flexibility in an array of ways, as a narrower range of work options that permit flexibility in terms of when work is completed (often referred to as scheduling flexibility or flextime) and where work is completed (often referred to as flexplace or telecommuting) (Kossek, 2006) or as a broader umbrella of choices not limited to the place or time of work but also including the choices over amount of time off from work, managing breaks in one's career and also the organisational culture of flexibility (Berg, Misra, Kossek, & Belman, 2014). However, contemporary researchers like Hill et al. (2008), in their well-renowned and comprehensive paper on job flexibility, highlighted the two key perspectives for job flexibility irrespective of the range of choices: organisational and employee perspectives of workplace flexibility. According to Hill et al. (2008) some researchers take an 'organisational perspective' where the primary motive of flexibility is to ensure the ability of the organisation to quickly respond to rapidly changing demands emerging from internal or external environmental forces and therefore, worker needs are secondary to the needs of the organisation. Conversely, another coterie of researchers adopt an 'individual or worker perspective' where the main goal of flexibility is to enhance the ability of employees to self-regulate work-related responsibilities and to help them fulfill their occupational, family, community and personal needs, which in turn will indirectly benefit the organisation in the form of enhanced employee productivity, efficiency and effectiveness (Hill et al., 2008). Since the two perspectives are distinct, Hill et al. suggest that researchers should explicitly identify which concept is being used for their study.

The current study focuses on individual employee creativity and the literature suggests that individual autonomy enhances employee creativity, therefore, in this paper I conceptualize job flexibility from the worker/employee perspective. The definition adopted for job flexibility, from the individual perspective, is the one proposed by Kossek & Thompson (2015) and Ten Brumhellius et al. (2011) which states that "job flexibility is a formal or informal agreement between an employer and employee to provide individual control over flexibility in location (flexplace or telecommuting), timing (flextime and scheduling flexibility), duration (shorter work weeks) and planning and communication (referred to as autonomy) in relation to job tasks." It is important to note that this definition has several salient features. First, at the core of the definition is the opportunity for the employees to choose and arrange the main aspects of their day-to-day work life as they desire. Second, it encompasses both formal (as a part of one's employment contract) and informal (at the discretion of the supervisor/manager) arrangements of job flexibility. Finally, it emphasizes that job flexibility is not a simple one-dimensional concept that focuses only on flextime (ability to choose when to start and finish work each day) but it is a multifaceted concept that also includes flexplace (ability to choose the location of work) e.g. telecommuting, liberty to choose the duration of individual or collective work-related tasks one performs each week (called shorter work weeks or part-time employment), as well as the ability to manage the planning and communication of work-related tasks (referred to as autonomy or job control) (Hill et al., 2008).

After defining job flexibility, it is important to understand the mechanism through which it influences employee creativity at work. Every occupation or industry, including the IT sector, has certain psychological work characteristics that are related to employee performance and well-being (Hakanen, Schaufeli & Ahola, 2008). According to the **Job-Demand Resources model (JD-R)** these characteristics are classified as either a job demand or a job resource. The physical, organisational and social aspects of the job that require an employee to invest sustained physical and psychological efforts are referred to as job demands. On the other hand, the physical, social, psychological and organisational aspects of the job that help 1) reduce job demands, 2) achieve work goals and 3) spur personal learning, development and growth are called job resources (Schaufeli, Bakker & Van Hannen, 2009). The quintessential examples of job demand include excessive work load, tight deadlines, information overload, etc. whereas common job resources include supervisor support, autonomy and control, organisational support, monetary resources etc. The fundamental doctrine of JD-R is that job demand can

induce pernicious problems like physical & mental stress, increased burnout, absenteeism, reduced task-effectiveness and lower job engagement, whereas job resources can evoke enhanced dedication, motivation, increased commitment, lower levels of absenteeism and burnout, increased productivity and reduced job disengagement (Bakker et al., 2003, 2004; Ten Brumhellius et al., 2011, 2013). Many empirical studies have corroborated this proposition, thus insinuating that job demands debilitate and job resources enhance employee performance at work (Bakker et al., 2014; Demerouti et al., 2001; Hobfoll, 2002).

It is expected that the JD-R model will help us understand the influence of job flexibility, as a resource, on the creative performance of ICT workers. Hooven and Zoonen (2015) suggest that job flexibility or flexible work designs provide three key resources to employees: work-life balance, autonomy and effective communication. Work-life balance is the 'overall level of contentment resulting from an assessment of one's degree of success at meeting work and family role demands' (Valcour, 2007, p.1512). A vast body of literature highlights that employees with flexible work schedules can accommodate both work and non-work responsibilities thereby experiencing better work-life balance (Kelly et al., 2011; Gajendran and Harrison, 2007; Kelliher & Anderson, 2008). Therefore, job flexibility acts as a vital resource that helps employees to manage various life responsibilities in a balanced manner, achieve their work goals and reduce the possibility of work-family conflict. This enables employees to better accommodate their job demands, reduces their job stress and thus, induces positive affect or positive mood states. To add further, Amabile et al. (2005) assert that when employees experience positive affect and happiness they are more likely to produce creative ideas and solutions at work. This insinuates that job flexibility enhances employee creativity through work-life balance.

Another crucial resource that employees receive through job flexibility is an enhanced feeling of autonomy (Hooven & Zoonen, 2015). The degree of freedom, discretion and independence over how to carry out the job task is referred to as autonomy (Humphrey et al., 2007). Research indicates that when employees receive complete control over their work location, work schedule, and the use of communication tools they experience increased levels of autonomy and control in their job (Kelly et al., 2011; Putnam et al., 2014). Byzantine mechanisms consisting of many rules, bureaucracy and time constraints often stifle creativity. If there are no restrictions on having to start work at a specific time and location, early-bird employees can exert their brilliance in the morning whereas night-owl employees can perform to their full

potential when it is dark. Employees who are uninspired by dreary cubicle walls, poor lighting and high noise levels in their office, can virtually work anywhere because of job flexibility provided to them. This indicates that job flexibility allows employees to tailor their work environment according to the task at hand thereby providing them a sense of autonomy and control over choosing a location that might serve as their muse for creative idea generation (Lewis, 2016). Thus, job flexibility enhances creative performance of employees by providing them autonomy and control at work.

The final job flexibility related resource that potentially influences employee creativity is communication effectiveness. The literature suggests that flexible working is assisted by advanced communication technologies which enhance collaboration and communication effectiveness between employees over both spatial and temporal boundaries (Cavazotte et al., 2014; Chesley, 2010; Jarvenpaa & Lang, 2005; Matusik & Mickel, 2011; Rennecker & Godwin, 2005). Flexible work designs allow employees from various work locations across the world to collaborate with each other, thereby enhancing horizontal and vertical communication effectiveness and providing a control over information and interaction. According to a creativity and innovation expert, DeGraff (2015), collaboration is one of the most crucial factors for creative idea generation. He believes that ground breaking creativity and innovation happens when cohorts of self-motivated people with a shared vision come together to share information, brainstorm ideas and decide the best solutions. Further, effective communication also provides employees with valuable and critical creativity-relevant information which satisfies their needs for competence thereby enhancing their intrinsic motivation which in turn facilitates their creative performance at work (Zhou, 1998; Deci & Ryan, 1985). Thus, job flexibility leads to communication effectiveness which enhances collaboration and access to information, both of which facilitate employee creativity at work.

To summarize, job flexibility provides work-life balance, autonomy and effective communication as resources to employees, all of which augment their creative performance at work. Based on these arguments, the following hypothesis is proposed:

H3: Job flexibility is positively related to the creative performance of ICT workers, such that as job flexibility increases, creativity of ICT employees will also increase.

In addition, according to self-determination and cognitive evaluation theory, since workplace flexibility provides employees with freedom and independence to choose their work schedule,

work location and work hours it satisfies their basic needs for autonomy and volition (Deci & Ryan, 1985; Coelho & Augusto, 2010). Further, job flexibility facilitated by modern communication technologies (like skype, whatsapp, conference calls) also enhances effectiveness of communication among employees, thereby providing them with all the information necessary for learning, growth and development (Zhou, 1998). This competence relevant information helps employees to gain new skills and improve their performance, consequently satisfying their needs for competence and skill-efficacy. When employees' basic needs for autonomy and competence are satisfied, they are automatically motivated to delve into an activity solely for its own sake rather than for external rewards (Deci & Ryan, 1985, 2000). This suggests that we can expect that when job flexibility increases, intrinsic motivation of employees also increases. On the contrary, when employees feel controlled and constrained their intrinsic motivation is undermined. Based on these arguments, the following hypothesis is proposed:

H4: Job flexibility is positively related to intrinsic motivation, such that as job flexibility increases, intrinsic motivation of employees will also increase.

2.6 Personal/Individual factors affecting creative performance of ICT professionals

Over the past several decades, a large body of literature has explored the proposition that individual or personal characteristics affect employee creativity (Oldham & Cummings, 1996; Rodan & Galunic, 2004; Jaussi, Randel & Dionne, 2007; Davis 1989; Martindale, 1989; Tierney & Farmer, 2002). Researchers have studied a myriad of personal attributes ranging from personality traits (Big Five – extraversion, openness to experience, neuroticism, agreeableness and conscientiousness) to cognitive styles and intelligence (Amabile, 1983; Barron & Harrington, 1981; Hocevar & Bachelor, 1989; Tierney & Farmer, 2011). Generally, most of these studies have empirically demonstrated that a stable group of personal attributes like self-confidence, openness to experience, attraction to complexity, proactive personality, intuition, job self-efficacy and personal identity relate positively and consistently to employee creativity across a wide array of domains (Gough, 1979; Oldham & Cummings, 1996; Shalley et al., 2004, Wang & Zhu, 2011). However very few studies have tried to investigate the influence of creative role identity and creative self-efficacy (as personal factors) on the creative performance of ICT employees. Therefore, to address this gap in the literature the current study aims to study the relationship between these personal factors and employee creativity.

2.6.1 Creative role identity and related hypotheses:

"A sense of identity is the root by which all creative effort is fed" – said J Saunders Redding in his address at the first conference of Afro-American writers. This powerful quote throws light on the importance of self-identity and self-concept in the creative performance of an individual. The way an individual sees himself and thinks about who he is as a person, has a tremendous influence on his behaviour or the way he acts (Farmer, Tierney, & Mcintyre, 2003). Though research indicates that creative individuals hold strong self-perceptions of being creative (Barron & Harrington, 1981), there is a paucity of literature examining the relationship between the self-concept of employees and their creative performance (Dowd, 1989). Until recently, there have been very few studies examining the impact of self-identity on employee creativity. In order to understand how an employee's identity relates to his creative action and to comprehend how he develops this self-identity relative to creativity, it is crucial to explore the self-concept of role identity (Burke, 1991; Stryker, 1980; Petkus, 1996). To thoroughly understand role identity, foremost, it is important to define and conceptualize it.

A role identity is how individuals like to see themselves or attribute meaning to themselves in

relation to a particular social position or role, that is generated instinctively through perceived appearance to self or social others, self-judgment of that appearance, and affect based on that judgment (Burke & Tully, 1997; McCall & Simmons, 1978). Researchers believe that the "self and others" aspect of role identity emerges from the symbolic-interactionist perspective which suggests that the self-perceptions of individuals are inevitably connected to their perceptions of what others think about them (Petkus, 1996). The way individuals interpret their interactions with people, events and situations that they encounter in social circumstances is determined by their role-identities (McCall & Simmons, 1978). The reaction (both hypothetical and actual) of social others (colleagues, peers and managers) to the behaviours and appearances of an employee in association with his role identity forms a fundamental part of the self-concept of role identity. In order to understand the concept of creative role identity it is essential to understand the two key elements of role identity. Role identity comprises of the role itself and the identity related to that role. Thus, in case of creative role identity, the identity is to be 'creative', whereas the role can be anything ranging from parent, to teacher or a tech professional. This association develops the complete role identity like a 'creative parent' or 'creative teacher' or a 'creative tech employee' (Petkus, 1996). Thus, a creative role identity necessitates an employee's penchant to be perceived by them and by their social others as someone who is creative in their work role (Wang, Tsai & Tsai, 2014).

According to **role identity theory**, an employee with a particular role identity (how a person likes to be seen by themself and social others) engages in corresponding role performances (actions or behaviours) that are intended to evoke role support, which further bolsters the role identity (McCall & Simmons, 1978). The theory particularly emphasizes that the self is comprised of different social roles in which a person engages and that this sense of role identity originates from the feedback an individual receives about themselves from their social relations and the concomitant self-perceptions (Riley & Burke, 1995). The development of self-concept through a role identity reflects a self-monitoring reflexive mechanism of sense-making in which feedback from others and self are integrated in order to support, validate and verify the identity (Farmer, Tierney, & Mcintyre, 2003). Finally, a role identity is indicative of a personal set of role expectations which are established in a way that the identity becomes a function of commitment to the pertinent role. The following diagram in Figure 5 highlights the cyclical nature of the role identity process and indicates how each element is connected to the others.

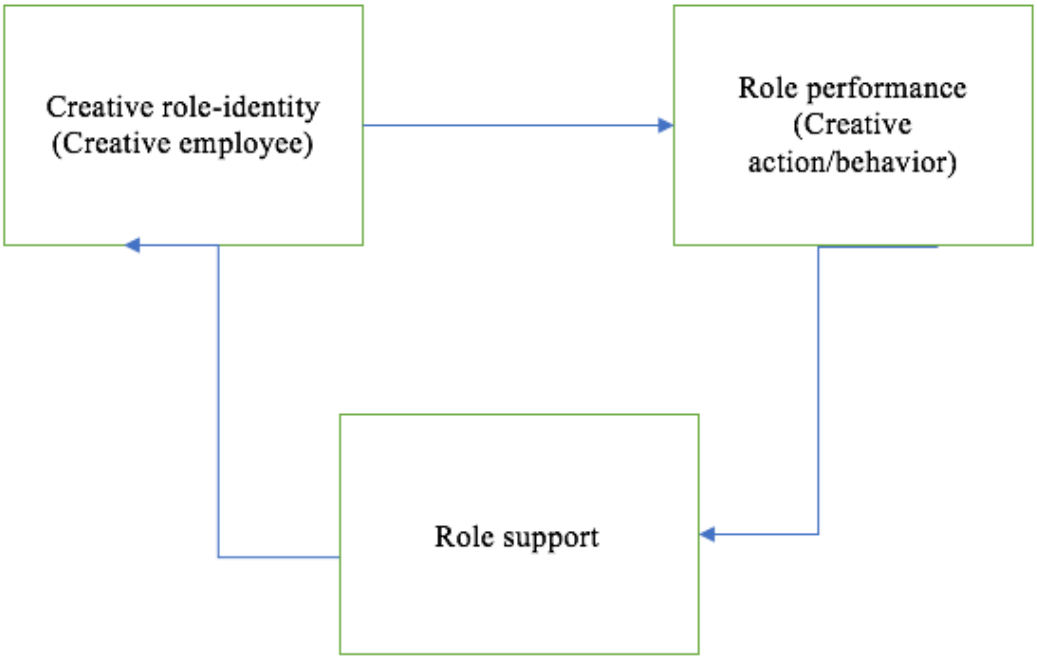


Figure 5. Role identity Theory in a creative context (Petkus, 1996, p. 191)

McCall & Simmons (1978) assert that when a particular role becomes an integral part of an employee's sense of identity, the employee is inclined to behave in compliance with this role identity so that he/she can gain verification and validation of the identity (Callero, Howard, & Piliavin, 1987; Petkus, 1996). This indicates that role identities encourage role performances because performing relevant roles satiate an employee's vital need for self-verification and allows their social others to identify and compartmentalise them (Markus & Wurf, 1987, Burke, 1991). Thus, on application of the role identity theory to the creative context, the cyclical and iterative nature of the theory highlights that an employee seeking to authenticate his creative role identity engages in role performance through his creative behaviour or actions. This role performance (creative action) is undertaken by the employee in turn to elicit role support (support for his creativity) from social others in the form of reactions (both imagined and actual) to his role performance and from himself in the form of self-support. Further, this role support fortifies and legitimizes the creative role identity of the employee, leading to continuous creative performance and the cycle is repeated.

However, the extent to which an employee is creative or performs creatively at work significantly depends on the relative strength of their role identity. According to Petkus (1996) the stronger the creative role identity of an employee, the more likely it is that they will exhibit

high creative performance and consequently try to evoke role support to validate their identity, whereas employees with low creative role identity are less likely to produce creative ideas or solutions as they are nonchalant about other's perceptions of their behaviour. Based on these arguments, the following hypothesis is proposed:

H5: Creative role identity is positively related to the creative performance of ICT employees, such that as creative role identity increases, the creative performance of employees will also increase.

In addition, the motivational perspective of role identity theory suggests that an individual's role identity self-motivates them to undertake role-consistent performances (behaviours or actions) because engaging in such behaviours reaffirms the identity. Hence, role identity is a significant driver of an individual's intrinsic motivation (Shamir, 1990). According to the "structural aspect" of symbolic interactionism, an individual's self-concept is composed of various role identities and these role identities are well-ordered in the self-concept as per the hierarchy of prominence (McCall & Simmons, 1978). The higher the prominence of a role identity within the self-concept, the greater it will enhance an individual's intrinsic motivation. Thus, role identities with significant importance will augment an individual's intrinsic motivation drastically (Stryker, 1980). On application of this postulate to creative role identity, one could argue that the higher the prominence of creative role identity within the self-concept of an employee, the more it will increase their intrinsic motivation. In simple words, employees with a high/strong creative role identity will have a significantly higher intrinsic motivation than the ones who have low/weak creative role identities.

More precisely, an employee with a creative role identity higher up in the prominence hierarchy will have a greater likelihood of perceiving a social situation as an opportunity to perform creatively and will also have far greater probability to actively seek out opportunities to engage in creative performance to validate that identity (Shamir, 1990). Though some researchers, have examined this relationship in a non-work context, there has been no research exploring it in the work setting. Thus, role identity theory highlights that employees with strong creative role identities will be intrinsically motivated to perform creatively at work, irrespective of the rewards or punishments associated with it, because by doing so they will maintain and validate their creative role identities. Based on these arguments, the following hypothesis is proposed:

H6: Creative role identity is positively related to employee intrinsic motivation; such that as

creative role-identity increases, intrinsic motivation will also increase.

2.6.2 Creative Self-efficacy and related hypotheses:

People usually ask questions like: are humans innately creative or is it something that we can learn and develop over time, or can a person be creative only in a specific domain or can they be creative across an array of disciplines, or even, why is it onerous to come up with creative ideas or solutions? These are certainly complex questions and researchers have tried to answer them by investigating human behaviour and creativity over several decades. However, one crucial aspect that seems to make a massive difference in the answers to these intriguing questions is that it greatly relies on you or the individual. Therefore, the principal question should be, do you think, or do you believe you can be creative? This vital question underscores the importance of understanding and exploring the critical concepts of 'job self-efficacy' and 'creative self-efficacy'.

Renowned psychologist Alan Bandura (1997) suggested job self-efficacy as one of the pre-requisites for creative performance and generation of novel ideas. Job self-efficacy is defined as an individual's belief in their ability and capacity to succeed in specific work situations or to accomplish a job task (Bandura, 1991). Since self-efficacy plays a significant role in influencing the performance of employees and their motivation to engage in specific behaviours, it becomes immensely important in understanding its impact on creative action in an organisational setting (Bandura, 1977, 1986). Ford (1996), in his theoretical model of creativity emphasized that self-efficacy beliefs are a key motivational component in driving employee creative behaviour. Though belief in task capacity and domain-specific expertise is essential to task accomplishment and performance (Bandura, 1986), Amabile's (1996) componential theory of creativity asserts that, along with domain-relevant skills, creative performance also considerably hinges on a core set of skills specific to creativity (called creativity-relevant skills). In reference to this argument, it is possible that an employee can perform incredibly well at the job or be highly productive but lack the potential or importantly, perceive himself as lacking the potential, to perform creatively at work (Tierney & Farmer, 2002). Furthermore, since novelty and productivity are two independent performance elements, it is plausible that differentiation in capability beliefs pertinent to the two performance dimensions will impact the performance mechanism (unique versus ordinary) an employee might choose. Therefore, it is vital to delineate self-perceptions of general job efficacy and self-perceptions of creative efficacy in relation to one's job. Deriving from Bandura's definition of job self-efficacy, Tierney and Farmer (2002, p.1138) defined creative self-efficacy

as “the belief one has the capability to produce creative outcomes”. It is important to note that despite creative self-efficacy lying within the realm of the self-concept or self-image perspective of creativity it is also unique from other general and broad self-views like confidence and self-esteem (Barron & Harrington, 1981; Bandura, 1997). Furthermore, this construct also differs from general job self-efficacy because it is creativity specific and does not focus on overall belief in an employee’s ability across various domains (Chen, Gully & Eden, 2001). A plethora of research has been conducted to investigate the relationship between job self-efficacy and employee creativity (Dewett, 2007; Oldham & Cummings, 1996), but very little attention has been directed towards understanding the influence of creativity-specific self-efficacy, called creative self-efficacy, on employee creativity. Thus, the current study aims to explore the influence of creative self-efficacy on the creative performance of ICT employees.

Creative ventures demand some psychological fortifying force that impels employees to be tenacious and persevere against the arduous challenges inherent in creative tasks (Amabile 1983; Bandura, 1997). When employees encounter formidable situations, strong creative self-efficacy beliefs significantly enhance their perseverance levels and coping efforts to tackle those situations (Bandura, 1977). Ford (1996) argues that the moment employees perceive their creative attempts to be unsuccessful they immediately resist engagement in creative behaviours and thus creativity-specific self-effacing beliefs play a crucial role in motivating employees to undertake creative endeavours. According to **social cognitive theory**, employees will not invest abundant time and resources in their work unless they believe or have confidence they can deliver coveted results and obviate deleterious ones by their actions (Bandura, 2001; Tierney & Farmer, 2002). Creative tasks and processes entail perpetual trial and error experimentation and relentless learning and adaptation (Tierney & Farmer, 2011). Employees that are creatively self-efficacious repudiate the process of following platitudinous and pedestrian procedures and rather adopt avant-garde and eccentric approaches to problem solving (Tierney & Farmer, 2004). High levels of creative self-efficacy also encourage employees to instill a powerful and tenable resilience in the face of major debacles and threats (Tierney & Farmer, 2002) and assists in adoption of mastery goal orientation towards learning strategies associated with creative processes (Tierney & Farmer, 2011). Even during events of massive difficulties, impediments and risks, employees with enhanced creative self-efficacy are less vulnerable to disengage from creative activities or to withdraw their creative efforts from formidable tasks. Conversely, employees with low beliefs of creative efficacy tend to be less creative because they have diminished cognitive perseverance and are reluctant to explore

and discover novel concepts and knowledge (Liu et al., 2016). In fact, research suggests that individuals with high levels of confidence in their creative efficacy, also called invincible creative self-efficacy (Tierney & Farmer, 2011), tend to be incredibly successful creators (Gong et al., 2009 Tierney & Farmer, 2002, 2004). Based on these arguments, the following hypothesis is proposed:

H7: Creative self-efficacy is positively related to creative performance of ICT employees, such that as creative self-efficacy increases, employee creativity will also increase.

Moreover, the beliefs in self-efficacy also have an impact on the goal-setting aspect of self-regulation (Bandura, 1991). Research suggests that employees who judge themselves capable and skilled are likely to set aspirational goals for themselves and thus, will be resolutely committed to achieving them (Locke & Latham, 1990; Wood & Bandura, 1989). On the contrary, employees who have qualms about their expertise and abilities tend to be easily deterred by failures and hurdles (Bandura & Caverone, 1986). This is supported by Bandura's (1991**) social cognitive theory** which suggests that employees who have high creative self-efficacy are often intrinsically motivated to amplify their efforts in the wake of failure and to tenaciously persevere until they succeed in achieving their objectives. Furthermore, Collins (1982) asserts that perceived self-efficacy is a better predictor of intrinsic motivation than actual ability of employees. This insinuates that employees who perceive themselves as creatively self-efficacious are likely to demonstrate enduring interest and joy in activities they perform because they believe they have the necessary skills and expertise to produce creative ideas or solutions (Bandura & Schunk, 1981). Therefore, creative self-efficacy can influence intrinsic motivation of employees by encouraging them to set the desired goals, striving persistently to achieving them in the face of difficulties, incessantly putting in effort and exhibiting resilience in the face of obstacles and failures.

Moreover, several studies have shown that feelings of fun, excitement, enjoyment and deep engagement in various types of job tasks are highly stimulated when employees believe they have the capabilities and see the evidence of their progress towards their aspirations (Bandura & Jourden, 1991; Dewett, 2007; Csikzentmihalyi, 1979). McCormick (2001) and Dewett (2007) postulated that self-efficacy beliefs and personal goals influence the creative performance of employees through their intrinsic motivation. Therefore, high creative self-efficacy will encourage ICT employees to truly believe in their capability to triumph in creative endeavours despite arduous challenges and hindrances, which will magnify their keenness to

try unconventional ideas and explore new areas, and consequently, enhance their intrinsic motivation (Gu, He & Liu, 2015). Based on these arguments, the following hypothesis is proposed:

H8: Creative self-efficacy of ICT employees is positively related to their intrinsic motivation, such that as creative self-efficacy increases, intrinsic motivation will also increase.

2.7 Role of Intrinsic Motivation and Mood in the Creative Performance of ICT professionals

As elucidated in the theoretical framework, it is important to note that according to Amabile's (1996) componential model of creativity, both intrinsic motivation and mood play a vital role in influencing employee creativity. In order to cogently understand the influence of intrinsic motivation and mood in the creative performance of ICT employees it is critical to define and conceptualize them first. Since I expounded and defined intrinsic motivation in detail while discussing self-determination (SDT) theory in section 2.2 of this chapter, I will now focus on explicating mood as a concept and will then lay out an argument underpinning the role of these two constructs in the creative performance of IT employees.

The literature suggests that the term 'affect' represents a blanket or hypernym group of phenomena that incorporates the concepts of 'emotions' and 'mood' (Davis, 2009; Amabile et al., 2005). There are two fundamental ways by which one can classify affective phenomena: first – whether the experience insinuates an association with a particular object and second – whether it is indicative of a response state or a durable/persisting orientation (Frijda, 1994). Some researchers have focused on other points of differentiation like the duration, intensity and specificity of the affective phenomena (Davis, 2009). Pragmatically, in neuroscience and psychology, the primary focus in mood conceptualization lies on distinguishing moods from emotions (Gendolla, 2000).

Emotions usually develop because of some form of interaction or association with a particular object or event, or a specific situation in a person's environment that channels attention and spurs action. Additionally, psychologists suggest that, in nature there are innumerable specific human emotions that exist and almost every one of them is affiliated to a limited array of responses. Thus, it is commonplace to observe emotions in instances like when someone is happy about something, furious at someone or scared of somebody (Baas, DeDru & Nijstad, 2008). On the contrary, moods are not typically associated with a particular event or object and are rather more diffused or generic affective states. Moreover, some researchers regard moods to be less intense and potent than emotions (Morris, 1989). Isen (1993) argues that a distinctive characteristic that sets mood apart from emotions is its lack of specificity which underlines the self-regulatory function through which mood channels current information about an individual's usual state of being. In accordance with this self-regulatory function, a vast body of empirical literature has frequently categorized affective experience into two general,

independent dimensions: positive and negative. However, some scholars have proposed a more detailed and stratified classification that includes some specific feeling states like self-assurance, joviality, excitement and attentiveness encapsulated under positive mood and sadness, guilt, fear and envy nested under negative mood, and some have even postulated four rather than two dimensions of affective experience. Despite these additional classifications, a plethora of mood-creativity literature has adopted the two-dimension perspective (Davis, 2009; Baas et al., 2008; Amabile et al., 2005; Gendolla, 2008; Hullett, 2005) and thus the current study will also follow the two-factor classification of affect and mood states.

Some studies argue that emotions are short lived whereas moods last for longer periods of time. For example, an employee might be furious and might lash out at a colleague, but that anger may last only for a couple of seconds or minutes whereas the same employee can sustainably be in an irritable mood which can last for few hours or several days (Watson & Clark, 1994). However, Lazarus (1994) asserts that timeframe or duration is not an appropriate parameter to differentiate moods from emotions. He suggests that some emotional incidents can comprise of more acute and less acute phases of affective phenomena succeeding one another, thereby prolonging the duration of affective experience whereas, on the other hand, some mood states can be ephemeral and last for a brief amount of time. Furthermore, applying the criterion of duration to differentiate mood and emotions is complex and baffling because, practically, each can influence the other. A small episode of an intense emotion like excitement can easily perpetuate and transform itself into a positive mood that may last for several days, whereas an unpleasant irritable mood can easily make an individual vulnerable to reacting indignantly to trivial frustrations (Davis, 2009). Unequivocally, it is very difficult to discern when an emotion ends, and a mood starts. In addition, some empirical evidence also suggests that both emotional incidents and moods can extend over a long time (Baas et al., 2008). In simple terms, though the time span of affective experience is a pervasive criterion used to distinguish emotions from moods, it is still a flawed one (Davis, 2009).

The literature suggests that researchers who view mood as a disposition or a trait infer that moods are experienced over extended periods of time (Isen & Baron, 1991; Mumford, 2003). Typically, emotional traits, like trait-anxiety, indicate the stable personal differences in the prospects that an individual would experience specific emotions whereas, emotional states like state-anxiety usually include only evanescent and fleeting feelings or responses (Davis, 2009). However, Lazarus (1994) particularly emphasizes that emotions and moods should only be

considered as response states. Nonetheless, the literature indicates that the propensity to experience positive or negative moods significantly depends on the personal differences between individuals (Grawitch, Munz, & Kramer, 2003; Lazarus, 1994). Furthermore, empirical evidence suggests that these differences continue to exist across various life circumnutates and over time (Watson & Clark, 1984).

To summarise, moods, contrary to emotions, are "pervasive, fairly diffuse, generalized affective states that are not typically associated with a particular object or event that may spur an action-orientation" (Madjar et al., 2002; Davis, 2009; George & Zhou, 2007). Additionally, the time-span of these transient affective states can vary, and in line with the self-regulatory aspect of moods, the literature has particularly focused on positive and negative moods as two general affective states. After understanding the concept of mood, it is important to understand the link between intrinsic motivation, mood and creative performance of ICT employees.

According to Amabile's componential theory of creativity, SDT & CET intrinsic motivation is one of the most essential factors necessary to produce creative outcomes or to enhance employee creativity. In fact, Amabile considered intrinsic motivation to be so vital for creative performance that she postulated the intrinsic motivation principle of creativity and regarded it as the central tenet of her componential theory (Amabile, 2012). The intrinsic motivation doctrine highlights that employees tend to have high creative performance only when they are intrinsically motivated by the job mainly because they find it exciting, involving, fun, enjoyable or personally challenging and not by extrinsic motivators like rewards, competition, evaluation or punishment (Amabile, 1996). Furthermore, research suggests that extrinsic motivators can in fact undermine intrinsic motivation and consequently, the creative performance of employees. Therefore, it is apparent from empirical evidence that intrinsic motivation is one of the crucial prerequisites for creativity (Liu et al., 2016; Dewett, 2007; Shalley et al., 2004).

Additionally, componential theory also suggests that intrinsic motivation influences creative performance through the affective experience/state of an employee (Amabile et al., 1990). The theory suggests that intrinsically motivated employees are usually deeply engrossed in the job at hand because they are not bound by extraneous or impertinent concerns about objectives foreign to the task. Therefore, because they have the proclivity to take audacious risks and try novel cognitive pathways, they will be more likely to play around with eccentric ideas and materials. Finally, since intrinsically motivated employees perform the task/activity solely for the pleasure or fun of engaging in it, they are very likely to be perky or exuberant during the

process, thereby experiencing positive mood/affect at work (Amabile et al., 1990). However, extrinsically motivated employees are usually occupied with the extrinsic objectives to be achieved and thus, are not greatly engaged or involved in the activity at hand. Further, they generally hesitate to take bold risks and tend to follow banal or hackneyed cognitive pathways. Therefore, since they shy away from trying iconoclastic ideas or solutions and do not undertake the activity for the sole purpose of enjoying it, they are likely to experience little to no positive mood/affect at work as compared to intrinsically motivated employees. In addition, Madjar et al. (2002) particularly highlighted in their mood-creativity research that intrinsic motivation of employees leads them to experience positive mood states at work. Thus, all of these arguments insinuate that intrinsic motivation enhances employees' positive mood/affective experiences at work. Therefore, the following hypothesis is proposed:

H9: Intrinsic motivation is positively related to positive mood, such that as employee intrinsic motivation increases, their positive mood experiences will also increase.

Further, Amabile et al. (1990) and Madjar et al. (2002) posit that as intrinsic motivation of employees increases, their likelihood to experience positive mood/affect at work also increases and this development or experience of positive mood consequently enhances their creative performance at work. Though the connection or relationship between intrinsic motivation and positive mood has been insinuated by componential theory, no study has ever officially proposed and empirically tested this association. However, the relationship between positive mood and employee creativity has been postulated and empirically tested by several researchers in the past decade. Most of the theories concerned with creativity suggest that employee creativity is susceptible to affective influence, particularly positive mood/affect, because it enhances employees' cognitive variations or processes in a way that spurs creative performance (Hirt, Levine, McDonald & Melton, 1997; Clore, Shwarz & Conway, 1994). In one of the most prominent mood-creativity studies, Isen (1999) suggests that positive mood/affect affects cognitive mechanisms and activities in three chief ways. First and foremost, positive mood significantly increases the plausible number of cognitive elements or routes available for connection by making auxiliary cognitive material or information available for processing. Second, it enhances the breadth of cognitive elements pertinent to the problem by leading to a complicated cognitive pathway and defocused attention. Third, positive mood allows individuals to make more associations between divergent stimulus materials, thereby increasing their cognitive flexibility which enhances the odds of diverse cognitive aspects to

in fact become connected. As a result, Isen concluded that an individual experiencing positive mood tends to easily recognize a problem, assimilate a wide range of available resources and therefore, have higher creative performance than one experiencing a neutral or negative mood.

Likewise, Fredrisckson (1998, 2001) suggested that positive affect expands the scope of attention and the scope of cognition thereby increasing the prospects of employee creativity at work. A vast body of empirical support of the influence of the positive affect on employee creativity comes from Isen's (1985, 1999) laboratory research in which he discovered that individuals who experienced positive moods gave more uncommon/unconventional (but appropriate) first word associations to neutral stimulus words than people in neutral or negative mood states. Further, he also argues that negative affect is undeniably a less functional retrieval cue for information/resources in memory which considerably impairs creative thinking and performance (Isen, 2002). Several other studies have highlighted that employees experiencing happy moods exhibit greater fluency and develop more divergent solutions to problems than the ones in sad moods (Hirt et al., 1996; Abele-Brehm, 1992; Vosburg, 1998). All in all, these empirical studies provide notable evidence that positive mood enhances employee creative performance at work by instigating changes in cognitive processing. Based on these arguments, the following hypothesis is proposed:

H10: Positive mood is positively related to creative performance of ICT professionals, such that, as positive mood experiences of employees increase, their creative performance will also increase.

Considering all the arguments made above, it can be concluded that intrinsic motivation augments employee's positive mood/affective experiences at work and this positive mood further enhances creative performance of employees. Therefore, linking this proposition to hypotheses 2, 4, 6 and 8 which posited that perceived supervisor support for creativity, job flexibility, creative role identity and creative self-efficacy are positively related to employee intrinsic motivation, one can propose that contextual and personal factors enhance intrinsic motivation of employees which further increases their positive mood experiences at work and these positive mood states consequently enhance employee creativity. This suggests that intrinsic motivation and positive mood act as chain mediators between creativity antecedents (contextual and personal factors) and creative performance. Based on this reasoning, the following hypotheses are proposed:

H11: Intrinsic motivation and positive mood will mediate the relationship between perceived supervisor support for creativity and creative performance of ICT employees.

H12: Intrinsic motivation and positive mood will mediate the relationship between job flexibility and creative performance of ICT employees.

H13: Intrinsic motivation and positive mood will mediate the relationship between creative role identity and creative performance of ICT employees.

H14: Intrinsic motivation and positive mood will mediate the relationship between creative self-efficacy and creative performance of ICT employees.

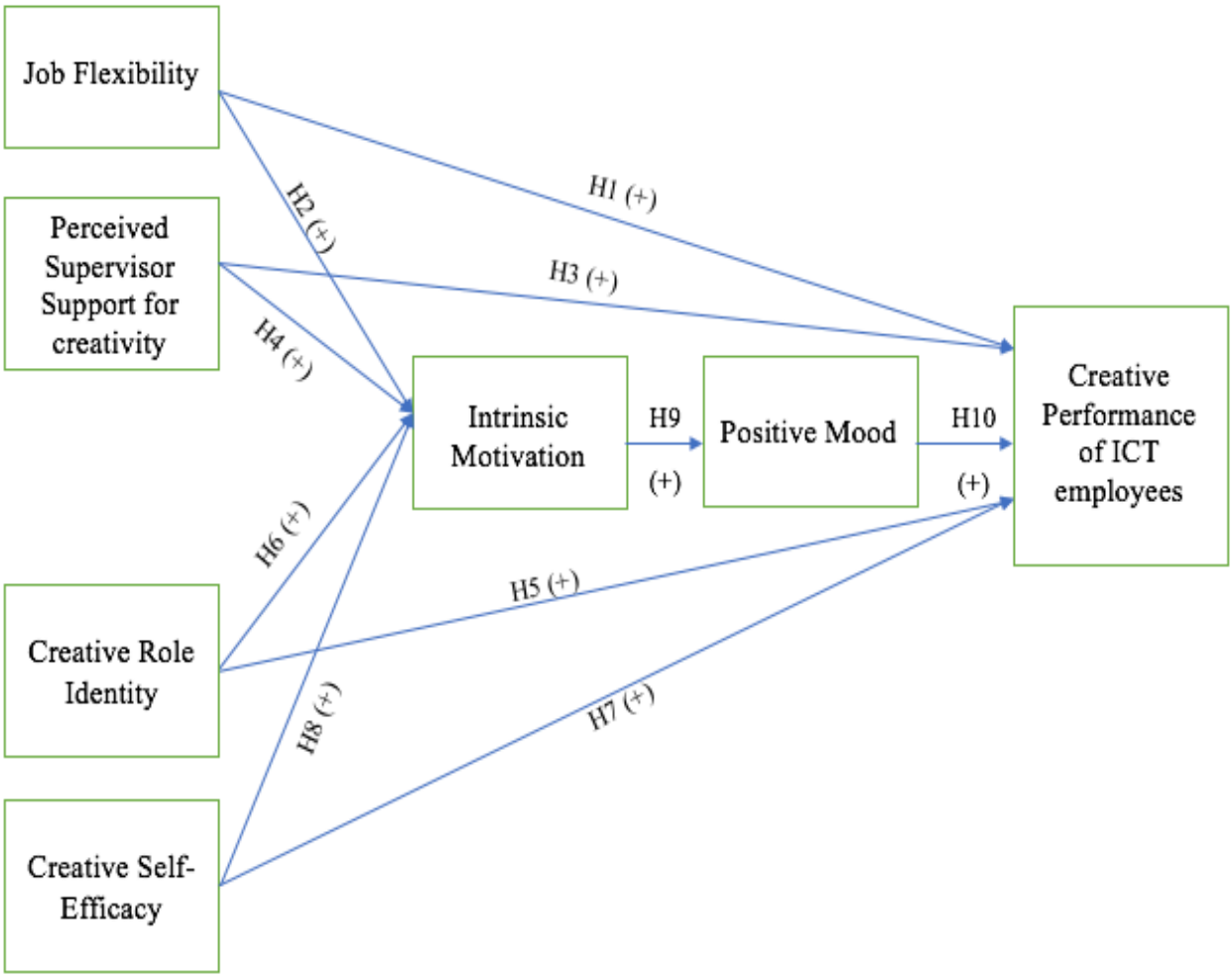
2.8 Theoretical/Conceptualized Model and Hypotheses

Based on the hypotheses proposed in the previous sections of the literature review (sections 2.1 – 2.7), the current section highlights the theoretical/conceptualized model – a mediation model – to elucidate the chain mediating role of intrinsic motivation and positive mood between creativity antecedents (contextual and personal factors) and creative performance of ICT employees. It also lists all the hypotheses that are proposed and empirically tested in this study.

2.8.1 Theoretical model:

Drawing on Componential theory of creativity, Self-determination theory and Cognitive evaluation theory, the conceptualized model proposes that creativity antecedents – mainly contextual factors (job flexibility and perceived supervisor support for creativity) and personal factors (creative role identity and creative self-efficacy) – have a positive relationship with the creative performance of employees (hypotheses 1, 3, 5 & 7). In other words, it posits that as job flexibility, supervisor support, creative role identity and creative self-efficacy increases, the creative performance of ICT employees will also increase. Further, it also suggests that these creativity antecedents are positively related to employee intrinsic motivation (hypotheses 2, 4, 6 & 8) and that intrinsic motivation is related to positive mood experiences of ICT professionals (hypothesis 9), which further is related to their creative performance at work (hypothesis 10). Thus, the model proposes that intrinsic motivation and positive mood act as chain mediators between creativity antecedents and employee creative performance. This is to say, as job flexibility, perceived supervisor support for creativity, creative role identity and creative self-efficacy increase, the intrinsic motivation of employees also increases which further enhances their positive mood at work, consequently augmenting their creative performance (hypotheses 11, 12, 13 & 14).

The theoretical model is depicted as follows:



H11: Intrinsic motivation and positive mood mediating Job Flexibility→Creative Performance
H12: Intrinsic motivation and positive mood mediating Perceived supervisor support→Creative Performance
H13: Intrinsic motivation and positive mood mediating Creative role identity→Creative Performance
H14: Intrinsic motivation and positive mood mediating Creative self-efficacy→Creative Performance

Figure 6. Theoretical Model depicting Chain Mediation effect of Intrinsic Motivation and Positive Mood

2.8.2 Hypotheses

Hypothesis 1: Perceived supervisor support for creativity is positively related to the creative performance of ICT employees, such that as perceived supervisor support for creativity increases, the creative performance of ICT employees will also increase.

Hypothesis 2: Perceived supervisor support for creativity is positively related to employee intrinsic motivation, such that as perceived supervisor support increases, intrinsic motivation of ICT employees will also increase.

Hypothesis 3: Job flexibility is positively related to creative performance of ICT employees, such that as job flexibility increases, creativity of ICT employees will also increase.

Hypothesis 4: Job flexibility is positively related to intrinsic motivation, such that as job flexibility increases, intrinsic motivation of employees will also increase.

Hypothesis 5: Creative role identity is positively related to creative performance of ICT employees, such that as creative role identity increases, the creative performance of employees will also increase.

Hypothesis 6 Creative role identity is positively related to employee intrinsic motivation; such that as creative role-identity increases, intrinsic motivation will also increase.

Hypothesis 7: Creative self-efficacy is positively related to the creative performance of ICT employees, such that as creative self-efficacy increases, employee creativity will also increase.

Hypothesis 8: Creative self-efficacy of ICT employees is positively related to their intrinsic motivation, such that as creative self-efficacy increases, employee intrinsic motivation will also increase.

Hypothesis 9: Intrinsic motivation is positively related to positive mood, such that as employee intrinsic motivation increases, their positive mood experiences will also increase.

Hypothesis 10: Positive mood is positively related to creative performance of ICT professionals, such that, as positive mood experiences of employees increase, their creative performance will also increase.

Hypothesis 11: Intrinsic motivation and positive mood will mediate the relationship between perceived supervisor support for creativity and creative performance of ICT employees.

Hypothesis 12: Intrinsic motivation and positive mood will mediate the relationship between job flexibility and the creative performance of ICT employees.

Hypothesis 13: Intrinsic motivation and positive mood will mediate the relationship between creative role identity and the creative performance of ICT employees.

Hypothesis 14: Intrinsic motivation and positive mood will mediate the relationship between creative self-efficacy and the creative performance of ICT employees.

Chapter 3 – Research Design & Methodology

3.1 Introduction

This chapter presents the research design and methodology adopted for this study and discusses the approaches used to explore the research objectives and test the hypotheses proposed in the previous chapter. The research designs selected by scholars in previous studies examining employee creativity are discussed in brief as rationale for the chosen approach and measurement instruments used in the current study. Further, the chapter provides detailed information on sample/participants, questionnaire/survey, materials, procedure and ethical considerations.

3.2 Research design overview

The present study aims to understand the influence of various contextual (job flexibility and perceived supervisor support for creativity) and personal factors (creative role-identity and creative self-efficacy) on employee creativity and, more importantly, to examine the role of intrinsic motivation and positive mood as chain mediators between creativity antecedents and creative performance of ICT professionals. These objectives of the study are aimed to be accomplished by testing the hypotheses proposed in the literature review and outlined in section 3.2. Thus, the study has adopted a quantitative approach with a cross-sectional research design to test the proposed theoretical model. It uses a deductive reasoning/ ontology, wherein componential theory and self-determination theory are used as a theoretical framework to develop the conceptualised models, which are empirically tested by collecting data through a cross-sectional web-based survey (Bryman & Bell, 2015). One of the advantages of this research design is that it helps researchers to examine the association between variables by allowing them to collect data on all the variables simultaneously, without any need of time ordering or manipulation (Bryman & Bell, 2015). Though it helps the researchers to save time and resources, it comes with the limitation that it does not allow them to discover a causal relationship between variables (Wicklund, 1975). Therefore, a longitudinal research design would be considered ideal to establish a causal relationship between the dependent and independent variables because it involves collection of data at two or more time intervals (T1

& T2). The researcher understands the limitations of a cross-sectional design, but considering the lack of resources and time, it appeared to be the most suitable option for this study.

The quantitative approach used in this study is an enquiry into cognitive and affective psychological phenomena that rely on testing a proposed theoretical model comprising several variables. These variables are measured primarily by collecting numerical data and analysing it with statistical techniques to ascertain whether the predictive generalisations of the proposed conceptualized model hold true in an actual business setting (Creswell, 1994). Though quantitative methods offer several major advantages in academic research like objectivity, generalisability and unbiasedness, some qualitative researchers have averred that it has some critical drawbacks. Bell & Willmott (2014) argue that quantitative research fails to take in to account individual perceptions of participants (ignores the human factor) and thus, is inappropriate for situations in which detailed understanding of processes is required. Furthermore, some creativity researchers believe that a quantitative approach does not permit a more holistic and in-depth analysis of human experience and actions. Therefore, a few scholars have adopted analytic induction and in-depth interviews for understanding creative thinking and cognition of employees in specific domains (Harrison & Rouse, 2014, 2015; Weller, 2012; Ocker, 2005). For example, Harrison and Rouse (2014) conducted in-depth face-to-face interviews with various dance choreographers and their group members to explore how modern dance groups foster dynamics that can pull team members together or de-integrate them to accomplish elastic co-ordination in creative projects which can consequently help them to enhance creative productivity. However, a striking similarity in most of these qualitative studies is that they were trying to analyse and explore creative thought processes of a very narrow segment of people/employees from a particular occupation (in case of Harrison and Rouse (2014) it was modern dancers & choreographers) or demographic and thus, the point of view of individual respondents is important in such cases.

Although a few contemporary scholars have followed a qualitative approach, a large majority of employee creativity literature has prominently adopted a quantitative or positivist approach to understand creative behaviour and performance at work (Shalley et al., 2004). The major criticism of the qualitative approach provided by these scholars is that the results/findings are largely unreliable and invalid, thus making replicating them or proving their accuracy extremely onerous. Additionally, it becomes very cumbersome to decipher conclusions from qualitative studies if the opinion or perceptions of participants vary largely due to their

subjective nature (Bryman & Bell, 2015). On the contrary, because quantitative studies primarily use numerical and statistical analysis techniques rather than personal perceptions or understanding, it significantly enhances the objectivity, validity and reliability of the research results (Gray, 2009; Hakim, 2000). Thus, the application of a quantitative approach is pervasive in employee creativity scholarship. A plethora of studies (Amabile, 1990, 1996; Oldham & Cummings, 1996; Conti et al., 2001; Eisenberger & Rhoades, 2001; Shalley et al., (2000); Dewett; 2007; Zhang & Bartol, 2010) have examined employee creativity and creative performance over the last two decades using a quantitative approach. This is to suggest that a positivist approach is so dominant in the creativity literature that scholars are continuously developing psychometric scales for almost every new variable that might have some influence on employee creative behaviour.

A quantitative approach was chosen for this study not only because it is supported by previous studies on creativity but also because it aids in accomplishing the objectives of this study. Gray (2009) highlights that a quantitative methodology follows a deductive approach in which a priori hypotheses or questions are proposed by engaging with the existing literature. In similar fashion, the current study intends to seek and corroborate the postulates arising from the extant theories. It permits one to describe the research questions in the form of testable hypotheses and to ascertain relationships between various variables. In case of the current study, the objective is specifically to determine whether intrinsic motivation and positive mood play a mediating role between creativity antecedents and the creative performance of ICT employees or not. To achieve this objective, a thorough review of the literature was conducted to deduce twelve hypotheses, which were empirically tested by collecting data from participants through a web-based survey. The data so collected was analyzed by using statistical techniques and the results are presented numerically detailing whether each hypothesis is supported or not by empirical evidence.

3.3 Sample/Participants

Since the current study aims to understand the factors influencing creative performance of IT professionals, participants for this study were sampled from the population of full-time and part-time IT professionals currently working in the United States (USA). The primary reason for sampling participants from the population of IT professionals working in the USA was the fact that most of the trailblazing innovation in the world originates from the tech hubs in the

USA, particularly, from innovation powerhouses like Silicon Valley in California and Downtown Seattle in Washington, consequently making it a global tech innovation leader – according to a recent KPMG report (Mostowyk, 2018). Further, it is also important to note that the US ICT sector covers the full diversity of organizational types, including tech start-ups, SMB's (small to medium sized businesses) and large multinational corporations (like Facebook or Google) and thus, provides access to a range of IT professionals needed to address the objectives of this study. Most of the previous studies on creativity have used samples from a single organization like a pharmaceutical R&D lab or manufacturing company or an oil and gas engineering firm, but the target participants for the current study were not limited to any single IT or Tech organization in United States. Selection of participants from one single organization induces a sampling bias because employees from the same organization share a single 'monopolistic organizational culture' and therefore, their opinions/responses might be skewed (McSweeney, 2002). Thus, the current study minimized the sampling bias by choosing a sample from a diverse group of IT professionals (Bryman & Bell, 2015).

Further, to generalize the findings of the study, as is the primary purpose of any positivist study, a large sample frame was established which included participants from a broad range of IT roles like Software Developers, User Experience (UX) and User Interface (UI) Designers, Programmers, Software Architects, Algorithm Developers/Engineers, Fullstack Java Developers, Machine Learning Engineers, Cybersecurity Engineers, SAP Consultants, Artificial Intelligence Engineers, Web Developers and Mobile App Developers. Participants working in these roles were particularly chosen because they are classified as knowledge intensive and creative jobs by the IT industry and therefore, align with the objectives of the current study (Parmar, 2015; Browning, 2017). Additionally, since the literature suggests that creative ideas can be generated by employees in any job position/role and at any rung of the corporate ladder (Madjar et al., 2002; Shalley et al., 2000), participants from all job levels (non-managerial employees, first-line supervisors, mid-level managers, senior managers and C-level executives) in the organizational hierarchy were chosen.

Researchers suggest that the minimum sample size can be reliably and conservatively estimated in PLS-SEM by using G-power analysis and Monte Carlo simulations (Kock, 2014b). Thus, G-power analysis was conducted for a standard F-test in a fixed model linear multiple regression with an a priori setting of effect size ($f^2 = 0.15$), α=0.05, power = 0.95 and number

of predictors = 6 (including the mediators) which produced a sample size estimate of 146. In addition, the Monte Carlo simulations, calculated by using the inequality: N > (2.48 / Abs(bm))^2, where N is the minimum sample size, Abs(bm) is the absolute value of the path coefficient with the minimum expected magnitude in the model (in this case assumed as 0.2), yielded a sample size estimate of 154. Thus, considering these estimates, a minimum sample size of 150 participants was finalized before beginning the data collection process. After finalizing the targeted sample size, self-administered web-based surveys were forwarded to 270 IT professionals working in various organizations in the San Fransico Bay area, California; Seattle, Washington and Austin, Texas in the United States. Of the 270 participants who accessed the Qualtrics survey online, 157 completed the survey, generating a completion rate of 58%. The sample size of 157 is acceptable for the current study, as PLS-SEM works well even with smaller samples as opposed to covariance-based SEM (Chin & Newsted, 1999).

The demographics of the respondents indicate that males constituted 64% and females 36% of the whole sample. The age range of the participants was between 23 and 62 with an average age of 37 for the whole sample. A majority of the participants (66%) had a bachelor's qualification while 27% of them had a Master's level qualification and 6% of them had a Doctoral qualification. The respondents came from 18 different job roles in the IT profession, with the top three roles being software developers (42%), software architects (13%) and a tie between cybersecurity engineers and programmers at 11.5% each. Further, 31% of participants were non-managerial employees, 6% were first line supervisors, 29% comprised mid-level managers, 18% represented senior managers and 15% constituted C-level executives. Table 1 (below) highlights the various demographic characteristics of the participants.

Table 1: Demographic characteristics of participants

Gender	**N**	**%**	**Age**	**N**	**%**
Male	101	64.3	18-25	6	3.8
Female	56	35.7	26-34	68	43.3
			35-34	51	32.5
Education level	**N**	**%**	55-64	22	14
Bachelor's degree	104	66.24	65 or over	10	6.4
Postgraduate diploma	1	0.64			
Master's degree	43	27.39			
Doctoral degree	9	5.73			

Job Level	N	%	Organisational Tenure	N	%
Non-managerial employee	49	31.21	Less than a year	9	5.7
First-line supervisor	10	6.37	1-2 years	19	12.1
Mid-level Manager	45	28.66	3-5 years	43	27.4
Senior Manager	28	17.83	6-9 years	45	28.7
C- level Executive	23	14.65	10-14 years	26	16.6
Other	2	1.27	15+ years	15	9.6
Job Role	**N**	**%**	**Tenure in current position**	**N**	**%**
Software Developer	66	42	Less than a year	11	7
Programmer	18	11.5	1-2 years	25	15.9
Software Architect	20	12.7	3-5 years	58	36.9
Algorithm Developer/Engineer	1	0.6	6-9 years	25	15.9
Cybersecurity Engineer	18	11.5	10-14 years	21	13.4
Web Developers	9	5.7	15+ years	15	9.6
UX Designers	6	3.8			
Mobile App Developers	5	3.2	**Tenure in IT industry**	**N**	**%**
Full stack Java Developers	3	1.9	Less than a year	1	0.6
SAP Consultants	4	2.5	1-2 years	6	3.8
Machine learning Engineer	2	1.3	3-5 years	30	19.1
Artificial Intelligence Engineer	3	1.9	6-9 years	35	22.3
Other	2	1.3	10-14 years	50	31.8
			15+ years	35	22.3
Salary	**N**	**%**			
$0 - $25,000	2	1.3			
$25,001 - $50,000	6	3.8			
$50,001 - $75,000	30	19.1			
$75,001 - $100,000	54	34.4			
$100,001 - $125,000	32	20.4			
$125,001 - $150,000	16	10.2			
$150,001 - $175,000	5	3.2			
$175,001 - $200,000	4	2.5			
$200,001+	8	5.1			

3.4 Materials and measures

After thoroughly reviewing the literature, job flexibility, perceived supervisor support for creativity (contextual factors), creative role identity, and creative self-efficacy (individual factors) were selected as vital predictor/independent variables and intrinsic motivation and positive mood as mediators to understand their influence on the creative performance of ICT professionals. A self-administered web-based questionnaire was used to collect the data for testing the causal relationship between these variables. All the constructs were measured using previously validated psychometric scales anchored on five-point or seven-point Likert scales ranging from 'strongly disagree' to 'strongly agree'. Demographic and background information was collected from the participants at the start of the survey which comprised of key characteristics like age, gender, education level, job role, experience/tenure, salary and job level. Appendix B outlines the specifics of the questionnaire/survey used for the current study. The following psychometric scales were used to measure the variables involved in this research:

Job Flexibility

Job flexibility refers to the flexibility offered to employees in terms of where they work, when and how long they work and the control over communication used for work (Ten Brummelhuis et al., 2012). This was measured using three sub-dimensions of the New Ways of Working Scale developed by Ten Brummelhuis et al. (2011): flexibility of time, flexibility of place and freedom over use of communication channels, each consisting of three items. A sample item for flexibility in place was 'I choose the location where I work'; flexibility in time was measured by 'I decide when my work day starts' and control over communication was assessed using 'I have the feeling of being in control over the communication I have for work'. All the responses were measured on a five-point Likert scale with options ranging from 1-strongly disagree to 5-strongly agree.

Perceived supervisor support for creativity

Madjar et al.'s (2002) seven item scale developed for measuring 'support for creativity from supervisor and coworkers' was adapted into a four-item version for this study to solely measure supervisor support for creativity. The main purpose of this scale is to measure the perception

of employees about whether they believe their supervisor provides support and encouragement for generation of unconventional and quirky ideas at work. It is a seven-point Likert-type scale with options ranging from 1-strongly disagree to 7-strongly agree and consists of items like 'My supervisor is always ready to support me if I produce an unpopular idea or solution at work'; 'My supervisor gives me useful feedback about my ideas concerning the workplace'.

Creative role-identity

Creative role-identity was measured using Farmer et al.'s (2003) 3-item scale. The aim of this scale is to understand an employee's self-view and predilection to be perceived by him/her as someone who is creative in his/her work role. It is scored on a 5-point Likert system ranging from 1-strongly disagree to 5-strongly agree and some of its items include 'I often think about being creative'; 'To be a creative employee is an important part of my identity'.

Creative self-efficacy

To assess an employee's self-perceived belief and competence regarding producing creative outcomes at work, Tierney and Farmer's (2002) four-item creative self-efficacy instrument was used. It is a five-point Likert type scale with options ranging from 1-strongly disagree to 5-strongly agree and includes items like 'I have confidence in my ability to produce new ideas'; 'I have confidence in my ability to solve problems creatively'.

Intrinsic Motivation

This construct was measured using Bakker's (2008) five-item intrinsic motivation subscale of the work-related flow inventory. The main purpose of the scale is to measure the degree to which employees intrinsically find their job interesting, enjoyable, boring or unpleasant. It is scored on a five-point Likert type scale with options ranging from 1-strongly disagree to 5-strongly agree and includes items like ''When I am working on something, I am doing it for myself'; 'I get my motivation from the work itself, and not from the reward for it'.

Positive mood

Positive mood was measured with the Positive and Negative affect scale (PANAS) (Watson, Clark & Tellegen, 1988). It consists of 10 items that are pure indicators of positive mood, some of which include items like 'interested', 'strong', 'enthusiastic' and 'inspired'. The overall positive mood score was calculated by averaging the response to each of these items. Since the current study focuses on positive mood as an affective state and not as a trait, participants were required to highlight to what extent they had felt/experienced any of the items at work in the past week on a Likert scale ranging from 1-very slightly or not at all to 5-extremely. Researchers suggest that the PANAS assesses mood mainly as a state rather than as a trait, when participants are instructed to indicate how they felt during relatively shorter periods of time like one week (George & Zhou, 2007; Watson, 2000; Watson et al., 1988). Moreover, when employees self-report mood states over short periods – for e.g. one week – they respond on the basis of their episodic emotional knowledge (which is knowledge based on experience) whereas when they are asked to report over longer periods of time, they usually tend to rely on their knowledge based on beliefs (semantic emotion knowledge) (Robinson & Clore, 2002). The fact that the current research involves assessing mood as a state and not as a trait and deals with the experience of mood states rather than beliefs about it, I used the one-week time-period. Further, the most extensively used method in the literature for measuring mood at work as a state has been reporting the experience within a one-week time-frame (Madjar et al., 2002; George & Zhou, 2007).

Creative performance

George & Zhou's (2001) thirteen-item scale was used to measure self-reported creative performance. Being a self-reported measure of creativity, the scale asks employees to rate the level of novelty and originality in the work that they produce. It is a five-point Likert scale with options ranging from 'not characteristic of me' to 'very characteristic of me' and includes items like 'I come up with creative solutions to problems'; 'I suggest new ways to achieve goals/objectives'. This scale was chosen because it suits the current study which aims to assess the creative performance of IT professionals in terms of their ability to solve problems creatively and to generate unique ideas. Since the research methodology of this study aims to assure participant anonymity, it is not feasible to use supervisor ratings of creativity (Shalley et al., 2000). Axtell et al. (2000) suggest that though self-reported measures of creativity are prone to social desirability bias, they still correlate considerably with supervisory ratings of creativity. Furthermore, the literature suggests that it is more appropriate to ask employees to

self-report their creativity because they are the best judges of the little things they do in their tasks that make them incredibly creative (Jansen, 2000).

Control variables

To minimize the possibility of individual demographic characteristics confounding with the various relationships examined in this research, two key characteristics suggested by previous research were controlled for: gender and tenure (Madjar et al., 2002; Wang et al., 2014; Farmer et al., 2003; Shin & Zhou, 2003; Tierney & Farmer, 2011). Eder and Sawyer (2007) conducted a meta-analysis, which indicates that in some cases tenure is positively related to creativity and in some it is not. Further, the literature suggests that creative achievement of males is often more valued compared to that of females (Evans, 1979) and even Conti et al.'s (2001) research highlights the gender differences in creative performance. Thus, they are included as control variables in the current study.

3.5 Procedure

Data was collected over a period of four weeks by using a web-based self-completion questionnaire whose hyperlink was forwarded to the participants via email. Online access panels of IT professionals available through Qualtrics were used to collect data from participants because it was difficult for the researcher to have access to Tech professionals working in top corporations like Apple, Facebook and others in creative job roles like web development, mobile app development, UX/UI designing etc. Many contemporary management researchers have used online access panels for data collection and have not reported any significant issues with data quality, therefore indicating that is a prevalent form of data collection approach and leads to solid, non-biased results (Goritz, 2004; Nancarrow & Cartwright, 2000). Though expensive, it is considered to provide faster access to data, reduce response time, and enhance data quality as responses with missing values or straight-line responses (for participants not reading the questions and randomly picking options) are excluded or removed and also allows longitudinal data collection from the same set of participants after a certain period of time (months/years) (Kees, et al., 2017).

Further, the online questionnaires were also designed using Qualtrics software because it provides flexibility to programme the survey in a manner that allows the questions to be displayed in a certain order or with a particular logic (Goritz, 2004). Apart from design

flexibility, web-based surveys are a cheaper and faster method of data collection compared to paper-pencil/postal surveys and they make it easy to recruit a large number of participants (Bryman & Bell, 2015). Further, they aid in enhancing response rates as they provide convenience to participants to answer the questionnaire from any location, at any time and at their own pace (Wyatt, 2000). Another significant advantage of the online survey is that it eliminates the daunting task of coding respondents' answers as they are stored automatically in a survey database (Schleyer & Forrest, 2000). This not only saves the researcher time but also minimizes the probability of errors in data entry and processing (Wyatt, 2000). In addition, researchers believe that data collected by face-to-face or telephonic interviews is more prone to social desirability bias compared to that collected by email/online self-administered surveys because the enhanced anonymity and absence of an interviewer in self-administered web surveys does not bias the results (Wright, 2005; Andrews at al., 2003). Therefore, the use of self-completion web-based questionnaires in the current study is believed to have minimized the social desirability bias associated with the self-reported creativity measure (Paulhus, 1984).

First, an information sheet elucidating the objectives and key benefits of the research accompanied with a link to the survey was forwarded to 270 IT professionals, available on online access panels of Qualtrics, working in various Tech organizations in United States, mainly in the San Francisco bay area, California; Seattle, Washington and Austin, Texas. In the first week, almost 79 participants completed the survey but in an industrialized society, since people are inundated with various activities, a reminder email was sent to the remaining participants to enhance the response rate. At the end of third week 157 participants had completed the survey, thus generating a response/completion rate of 58%. No further follow-ups were made because the desired sample size (150), as calculated by G-power analysis and Monte-Carlo simulations, was achieved.

3.6 Ethical Considerations

Since the present study involves human participants, utmost attention was given to the ethical and moral principles involved in behavioural sciences research by ensuring that the study complied with Massey University's Professional Code of Conduct for human research. An ethics application for low risk notification was submitted to the Massey University Human Ethics Committee and an approval for it was obtained within five working days. A copy of this low risk notification approval can be found in Appendix C. A participant information sheet

(PIS) was also included at the start of the survey to make the participants aware of their rights, explain the purpose of the study and to seek their consent before they took the survey (see Appendix A). It was explicitly mentioned in the PIS that participation is voluntary and that participants have a right to accept or decline their participation in the survey. Moreover, only minimal demographic data was collected, to ensure the confidentiality and anonymity of the participants (Wiles et al., 2008). All the data so collected was kept strictly confidential and at no stage was any question pertinent to the individual identity of any participant asked. Furthermore, the use of a self-administered web survey also provides an additional assurance to participants that anonymity is maintained in the process as it is not possible for the researcher or the readers to trace the answers back to the individual participants (Gaines et al., 2007). Additionally, the contact details of the researcher's supervisors were also included in the PIS so that the participants could contact them in case they had any issues or queries regarding the research. The entire survey including the questionnaire was approved by the researcher's supervisors and the ethics application was also peer reviewed by them. Since a 'low risk' approval was obtained by the Massey University Human ethics committee, a full approval was not deemed necessary.

Chapter 4: Data Analysis & Results

4.1 Data analysis overview

Preliminary data analysis was undertaken by using SPSS version 25 and the conceptualized model was tested by using WarpPLS version 6.0 – a software application that tests conceptualized theoretical models by a Partial Least Squares (PLS) based Structural Equation Modelling (SEM) technique. PLS-SEM is a variance-based SEM that has various advantages over covariance-based (CB)-SEM approaches and therefore, was found to be better suited for this study (Ridgon, 2012). One of the reasons for choosing this technique is that all the constructs incorporated in the current study are latent variables (LVs) measured through a set of indicators, and research suggests that SEM is the best method to investigate the relationships between several LVs (Urbach & Ahlemann, 2010). Furthermore, PLS-SEM has a significantly high prediction accuracy for very complex models involving multiple mediators, constructs and indicators and works really well even with a smaller sample size compared to covariance-based approaches (which require N>150) (Hair, Sarstedt, Hopkins & Kuppelwieser, 2014). Since the current study aims to test the model involving multiple mediators and has a relatively small sample (N=157), PLS-SEM is the most suitable approach to test the proposed theoretical model. In addition, it does not require normal distributional assumptions (thus considered "distribution free") and produces strong statistical output even with non-normal data (that does not follow multivariate normal distribution) in contrast to CB-SEM that assumes and demands normal distribution of the data (Lei & Lomax, 2005).

As necessitated by the underpinning theoretical model, the current study used first order PLS-SEM. The first order model is comprised of several reflective indicators caused by their respective latent variables, thus measuring the same features of the underlying phenomenon and correlating positively with other indicators of the same latent construct (Urbach & Ahlemann, 2010). Moreover, the literature suggests that PLS-SEM is an appropriate and effective technique for measuring both reflective and formative constructs (Becker, Klein, & Wetzels, 2012; Ringle, Sarstedt, & Straub, 2012) and has been widely adopted for both developing and confirming theories (Chin, 1998). Additionally, various statistical techniques were applied in order to ensure the validity and reliability of the findings. A confirmatory factor analysis (CFA) was also conducted to evaluate whether the association between observed

variables and their undergirding latent variables exists or not (Bryant & Yarnold, 1995). Common method bias was also tested to verify that no spurious variance was caused by the measurement method leading to an inflated relationship between variables (Conway & Lance, 2010). Finally, a conceptualized model was drawn in WarpPLS to analyze the causal chain mediation effect of intrinsic motivation and positive mood between creativity antecedents and creative performance as outcomes. Further, some alternative goodness of fit indices were also computed in order to assess and verify model fit.

4.2 Data entry and missing data

All the data was collected through an online questionnaire created on the Qualtrics platform and was then exported from the Qualtrics database to SPSS. No manual data entry was required since the data was recorded by Qualtrics and directly uploaded to the statistical analysis programs (SPSS, WarpPLS). This minimized the time required for and the number of errors caused by manual data entry. The questionnaire was specifically designed in a manner that participants could pick their answer only from the options provided. Furthermore, a forced response logic was applied to each question, making it mandatory for participants to respond to each question. This ensured little to no missing data and minimized the probability of invalid responses or values. Field (2009) highlights that missing data occurs primarily because participants fortuitously miss out questions or preferentially choose to not answer certain questions. However, any missing data could generate significant problems for statistical analysis including PLS-SEM (Field, 2009). Further, the issue of missing data was also minimized for this study because of use of paid online access panels through Qualtrics which guarantees high quality responses with no missing values and, in fact, replaces the ones that appear shoddy or of poor quality. However, to make sure that there were no missing values in the raw data, the entire data file was thoroughly reviewed by SPSS before using it for final statistical analysis. After reviewing the data file, no missing data was found, suggesting that it is not an issue for the current study.

4.3 Measurement model

In PLS and SEM analysis it is a prerequisite to test the measurement model before testing the structural model (Palanisamy, Taskin & Verville, 2017). Validity and reliability tests were conducted to test the measurement model. Construct validity is the most important and prevalent test for assessing validity of the model and is defined as “the degree to which an

assessment instrument measures the targeted construct" (Haynes, Richard, & Kubany, 1995, p. 239). There are mainly two ways for testing construct validity: convergent and discriminant validities (Hair et al., 2006). If the respondents of the study comprehend the question statements of a measurement instrument related to each latent variable in the same way as they were intended by the developers of the question statements, then the measurement instrument/psychometric scale is considered to have good convergent validity. Convergent validity can be tested by using confirmatory factor analysis (CFA) and Fornell and Larcker's (1981) criterion (Rubio et al., 2003; Kock, 2017; Ahmed et al., 2017). In the current study, both methods were used to test and ensure convergent validity.

In factor analysis, a measurement model is deemed to have acceptable convergent validity if all the factor loadings are equal to or greater than 0.5 and the p-values associated with the corresponding loadings are less than 0.05 (Hair et al., 1987, 2009). After running the CFA, it was found that two items (IM_1 & CRI_2) had factor loadings of less than 0.5 and thus, were removed to ensure the convergent validity of the measurement model. On removal of CRI_2, the construct (creative role identity) had two only items but it was considered appropriate to still use it because the literature suggests that a factor with 2 items is only considered valid and reliable when its items are highly correlated with each another ($r > .70$) but fairly uncorrelated with items of other variables/constructs (Yong & Pearce, 2013; Raubenheimer, 2004). The loadings for CRI_1 & CRI_3 of creative role identity construct indicate (see table 2) that the two items are highly correlated to each other ($r > 0.88$) but significantly uncorrelated to items of other constructs. Table 2 indicates that all the variables, after removing the outliers and rerunning the factor analysis, are loading to the expected factors and all the loadings are above 0.5, ranging between 0.582 and 0.93.

Table 2: Confirmatory factor analysis and loadings

Constructs	JF	PSS	CRI	CSE	IM	PM	CP
JF_1	0.724	-0.037	-0.175	0.091	0.246	-0.039	-0.012
JF_2	0.717	0.116	-0.285	0.069	-0.008	-0.217	0.096
JF_3	0.798	0.007	-0.238	-0.003	-0.003	-0.152	0.103
JF_4	0.821	-0.06	0.083	-0.034	-0.01	0.166	-0.148
JF_5	0.838	0.07	-0.187	-0.123	-0.057	-0.042	0.057
JF_6	0.776	-0.115	0.255	-0.076	0.027	0.25	-0.225
JF_7	0.61	-0.007	0.131	-0.049	-0.141	-0.119	0.322
JF_8	0.788	0.013	0.265	-0.018	-0.073	0.103	-0.115
JF_9	0.655	0.018	0.187	0.184	0.013	0.001	0.001
SS_1	0.046	0.862	0.03	-0.008	-0.034	0.041	-0.089
SS_2	0.047	0.883	-0.048	0.025	0.059	0.037	-0.004
SS_3	-0.054	0.93	-0.007	0.038	0.027	-0.116	0.031
SS_4	-0.035	0.881	0.026	-0.058	-0.054	0.046	0.058
CRI_1	-0.019	-0.032	0.88	-0.004	-0.005	0.074	-0.068
CRI_3	0.019	0.032	0.88	0.004	0.005	-0.074	0.068
CSE_1	0.11	-0.07	0.017	0.811	-0.212	0.187	-0.001
CSE_2	-0.064	0.076	-0.02	0.829	0.065	0.051	-0.047
CSE_4	-0.062	-0.01	0.005	0.582	0.203	-0.332	0.068
IM_2	-0.062	-0.113	0.012	0.186	0.66	-0.042	0.009
IM_3	-0.088	-0.062	-0.171	0.039	0.74	0.086	0.125
IM_4	0.026	0.096	0.029	-0.009	0.802	-0.022	-0.148
IM_5	0.111	0.057	0.125	-0.188	0.768	-0.024	0.027
PM1	0.038	0.233	-0.069	0.036	0.081	0.772	0.094
PM2	0.003	-0.011	0.265	-0.158	0.213	0.775	-0.125
PM3	0.123	-0.087	-0.146	0.086	0.1	0.788	-0.068
PM4	-0.166	0.078	0.093	-0.007	-0.007	0.792	0.013
PM5	0.075	0.109	0.059	0.004	-0.121	0.82	-0.043
PM6	-0.068	-0.143	-0.122	-0.135	-0.113	0.6	0.13
PM7	-0.066	0.117	0.129	0.223	0.107	0.793	-0.299
PM8	0.057	-0.027	-0.057	0.099	-0.082	0.824	0.075
PM9	0.009	-0.206	-0.24	-0.101	-0.283	0.696	0.333
PM10	-0.023	-0.119	0.033	-0.099	0.059	0.794	-0.041
CP1	0.04	0.074	-0.163	0.012	0.169	-0.058	0.807
CP2	-0.018	0.126	-0.135	0.166	-0.076	-0.007	0.792
CP3	-0.144	-0.046	-0.037	0.048	0.047	-0.042	0.785
CP4	0.053	-0.13	-0.068	-0.041	-0.11	0.035	0.807
CP5	-0.007	0.051	0.173	0.092	-0.174	0.058	0.794
CP6	0.237	-0.126	0.038	-0.089	0.192	-0.174	0.704
CP7	0.093	0.011	-0.055	-0.096	0.044	-0.026	0.797
CP8	0.033	0.062	0.199	-0.141	-0.26	0.053	0.799
CP9	-0.131	0.065	0.146	-0.02	0.069	-0.131	0.72
CP10	-0.049	-0.065	0.128	0.121	0.121	-0.033	0.77
CP11	-0.117	-0.047	0.009	0.094	-0.02	0.157	0.785
CP12	-0.04	0.014	-0.068	-0.105	0.001	0.152	0.817
CP13	0.061	0	-0.145	-0.043	0.03	-0.019	0.792

Further, Fornell and Larcker's (1981) criterion was also used to verify convergent validity. According to this criterion, each latent variable should be able to explain at least a minimum of half of the variances of its indicators, thus requiring an average variance extracted (AVE) value of 0.5 or higher for each variable (Kock, 2017; Henseler et al., 2015). Table 4 indicates that this condition was met by the analysis, thereby confirming convergent validity of the measurement model. After testing convergent validity, discriminant validity was tested 1) using AVEs in conjunction with correlations between latent variables and 2) by examination of variance inflation factors (VIF) from a full collinearity test.

In order to assess the discriminant validity through inter-item correlations and their AVES - Table 3 highlighting the correlations and square roots of Average variances extracted (AVE) values for all the variables – should be referred. All the independent variables – job flexibility, perceived supervisor support for creativity, creative role identity and creative self-efficacy – were positively and significantly ($P<0.01$) correlated to each other. The mediators, intrinsic motivation and positive mood, were positively and significantly ($P<0.01$) correlated to each other and to all the independent variables. Further, creative performance – the dependent/outcome variable – was positively correlated to all the independent variables job flexibility ($r = 0.364$, $p < 0.01$), perceived supervisor support for creativity ($r = 0.307$, $p < 0.01$), creative role identity ($r = 0.55$, $p < 0.01$), creative self-efficacy ($r = 0.558$, $p < 0.01$), and to the mediators: intrinsic motivation ($r = 0.498$, $p < 0.01$) and positive mood ($r = 0.659$, $p < 0.01$). The literature suggests that for a model to have acceptable discriminant validity, all the constructs should be significantly correlated to each other and the square roots of AVE values should be greater than the correlations of that construct with other constructs (Kock, 2017; Hensler et al., 2015). Table 3 indicates that all variables/constructs are positively and significantly correlated to each other and the square roots of their AVE values, shown in the diagonal, are greater than the correlations of the other constructs. Therefore, it can be concluded that the model has acceptable discriminant validity.

Additionally, variance inflation factors (VIFs) were also assessed for all the variables by a full collinearity test and it was found that VIF values for all the variables were less than 3.3, which is considered as a conservative and reliable estimate for low collinearity. Table 4 highlights the VIFs for all the variables and confirms discriminant validity for the model (Hair, Black, Babin, & Anderson, 2010).

Table 3: Means, Standard Deviations, Correlations between latent variables and square root of AVE's in diagonal

Variables	Mean	S.D.	Gender	Tenure	JF	PSS	CRI	CSE	IM	PM	CP
Gender	1.360	0.481	1.00								
Tenure	6.700	6.344	-0.024	1.00							
JF	3.457	0.848	0.090	0.090	(0.751)						
PSS	5.311	1.275	0.118	-0.087	0.417***	(0.890)					
CRI	4.118	0.677	-0.002	-0.011	0.315***	0.343***	(0.880)				
CSE	4.106	0.531	0.061	0.055	0.248***	0.217***	0.43***	(0.749)			
IM	3.667	0.752	-0.017	0.027	0.535***	0.378***	0.399***	0.286***	(0.744)		
PM	3.621	0.848	0.147	0.034	0.533***	0.553***	0.467***	0.465***	0.553***	(0.768)	
CP	3.860	0.735	0.104	0.103	0.364***	0.307***	0.55***	0.558***	0.498***	0.659***	(0.783)

Note:

***p < 0.01 (co-relation is significant at 0.01 level (2-tailed))

**p < 0.05 (co-relation is significant at 0.05 level (2-tailed))

*p < 0.1 (co-relation is significant at 0.1 level (2-tailed))

N = 157

The square root of AVE for discriminant validity are in parentheses along the diagonal

Once the validity of the measurement model was tested, its reliability was examined by using Cronbach's alpha (CA) and composite reliability (CR) – two of the most prominent and commonly used methods for testing reliability or internal consistency of the psychometric measures (Fornell, & Larcker, 1981). The literature suggests that Cronbach's alpha value of 0.7 is generally considered acceptable, however, values equal to or over 0.6 are also deemed marginally acceptable (Gliner & Morgan, 2000). Table 4 indicates that the Cronbach's alpha values for all the variables are above 0.7, except for creative self-efficacy (CSE) which has a CA value of 0.6. Therefore, the results highlight that all the constructs are reliable as their CA value lies within the acceptable or marginally acceptable ranges. Further, reliabilities of all the constructs, particularly the ones with marginally acceptable CA values, were also verified by examining their composite reliability scores. A score of 0.7 or higher indicates good composite reliability (Kline, 1998). The composite reliabilities of all the variables are close to 0.8 or above (refer Table 4), thus indicating acceptable reliabilities for all the constructs involved in the model. Unidemensionality was also tested after rerunning the CFA (once the outlier indicators were removed) by using Rohatgi-SzÚkely (RS) and Klaassen-Mokveld-van Es (MKvE) tests. Table 4 indicates that all the constructs involved in the measurement model comply with RS

and MKvE tests, thereby confirming that the factors/indicators can be relied upon to measure a single construct.

Table 4: Validity, Reliability and Unidimensionality of constructs

Constructs	Internal consistency & reliability		Unidimensionality		Convergent validity	Discriminant validity
	CR	CA	RS	MKvE	AVE	VIF
JF	0.920	0.901	✓	✓	0.564	1.646
PSS	0.938	0.912	✓	✓	0.792	1.570
CRI	0.873	0.708	✓	✓	0.774	1.594
CSE	0.790	0.6	✓	✓	0.561	1.536
IM	0.832	0.730	✓	✓	0.554	1.775
PM	0.935	0.922	✓	✓	0.590	2.704
CP	0.954	0.947	✓	✓	0.613	2.412

Legend:

JF	Job Flexibility	IM	Intrinsic Motivation
PSS	Perceived Supervisor Support	PM	Positive Mood
CRI	Creative Role Identity	CP	Creative Performance
CSE	Creative Self-Efficacy	CR	Composite Reliability
CA	Cronbach's Alpha	RS	Rohatgi-SzÈkely
MKvE	Klaassen-Mokveld-van Es	AVE	Average Variances Extracted
VIF	Variance Inflation Factor		

4.4 Structural model

After testing the validity and reliability of the constructs, the proposed hypotheses were tested using the PLS model in WarpPLS software. Baron and Kenny's (1986) four steps causal strategy, as elucidated by Kock (2014), was adopted to test the proposed mediation model i.e. hypotheses 8 through 12. According to this strategy a variable or variables mediate the relationship between independent and dependent variables if the following four conditions are met: 1) there should be a significant contribution made by the independent variable to the outcome variable; 2) there should be a significant contribution made by the independent

variable to the mediator variable; 3) the mediator/mediators should make a sufficiently great contribution to the dependent variable; and 4) on holding the influence of mediator/mediators on the dependent variable constant, the contribution of independent variable to dependent variable should become non-significant or its significance should be reduced (Barron & Kenny, 1986; Kock, 2014). This approach has been vastly adopted by many experienced and well-renowned scholars in management research to test the mediation effects and has been found to successfully produce consistent results (Madjar et al., 2002; Wang et al., 2014). Further, most of the papers that have adopted this approach have appeared in top-tier academic journals (Dewett, 2007; Kim et al., 2010; Madjar et al., 2002) and therefore, it was considered acceptable to use this approach for the current study. In addition, to ensure the statistical significance of the mediation (indirect) effects, p-values obtained from WarpPLS (calculated by resampling and therefore highly precise), are also reported, as recommended by Kock (2014).

The first condition of mediation was examined by testing hypotheses 1, 3, 5 and 7. Thus, job flexibility, perceived supervisor support for creativity, creative role identity, creative self-efficacy were included as independent variables, creative performance as an outcome variable and gender and tenure as control variables in the PLS model. As shown in Table 5 and Figure 7, the direct effects of job flexibility (β=0.128, p <0.05), perceived supervisor support for creativity (β=0.135, p <0.05), creative role identity (β=0.279, p <0.01) and creative self-efficacy (β=0.128, p <0.01) on creative performance of ICT professionals are all statistically significant, thereby indicating a significant contribution of independent variables to the dependent variable. Gender and tenure had no significant effect on the creative performance of employees. This suggests that hypotheses 1, 2, 3 and 4 are supported.

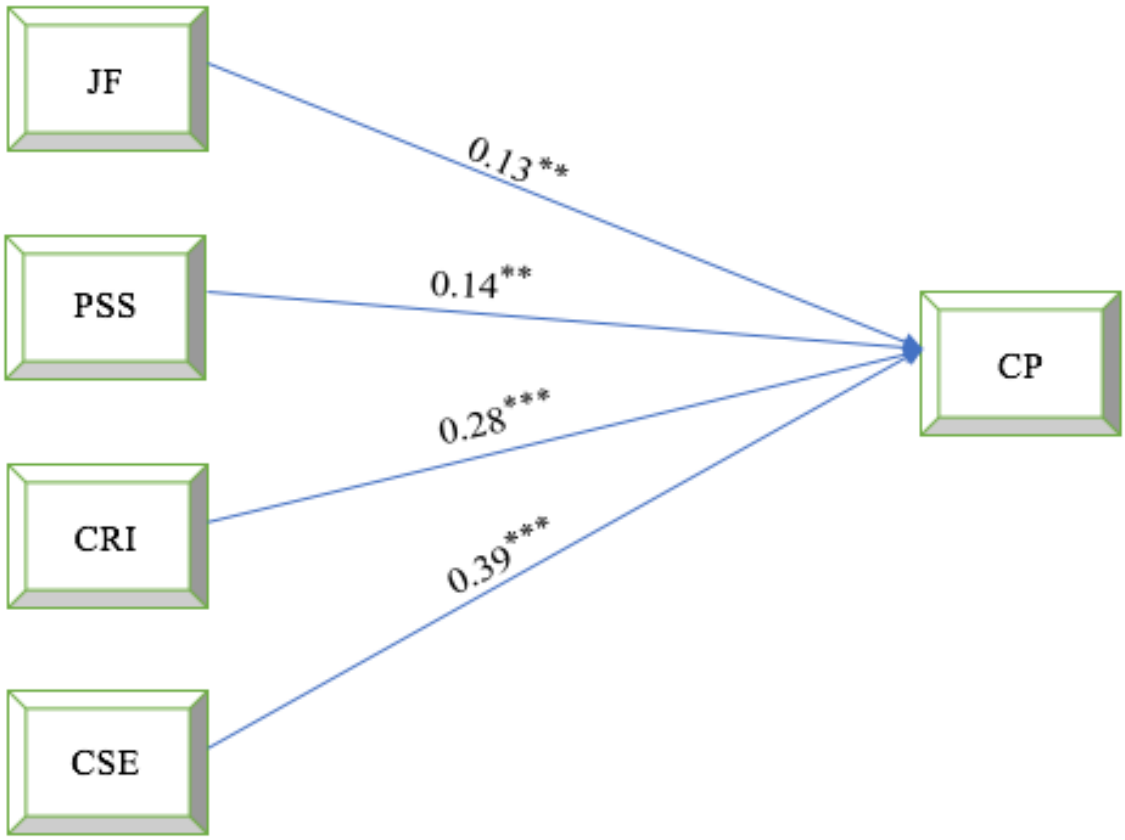
Table 5: Path coefficients for direct effects of independent variables on the outcome variable.

Constructs	JF	PSS	CRI	CSE	Gender	Tenure	R^2	Adj R^2
CP	0.13**	0.14**	0.28***	0.39***	0.074	0.114	0.525	0.506

Note:

***p < 0.01, **p < 0.05, *p < 0.1

Figure 7: Direct effects of Contextual & Personal factors on Creative performance



Note: ***p < 0.01, **p < 0.05, *p < 0.1

For examining the next three conditions of mediation, hypotheses 2, 4, 6 and 8 through 12 were tested by incorporating job flexibility, perceived supervisor support for creativity, creative role identity, creative self-efficacy as independent variables, intrinsic motivation and positive mood as chain mediators, creative performance as an outcome variable and gender and tenure as control variables, all of them together, in the PLS model. The results shown in Table 6 and Figure 8 highlight that all four independent variables, JF (β=0.396, p <0.01), PSS (β=0.17, p <0.01), CRI (β=0.15, p <0.05), and CSE (β=0.116, p <0.1), made statistically significant contributions to intrinsic motivation (IM), thereby meeting condition two of Baron & Kenny's mediation strategy and supporting hypotheses 2, 4, 6 and 8. Further, the first chain mediator, intrinsic motivation, made a statistically significant contribution to positive mood (the second chain mediator) (β=0.562, p <0.01) and positive mood made a statistically significant

contribution to creative performance (outcome variable) (β=0.384, p <0.01), consequently satisfying the third condition of Baron & Kenny's mediation strategy and supporting hypotheses 9 and 10.

The last condition of mediation was also satisfied because the coefficients for job flexibility (β= -0.003, p > 0.05) and perceived supervisor support for creativity (β= -0.06, p > 0.05) became non-significant, thereby indicating no significant contribution to creative performance. This suggests that hypotheses 11 and 12 were fully supported (full chain mediation). Finally, the contribution of creative role identity (β=0.218, p <0.01) and creative self-efficacy (β=0.293, p <0.01) to creative performance though significant, reduced drastically compared to their direct effects on creative performance, when mediators were not included. Researchers suggest that for mediation to exist, the direct effect of an independent variable on the outcome variable should reduce on incorporation of mediators (Zhao, Lynch & Chen, 2010; Kock 2014). This insinuates that hypotheses 13 and 14 are also supported. Gender (β=0.038, p >0.05) and tenure (β=0.116, p >0.05) made no significant contributions to creative performance, thereby suggesting that there was no difference between the creative performances of male and female employees and that tenure in a particular job position/role doesn't predict the creativity of IT professionals.

Further, to ensure the statistical significance of the mediation (indirect) effects, p-values for each indirect effect were calculated using Kock's (2014) approach for mediation testing in WarpPLS. The approach involves testing the significance of the indirect effects by resampling (like bootstrapping) technique, thereby assuring high precision of results. In fact, literature suggests that PLS-SEM – particularly when performed using WarpPLS or SmartPLS software – allows one to test complex models involving serial/chain mediation or parallel mediation more efficiently as compared to conventional statistical techniques (Kock, 2014; Kock & Mayfield, 2015). Statistical significance for indirect effects was calculated, separately for each independent variable, as recommended by Preacher & Hayes (2008) and Kock (2014). Further, this approach doesn't have any theoretical ramifications for this study, as the literature suggests that intrinsic motivation and positive mood will not only chain mediate the relationship between personal and contextual factors (chosen for this study – JF, PSS, CRI, CSE) and employee creativity but will also for various other personal and contextual factors identified

by scholars in the creativity literature (Dewett, 2007). Therefore, researchers in future study can test the mediation model proposed in this study using other creativity antecedents.

Table 7 indicates that all the chain mediation/indirect effects between independent variables (IV) and dependent variable (DV) are significant. It highlights that the chain mediation effect of intrinsic motivation and positive mood between each independent variable: job flexibility (β=0.203, $p < 0.01$), perceived supervisor support for creativity (β=0.164, $p < 0.01$), creative role identity (β=0.149, $p < 0.01$), creative self-efficacy (β=0.124, $p < 0.01$), and dependent variable (creative performance) is statistically significant. This provides further support for hypotheses 11, 12, 13 & 14. In addition, Table 8 gives a summary of all the hypotheses and their status as to whether they are accepted/supported or rejected/not supported.

Table 6: Path coefficients for the proposed conceptualized mediation model

Constructs	JF	PSS	CRI	CSE	IM	PM	Gender	Tenure	R^2	Adj R^2
IM	0.40***	0.17***	0.15**	0.12*					0.389	0.373
PM					0.56***				0.316	0.311
CP	-0.003	-0.06	0.22***	0.29***		0.38***	0.038	0.116	0.544	0.523

Note:

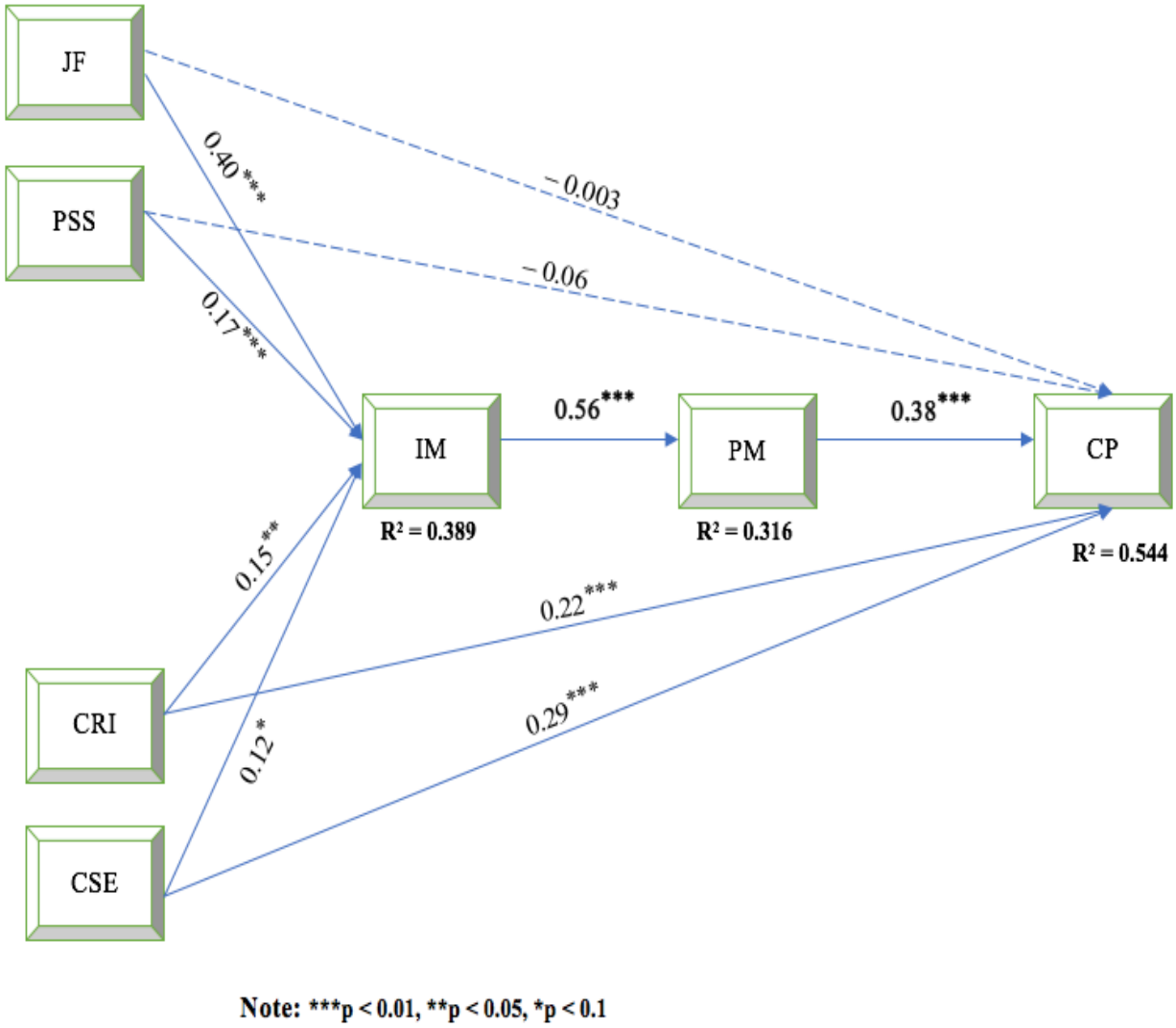
***p < 0.01, **p < 0.05, *p < 0.1

Table 7: Path coefficients and their statistical significance only for each chain indirect effect (indirect effect for paths with three segments) between IV & DV

	JF	PSS	CRI	CSE
CP	0.203***	0.164***	0.149***	0.124***

Note: ***p < 0.01

Figure 8: Estimated Parameters in the structural model



Note: ***p < 0.01, **p < 0.05, *p < 0.1

Table 8: Hypotheses and their status

Hypotheses	**Status**
H1: Perceived supervisor support for creativity is positively related to creative performance of ICT employees	Supported
H2: Perceived supervisor support for creativity is positively related to employee intrinsic motivation	Supported
H3: Job flexibility is positively related to creative performance of ICT employees	Supported
H4: Job flexibility is positively related to employee intrinsic motivation	Supported
H5: Creative role identity is positively related to creative performance of ICT employees	Supported
H6: Creative role identity is positively related to employee intrinsic motivation	Supported

H7: Creative self-efficacy is positively related to the creative performance of ICT employees	Supported
H8: Creative self-efficacy of ICT employees is positively related to their intrinsic motivation	Supported
H9: Intrinsic motivation is positively related to positive mood	Supported
H10: Positive mood is positively related to creative performance of ICT employees	Supported
H11: Intrinsic motivation and positive mood will mediate the relationship between perceived supervisor support for creativity and creative performance of ICT employees	Supported
H12: Intrinsic motivation and positive mood will mediate the relationship between job flexibility and the creative performance of ICT employees	Supported
H13: Intrinsic motivation and positive mood will mediate the relationship between creative role identity and the creative performance of ICT employees	Supported
H14: Intrinsic motivation and positive mood will mediate the relationship between creative self-efficacy and the creative performance of ICT employees	Supported

After testing all the hypotheses and the proposed theoretical model, the quality of the model and its goodness of fit were evaluated. In variance-based SEM analysis, like PLS, statistics like Average R-Squared (ARS), Average Path Coefficient (APC), Average Adjusted R-Squared (AARS) and Average Block VIF (AVIF) are considered good indicators for testing the model fit and its quality (Kock, 2017). Table 9 highlights that model fit and quality indices like Average Path coefficient (0.286, $p < 0.01$), Average R-Squared (0.416, $p < 0.01$), Average Adjusted R-Squared (0.402, $p < 0.01$), Average Block VIF (1.383), R-squared contribution ratio (1, the ideal score), Sympson's paradox ratio (0.833, acceptable if > 0.7) and Statistical suppression ratio (1) are perfectly within the acceptable value ranges and thus, there is no evidence of concern regarding the model fit. Furthermore, variance inflation factor (VIF) – a measure for detecting multicollinearity – was also assessed as a part of goodness of fit evaluation. Conservative statistics suggest that VIF values greater than 3.3 indicate a significant threat of multicollinearity in the model (Hair et al., 2010, Kock, 2017). However, multicollinearity is not a threat for the current study since the VIF values for all the variables are less than 3.3 (refer Table 9) which is considered to be the ideal value range. Additionally, the model also explains moderate to substantial variance for the outcome variable i.e. creative performance with a R^2 of 0.544 (see Table 6). All of this suggests that the proposed model has a good fit.

Table 9: Model Fit and Quality Indices for the proposed mediation model (as defined in WarpPLS Output)

Constructs	*JF*	*PSS*	*CRI*	*CSE*	*IM*	*PM*	*CP*
Collinearity VIF	1.646	1.570	1.594	1.536	1.775	2.704	2.412
Q^2 co-efficient					0.390	0.320	0.605
Average path coefficient (APC)	0.286***						
Average R-squared (ARS)	0.416***						
Average Adjusted R-squared (AARS)	0.402***						
Average full collinearity VIF (AFVIF)	1.704			acceptable if <= 5, ideally <= 3.3			
Average block VIF (AVIF)	1.383			acceptable if <= 5, ideally <= 3.3			
Sympson's paradox ratio (SPR)	0.833			acceptable if >= 0.7, ideally = 1			
R-squared contribution ratio (RSCR)	1.000			acceptable if >= 0.9, ideally = 1			
Statistical suppression ratio (SSR)	1.000			acceptable if >= 0.7			

Finally, common method bias (CMB) was also tested because the literature suggests that studies involving 'survey questionnaires' as a data collection method/tool usually face CMB as a measurement method problem (Podsakoff et al., 2003; Kock 2015). CMB is defined as the spurious variance caused by a measurement method, like self-reported biases in surveys, which could lead to inflated relationships between variables (Conway & Lance, 2010). The various methods to measure CMB include Harman's single factor test (Podsakoff and Organ, 1986), inclusion of marker variable (Lindell & Whitney, 2001), and full collinearity variance inflation factors (VIFs) which is the most conservative approach of all three. For the current study, Harman's single factor test and full collinearity VIFs were used to assess CMB because these methods are the most recommended ones for variance-based SEM analysis (Kock & Lynn, 2012; Kock, 2015). After executing the exploratory factor analysis (EFA), Harman's single factor test indicated that the unrotated single latent factor solution was less than 50% on all the indicators, thereby indicating that CMB does not exist in the current study (Podsakoff & Organ, 1986). Furthermore, Table 9 indicates that the collinearity VIF values for all the variables involved in this study are less than the recommended threshold of 3.3 (Kock, 2015), with the minimum value being 1.536 for creative self-efficacy and the maximum being 2.704 for

positive mood. Therefore, the results of both the measures suggest that CMB risk is minimal for this study.

Chapter 5: Discussion

To advance our understanding of the mechanisms through which creativity antecedents influence employee creativity, the primary objective of the current study was to propose and empirically examine a theoretical model elucidating the chain/serial mediating role of intrinsic motivation and positive mood in the creative performance of ICT professionals. Further, the study also aimed to understand the influence of contextual (job flexibility and perceived supervisor support for creativity) and personal (creative role identity and creative self-efficacy) factors on employee creativity. The findings and results of the study shown in figure 8 and tables 6 & 7 indicate that creativity antecedents - job flexibility, perceived supervisor support for creativity, creative role identity and creative self-efficacy – are positively related to employee intrinsic motivation, which is positively related to their positive mood experiences and positive mood is further positively related to the creative performance of ICT professionals. This suggests that intrinsic motivation and positive mood act as chain mediators in the relationship between creativity antecedents and creative performance, thereby highlighting the significance of motivational-affective mechanism underpinning employee creativity. Furthermore, figure 7 & table 5 suggest that all four creativity antecedents also have a direct positive relationship with employee creativity. Therefore, the study provides complete empirical support for all the proposed hypotheses and consequently for the mediation/theoretical model. The key contributions of the results and the overall study are discussed in the following section.

5.1 Discussion of results and key contributions

Creativity is described as the lifeblood of innovation and thus, for contemporary firms to stay competitive and maintain their innovativeness in today's rapidly changing global environment it has become immensely important for them to enhance the creative performance of their employees (Amabile, 1988; Zhou, 2003). Prior research on employee creativity has focused on understanding the mechanisms through which creativity antecedents, mainly personal and situational factors, affect the creative performance of employees, particularly through the motivational pathway. Though contemporary scholars have theorised intrinsic motivation as a vital driver for creativity, a significant number of primary studies have produced mixed findings (Andrew et al., 2014) raising qualms about whether it genuinely acts as a

quintessential motivational force in channeling and sustaining creative performance of employees in applied business settings (Liu et al., 2016). Therefore, the current study aimed at identifying shortcomings in the existing theoretical framework/literature linking intrinsic motivation to creativity and suggesting alternative mechanisms, supported by empirical evidence, that may explain the mediation effect of intrinsic motivation.

This research makes at least three significant contributions to the study of creativity in the context of IT/Tech industry by accomplishing its key objectives. First of all, the study developed and examined a model that linked intrinsic motivation to mood (specifically positive mood) to explain the gaps in the motivation-creativity relationship. Though few studies in the past have examined the mediating effect of intrinsic motivation and positive mood independently between creativity antecedents and employee creativity (as an outcome), none of them have ever linked the two together as chain mediators to explain the influence of personal and contextual factors on employee creativity. In fact, Madjar et al. (2000) mentioned this as one of the key limitations of their research that explored the extent to which positive mood mediated the association between work/nonwork support and creative performance of employees. They explicitly highlighted that it is crucial to know that whether mood individually mediated the relationship or whether it is a combination of intrinsic motivation and mood together that mediates the antecedents-creativity relationship. Thus, the current study is the first of its kind that theorized and empirically showed how intrinsic motivation and positive mood together, as chain mediators, mediate the relationship through which unique creativity antecedents, specific to the IT sector, like job flexibility, perceived supervisor support for creativity, creative role identity and creative self-efficacy influence the creative performance of IT professionals. This addresses the primary objective of this research.

Since organizations in the field of IT/Tech, both small to medium sized businesses (SMBs) and large corporations, depend on creative professionals to develop avant-garde products and services that can pave the way for massive financial returns, the main contribution of this research, thus, is the empirically supported mediation model with solid theoretical underpinnings that can be used by practitioners/managers to develop various organizational policies (pertinent to creativity antecedents, like providing job flexibility) which can enhance the creative performance of their employees. Further, the results of this study align with the key conclusions of previous creativity studies that emphasize the importance of creating a work environment which can motivate employees to intrinsically enjoy their work and stay in a

positive or cheerful mood, both of which consequently can augment their creative problem solving at work (Dewett, 2007; Shin & Zhou, 2003).

Second, the support for our hypotheses 1, 3, 5 and 7 also indicates the direct effects of creativity antecedents on creative performance of Tech professionals. The results highlight that employees who are provided with more job flexibility or flexible work arrangements (flexitime, flexiplace and flexibility over communication and planning) are more likely to be creative in their work endeavours compared to those who are afforded little to no flexibility. In fact, this study is the first one to investigate the direct effect of job flexibility on employee creativity. As predicted, our findings suggest that employees who receive support or perceive to receive support from their supervisors in the form of developmental feedback, creativity-relevant information and appreciation for the quirky ideas they produce, tend to be more creative at work compared to employees who lack such crucial support. Further, the results also reveal that hiring employees with a strong sense of creative role identity and bolstering that role-identity by providing support for their creativity can tremendously magnify their creative performance at work. In addition, if organisations hire employees who are confident in their self-efficacy to be creative and make them feel that they have the capability to produce trailblazing ideas, then they can considerably enhance their creative outcomes at work.

Finally, though the literature often propounds the cardinal importance of intrinsic motivation in the context of understanding employee creativity, it is seldom investigated or measured in an applied business setting. This study extends Tierney & Farmer's (2011) and Shin & Zhou's (2003) work by examining the impact of vital personal (creative role identity and creative self-efficacy) and contextual (job flexibility, perceived supervisor support) factors on intrinsic motivation of employees and how superior creative performance is imputed to high levels of employee intrinsic motivation. More precisely, this is the first study to investigate the direct effects of job flexibility, perceived supervisor support, creative role identity and creative self-efficacy on intrinsic motivation in the context of the highly-knowledge based IT sector. The results of the study (hypotheses 5 through 8) are consistent with self-determination theory (SET), cognitive evaluation theory (CET) and the componential theory of creativity basically highlighting that when employees' psychological needs for competence, autonomy and relatedness are satisfied by providing them effectance-promoting feedback, job flexibility and role-support to bolster their creative role-identity then their propensity to engage in the job task solely for the purpose of intrinsic enjoyment or interest, rather than for extrinsic rewards, is

highly likely to increase (Amabile, 1996; Deci & Ryan, 1985). Most important of all, the study makes a vital theoretical contribution to the creativity literature by linking four IT sector-pertinent creativity antecedents to intrinsic motivation (the cognitive route to creativity) and positive mood (the affective route to creativity), which consequently, as chain mediators, amplify the creative performance of ICT professionals.

Additionally, the results based on the control variables indicate that females are equally likely to be creative as males if provided with suitable contextual factors like supervisor support, job flexibility that might further boost their creativity-relevant personal characteristics like creative role identity, and creative self-efficacy. Moreover, tenure also didn't seem to have any effect on creative performance of the IT professionals in this study, contrary to the findings of Eder & Sawyer (2001) which found a positive relationship between the two. This is not a surprise, because the literature suggests that people can be equally creative at any job level and with any level of experience in a particular position or workplace (Madjar et al., 2002). However, further research is now needed to directly examine these relationships, as the current study had only included them as control variables.

5.2 Practical implications for Managers

The mechanisms through which creativity of IT professionals can be enhanced should be of great interest to both senior management of IT organizations and other firms that hire IT professionals, as well as to public sector policy-makers in charge of ameliorating national outcomes for their country through, for example, developing policies that might desiderate secondary and tertiary education institutions to encourage students to engage in creative or innovative endeavours or attract highly-skilled migrants (MBIE, 2015). The results of the study have implications for both practitioners and scholars with regards to the non-redundant contributions of intrinsic motivation and positive mood to employee creativity. The study encourages IT firms to draw on the insights from cognitive evaluation theory (CET), self-determination theory (SDT) and the componential theory of creativity to formulate intervention policies that can fuel the intrinsic motivation and positive mood of their employees which consequently will give a huge impetus to their creative performance at the workplace. Specifically, the current research shows that increasing job flexibility, providing supervisor support in the form of developmental feedback and appreciation for novel ideas, selecting/hiring employees with a strong creative role-identity and boosting their confidence

or self-efficacy beliefs to be creative in the job tasks can significantly spur the creative performance of IT professionals. To gauge the degree to which these personal and contextual factors influence the creativity of employees, managers should keep track of the changes in employee's motivation and mood levels before and after the implementation of new policies or systems.

Within organisations, considering the research findings of this study, management should focus on a number of important areas for intervention: Firstly, it is crucial to provide job flexibility to IT professionals in the form of formal and informal flexible work arrangements like flexibility of time/schedule (flexitime), flexibility of place (flexiplace) and autonomy over the planning or communication tools they use for work. This will give a huge boost to their intrinsic motivation which will lead to development of positive mood states, thereby increasing their creative performance at work. Research suggests that even contemporary organizations are generally reluctant to permit their employees to work from home or have flexitime arrangements because of apparent lack of trust in employees (Hoeven & Zoenen, 2015). Therefore, companies should take insights from this research to enhance their competitive advantage and innovativeness in the market.

Second, employers should provide supervisor support to employees by fostering an environment that is open to eccentric and unique ideas, providing developmental feedback, recognizing individual employee contributions, serving as an erudite role model, showing confidence in the subordinates and the workgroup, eliminating inflexible and bureaucratic procedures, encouraging diversity of opinion, disruption and dissent to challenge the status quo and sharing valuable creativity-relevant information. The results of this study indicate that when employees receive creativity-relevant feedback and information from their supervisors they are encouraged to produce more creative ideas as they view their creativity being appreciated and valued by their supervisors. Further, supervisors or managers should be properly trained to provide creativity-relevant support to their subordinates or team members.

Third, organisations need to consider selecting and recruiting IT professionals who have a proclivity to be perceived by them and by their social others as someone who is creative in their work role i.e. employees with a strong creative role identity. In addition, supervisors or coworkers should provide creative role-support to these employees to further bolster their

creative role-identity which would drastically enhance their intrinsic motivation and positive mood at work, consequently augmenting their creative performance.

Fourth, it is important to hire employees who believe they have the capability to produce creative solutions to complex problems i.e. employees with high creative self-efficacy. The findings of the study insinuate that recruiting employees with high creative self-efficacy and further boosting their confidence by providing adequate creativity-relevant support will significantly propel them to reject conventional hackneyed ideas and to adopt avant-garde and novel approaches to problem solving.

Fifth, organisations need to focus on managing employees in a manner that can enhance their intrinsic motivation rather than tarnishing it, for example, by adopting a reward or retribution only policy for producing creative outcomes. High levels of intrinsic motivation will lead to enhanced levels of positive mood which will further amplify creative performance of IT professionals.

Sixth, organisations must find ways to enhance or induce positive mood states at work by eliminating tight deadlines or excessive workloads, hiring supportive, yet non-controlling managers, promoting off-site relaxation retreats, recruiting leaders and team members prone to positive affect and using humour or light-hearted banter at work (Totterdell, 2000; Romero & Cruthirds, 2006). Literature and empirical evidence from the current research indicates that elevating or developing positive mood states at work significantly increases flexible thinking and fluency of thoughts and ideas, thereby increasing employee creativity (Madjar et al., 2002).

These recommendations should be viewed in pertinence to the characteristics of the IT sector in advanced economies. The Tech sector is a highly competitive industry and has one of the highest employee turnover rates (13-15%) among all other major industries (Petrone, 2018). Retaining talent is a major problem for tech companies, including prominent Tech giants like Google and Amazon (Rhatigan, 2016), because of burgeoning demand for highly skilled tech professionals and the high levels of stress due to long working hours and poor work-life balance (Lyons, 2017). In the light of these facts and the findings of this study, employers should pay special attention to creating a work environment that will reduce stress, enhance intrinsic motivation and positive mood so that they can retain their most talented and creative employees – who are considered as the cornerstone of the innovativeness and success of a firm.

5.3 Implications for theory

The current study makes some important theoretical contributions to the existing knowledge concerning creativity and its management. The study identifies limitations in the existing creativity theory that emphasizes the independent mediating role of intrinsic motivation or of positive mood between creativity antecedents (personal and contextual factors) and creative performance leading to confounding results obtained by various researchers. Thus, drawing from and linking the Componential theory of creativity, Self-determination theory and Cognitive evaluation theory this study proposes and provides empirical support for a new theoretical model – encompassing both intrinsic motivation and positive mood together as chain mediators – that explains the mechanism thorough which personal and contextual factors affect creative performance of ICT professionals. It highlights the significance of motivational-affective mechanism underpinning employee creativity which other creativity models/theories have ignored in the past. It also makes a unique contribution to both the 'creativity' and 'future of work' literature by being the first study to empirically elucidate the influence of job/work flexibility on employee creativity. Further, the study provides some key insights to both organizational behaviour researchers and business information systems researchers (studying human-computer interaction) in relation to understanding the theoretical mechanisms through which various factors influence the creativity of Tech workers. Finally, it is the first of its kind study to clarify and explain the relationship between common creativity antecedents, intrinsic motivation, positive mood and employee creativity in an ICT context or elsewhere.

5.4 Limitations & Suggestions for future research

Like any study, this study also has some potential limitations. First, the study depended solely on objective ratings of creativity to measure the creative performance of employees which might have led to the introduction of systematic bias in the responses of participants. Though it is possible that relationships among various constructs might be inflated since employees provided ratings for their own creative performance, various creativity antecedents, intrinsic motivation and positive mood, the results of the Harman single factor test and VIF analysis indicate that common method variance is not a problem in the current study. However, future research could address the issue of systematic bias by examining the role of intrinsic motivation and positive mood as chain mediators using both objective ratings and supervisor ratings of creativity. Second, throughout the study a causal argument was made that personal and

contextual factors influence employee intrinsic motivation which in turn influences the mood of employees, consequently affecting employee creativity. Yet the study was not an experiment to technically justify such a causal inference. Therefore, future work is needed either in the form of experiments or longitudinal research design to assess causality of the proposed mediation hypotheses.

Finally, it is important to note that in the current study, mood was defined as a transient state to understand experience of employees over a relatively short period of time. Generally accepted procedures in the field of mood-creativity studies were followed by asking employees to indicate their feelings during the past week to describe their mood states (George, 1991; Stokes & Levin, 1990). The statically significant mood-creativity suggests that employees reflected on their experience in the past one-week period while rating mood and creativity measures in the questionnaire. Literature on affect highlights that though moods are less stable than affective traits they sometimes can remain relatively stable over periods of time (George, 1991). Nevertheless, it is possible that the measure of mood used in the current study assessed permanent affective traits and that employees with positive traits had high intrinsic motivation because they received conducive contextual factors and inherently had strong personal characteristics like creative role identity and creative self-efficacy and therefore exhibited higher creativity. Thus, it is advisable that future work should tackle this possibility by assessing the mediating effects of both affective traits and states (Madjar et al., 2002).

Further, in terms of future research, the proposed model should be tested by using other personal and contextual factors in new work contexts like the education, finance or hospitality sectors to understand whether intrinsic motivation and positive mood still act as chain mediators between new creativity antecedents and employee creativity or whether there are any alternate mechanisms that can explain this relationship. Additionally, the current research was conducted in the Western context – data was collected from IT professionals working in the United States – which often serves as a context for creativity studies. Researchers suggest that findings emerging from US/Western management literature cannot be simply mapped onto firms in other cultural contexts, specifically because cultural aspects/attributes like individualism vs collectivism vary considerably between Eastern and Western cultures (Jones, Pringle & Shepherd, 2000). Therefore, it would be recommended to conduct a similar study in other cultural contexts in order to explore its cross-cultural applicability.

Chapter 6: Conclusions

In summary, IT firms wishing to remain competitive must concentrate on producing cutting edge innovation which vastly relies on the superior creative performance of their IT professionals (Amabile, 1997). Organizations can amplify the creative performance of employees only when they understand what are the vital factors and mechanisms which influence employee creativity, otherwise they risk becoming strategically and competitively impertinent in the market (Shalley et al., 2000). Though strategic irrelevance might not be an imminent threat, a lack of creativity hamstrings a company's financial performance. Burgeoning international competition due to changes in consumers' demands and preferences and the role that information technology plays in shaping them, coupled with the drive of Western nations to become a knowledge economy, suggest that the merits of a highly creative workforce are of immense importance to both the Tech firms and policy makers (Chung et al., 2014). The findings of the study highlight the unique, cumulative functioning of the motivational and affective mechanism in the relationship between personal and contextual factors and employee creativity.

In particular, the results indicate that contextual workplace factors like job flexibility, and supervisor support for creativity and personal factors like creative role identity and creative self-efficacy tremendously enhance the creative performance of IT professionals. The mechanism through which these factors influence employee creativity suggests that when employees are provided with a supportive work environment in the form of job flexibility and supervisor support for creativity and when their personal attributes like creative role identity and creative self-efficacy are high or boosted due to the supportive contextual environment provided to them then their intrinsic motivation enhances significantly. Further, this motivation to perform the task because they intrinsically enjoy it or find it interesting leads them to experience positive mood states at work which eventually augments their creative performance. Thus, the study theoretically and empirically supports the hypothesis that contextual and personal factors enhance intrinsic motivation of employees, which further increases their positive mood/affective experiences at work and these positive mood states consequently enhance employee creativity. The combined chain mediation effect of intrinsic motivation and positive mood serves as a mechanism that can provide IT professionals with novel stimuli for them to be creative at work. To sum up, these findings suggest the need to take a more

perspicacious view of the underpinning chain mediation mechanism of motivation and mood for employee creativity and to identify all possible antecedents that can potentially influence creative performance of IT employees.

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Appendices

Appendix A: Participant Information sheet

Information sheet

Main Task & Aim:

We are conducting research to investigate the role of intrinsic motivation and mood in the creative performance of ICT workers. Thus, we are approaching people from IT industry to complete our survey, which covers a range of factors that affect employee creativity at work. The survey focuses on various personal factors like proactive personality, creative role identity and contextual factors like job flexibility and supervisor or organizational support that may affect your creative performance at work on a day to day basis.

Confidentiality and Anonymity:

We invite you to participate in this research. Participation is voluntary and you can withdraw from the study by not completing or submitting the completed questionnaire. You must be over 16 years old to participate in this study. Please note, completing this survey automatically indicates your consent to participate in this study. The survey will take 15 minutes to complete. If you have any questions, you can contact any member of the Research team. The members of the research team are: Rohit Piplani ([redacted]), Tim Bentley (t.a.bentley@massey.ac.nz) and Nazim Taskin (n.taskin@massey.ac.nz). This survey is anonymous. The record of your survey responses does not contain any identifying information about you and there is no way to identify you from your responses.

Implications of research findings:

The findings of this study will have implications for employers' looking to enhance or ameliorate creative performance of their employees by providing them an insight on the positive impact of organizational support and job flexibility on employee creativity. It will also help many IT firms to stay at the forefront of technological innovation as creativity is a prerequisite for innovation. It is expected that a conference paper and journal article will help disseminate findings to other researchers and students.

Ethics & Contact details:

This research has received Ethics approval from the Ethics Committee at Massey University, NZ. If you have any questions about the survey, please contact the project lead researcher, Rohit Piplani, at [redacted].

Appendix B: Survey Questionnaire

We care about the quality of our survey data and hope to receive the most accurate measures of your opinions, so it is important to us that you thoughtfully provide your best answer to each question in the survey.

Do you commit to providing your thoughtful and honest answers to the questions in this survey?

- ○ I will provide my best answers (1)
- ○ I will not provide my best answers (2)
- ○ I can't promise either way (3)

Start of Block: Demographic Profile: Please answer some questions about yourself

Q1 How old are you?

_____

Q2 To which gender identity do you most identify?

- ○ Male (1)
- ○ Female (2)

Q3 What is the highest level of education you have completed?

- ○ Less than High School (1)
- ○ High School (2)
- ○ Some College education (Started University/College but not finished yet) (3)
- ○ Bachelors Degree (4)
- ○ Postgraduate Diploma (5)
- ○ Masters Degree (6)
- ○ Doctoral Degree (7)
- ○ Professional Degree (JD, MD) (8)

Q4 Which of the following best describes your job role in your current organization?

- ○ Software Developer (1)
- ○ Programmer (2)
- ○ Software Architect (3)
- ○ IT Technical support officer (15)
- ○ Algorithm Developer/Engineer (5)
- ○ Cybersecurity Engineer (6)
- ○ Web Developers, (7)
- ○ UX designers, (8)
- ○ Mobile App developers, (9)
- ○ Fullstack Java Developers, (10)
- ○ SAP consultants, (11)
- ○ Machine learning Engineer (12)
- ○ Artificial Intelligence engineers (13)

- ○ Other (14) _____

Q5 How long have you been in your current position?

- ○ Years (1) _____
- ○ Months (2) _____

Q6 How long have you been working for your current organization?

- ○ Years (1) _____
- ○ Months (2) _____

Q7 How long have you been working in the IT industry?

- ○ Years (1) _____
- ○ Months (2) _____

Q8 Which of the following most closely matches your job title?

- ○ Non-managerial employee (1)
- ○ First-line supervisor (2)
- ○ Mid-level Manager (3)
- ○ Senior Manager (4)
- ○ C- level Executive (5)
- ○ Other (6) _____

Q9 What is your annual salary (including bonuses and commissions) in U.S. dollar

- ○ $0 - $25,000 (1)
- ○ $25,001 - $50,000 (2)
- ○ $50,001 - $75,000 (3)
- ○ $75,001 - $100,000 (4)
- ○ $100,001 - $125,000 (5)
- ○ $125,001 - $150,000 (6)
- ○ $150,001 - $175,000 (7)
- ○ $175,001 - $200,000 (8)
- ○ $200,001+ (9)

End of Block: Demographic Profile: Please answer some questions about yourself

Start of Block: Contextual & Personal Factors

Now, we would like you to answer the remainder of the questions in this surve relation to your job and personal characteristics.

Q10

The items below ask about **Job Flexibility** at your current workplace. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Neither agree or disagree (3)	Agree (4)	Strongly Agree (5)
I have the ability to determine my working hours (1)	○	○	○	○	○
I decide when my workday starts (2)	○	○	○	○	○
I plan my working hours myself (3)	○	○	○	○	○
I decide where I work (4)	○	○	○	○	○
I choose what times I work (5)	○	○	○	○	○
I choose the location where I work (6)	○	○	○	○	○
I have the freedom over how I do my job (7)	○	○	○	○	○
I have the ability to determine my workplace myself (8)	○	○	○	○	○
I have the feeling of being in control over the communication I have for work. (9)	○	○	○	○	○

Q11

The items below ask about the **support that you receive from your current supervisor** for being creative at work. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither agree or disagree (4)	Somewhat agree (5)	Agree (6)	Strongly Agree (7)
My supervisor gives me useful feedback about my ideas concerning the workplace (1)	○	○	○	○	○	○	○
My supervisor is always ready to support me if I produce an unpopular idea or solution at work (2)	○	○	○	○	○	○	○
My supervisor discusses with me my work related ideas in order to improve them (3)	○	○	○	○	○	○	○
My supervisor praises good work (4)	○	○	○	○	○	○	○

Q12

The items below ask about your personality. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither agree or disagree (4)	Somewhat agree (5)	Agree (6)	Strongly Agree (7)
I am constantly on the lookout for new ways to improve my life. (1)	○	○	○	○	○	○	○
Wherever I have been, I have been a powerful force for constructive change (2)	○	○	○	○	○	○	○
Nothing is more exciting than seeing my ideas turn into reality. (3)	○	○	○	○	○	○	○
If I see something I don't like, I fix it. (4)	○	○	○	○	○	○	○
No matter what the odds, if I believe in something I will make it happen (5)	○	○	○	○	○	○	○
I love being a champion for my ideas, even against others' opposition (6)	○	○	○	○	○	○	○

I excel at identifying opportunities (7)	○	○	○	○	○	○	○
I am always looking for better ways to do things (8)	○	○	○	○	○	○	○
If I believe in an idea, no obstacle will prevent me from making it happen (9)	○	○	○	○	○	○	○
I can spot a good opportunity long before others can. (10)	○	○	○	○	○	○	○

Q13

The items below ask about your self-view in reference to the role of performing creatively at your current workplace. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Neither agree or disagree (3)	Agree (4)	Strongly Agree (5)
I often think about being creative. (1)	○	○	○	○	○
I do not have any clear concept of myself as a creative employee. (2)	○	○	○	○	○
To be a creative employee is an important part of my identity. (3)	○	○	○	○	○

Q14

The items below ask about the organizational support that you receive for being creative in your current job or for enhancing your job creativity. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neither agree or disagree (4)	Slightly agree (5)	Moderately Agree (6)	Strongly Agree (7)
The organization values my contribution to its well-being. (1)	○	○	○	○	○	○	○
The organization fails to appreciate any extra effort from me. (2)	○	○	○	○	○	○	○
The organization would ignore any complaint from me. (3)	○	○	○	○	○	○	○
The organization really cares about my well-being. (4)	○	○	○	○	○	○	○
Even if I did the best job possible, the organization would fail to notice. (5)	○	○	○	○	○	○	○
The organization cares about my general satisfaction at work. (6)	○	○	○	○	○	○	○
The organization shows very little concern for me. (7)	○	○	○	○	○	○	○
The organization takes pride in my accomplishments at work. (8)	○	○	○	○	○	○	○

Q15

The items below ask about the autonomy that you have in your current job with respect to your work methods, work schedule, and work criteria. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither agree or disagree (4)	Somewhat agree (5)	Agree (6)	Strongly Agree (7)
I am allowed to decide how to go about getting my job done (the methods to use) (1)	○	○	○	○	○	○	○
I am able to choose the way to go about my job (the procedures to utilise) (2)	○	○	○	○	○	○	○
I am free to choose the method(s) to use in carrying out my work. (3)	○	○	○	○	○	○	○
I have the control over the scheduling of my work (4)	○	○	○	○	○	○	○
I have some control over the sequencing of my work activities (when I do	○	○	○	○	○	○	○

what) (5)							
My job is such that I can decide when to do particular work activities (6)	○	○	○	○	○	○	○
My job allows me to modify the normal way we are evaluated so that I can emphasise some aspects of my job and play down others (7)	○	○	○	○	○	○	○
I am able to modify what my job objectives are (what I am supposed to accomplish) (8)	○	○	○	○	○	○	○
I have some control over what I am supposed to accomplish (what my supervisor sees as my job objectives) (9)	○	○	○	○	○	○	○

Q16

The items below ask about your confidence at being creative in your job tasks. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Neither agree or disagree (3)	Agree (4)	Strongly Agree (5)
I have confidence in my ability to solve problems creatively (1)	○	○	○	○	○
I have confidence in my ability to produce new ideas. (2)	○	○	○	○	○
My past experiences and accomplishments increase my confidence that I will be able to perform successfully in this organization (3)	○	○	○	○	○
I believe I could have handled a more challenging job than the one I will be doing (4)	○	○	○	○	○

Q17

The items below ask about the stress that you experience in your current job due to tight deadlines or excessive workload. Please indicate the extent to which you agree or disagree with the following statements.

	Never True (1)	Sometimes True (2)	Often True (3)	Always True (4)
I have too much work to do in too little time (1)	○	○	○	○
I feel I have an excessive amount of work (2)	○	○	○	○
I feel stressed at work (3)	○	○	○	○
There are clear time pressures that inhibit my ability to do my job well (4)	○	○	○	○

Q18

The items below ask about the importance of creativity, irrespective of work, to your self-definition rather than on the importance of being a creative employee. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Neither agree or disagree (3)	Agree (4)	Strongly Agree (5)
In general, my creativity is an important part of my self-image (1)	○	○	○	○	○
My creativity is an important part of who I am (2)	○	○	○	○	○
Overall, my creativity has little to do	○	○	○	○	○

with how I feel about myself (3)							
My ability to be creative is an important reflection of who I am (4)	○	○	○	○	○		

Q19

The items below ask about your belief in your own capability of performing a specific task effectively and efficiently at work. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither agree or disagree (4)	Somewhat agree (5)	Agree (6)	Strongly Agree (7)
I am confident about my ability to do my job (1)	○	○	○	○	○	○	○
I am self-assured about my capabilities to perform my work activities (2)	○	○	○	○	○	○	○
I have mastered the skills necessary for my job (3)	○	○	○	○	○	○	○

Q20

The items below ask about your interest or motivation in performing a job task or an activity irrespective of an external award or compensation associated with it. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Neither agree or disagree (3)	Agree (4)	Strongly Agree (5)
When I am working on something, I am doing it for myself (1)	○	○	○	○	○
I get my motivation from the work itself, and not from the reward for it (2)	○	○	○	○	○
I work because I enjoy it (3)	○	○	○	○	○
I would still do this work, even if I received less pay (4)	○	○	○	○	○
I find that I also want to work in my free time (5)	○	○	○	○	○

Q21

Over the past one week, to what extent have you felt each of the following? Please select the response which best reflects how you have felt in this period.

	Very slightly or Not at all (1)	A little (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
Interested (1)	○	○	○	○	○
Distressed (2)	○	○	○	○	○

Excited (3)	○	○	○	○	○
Upset (4)	○	○	○	○	○
Strong (5)	○	○	○	○	○
Guilty (6)	○	○	○	○	○
Scared (7)	○	○	○	○	○
Hostile (8)	○	○	○	○	○
Enthusiastic (9)	○	○	○	○	○
Proud (10)	○	○	○	○	○
Irritable (11)	○	○	○	○	○
Alert (12)	○	○	○	○	○
Ashamed (13)	○	○	○	○	○
Inspired (14)	○	○	○	○	○
Nervous (15)	○	○	○	○	○
Determined (16)	○	○	○	○	○
Attentive (17)	○	○	○	○	○
Jittery (18)	○	○	○	○	○
Active (19)	○	○	○	○	○

Afraid (20)	○	○	○	○	○

Q22

The items below ask about your creativity or creative performance at work. Please respond to each item using the response scale provided.

	Not at all Characteristic of me (1)	Slightly Characteristic of me (2)	Somewhat Characteristic of me (3)	Moderately Characteristic of me (4)	Very Characteristic of me (5)
I suggest new ways to achieve goals or objectives. (1)	○	○	○	○	○
I come up with new and practical ideas to improve performance. (2)	○	○	○	○	○
I search out new technologies, processes, techniques, and/or product ideas. (3)	○	○	○	○	○
I suggest new ways to increase quality. (4)	○	○	○	○	○
I am a good source of creative ideas. (5)	○	○	○	○	○
I am not afraid to take risks. (6)	○	○	○	○	○
I promote and champion ideas to others. (7)	○	○	○	○	○

I exhibit creativity on the job when given the opportunity to. (8)	○	○	○	○	○
I develop adequate plans and schedules for the implementation of new ideas. (9)	○	○	○	○	○
I often have new and innovative ideas. (10)	○	○	○	○	○
I come up with creative solutions to problems. (11)	○	○	○	○	○
I often have a fresh approach to problems. (12)	○	○	○	○	○
I suggest new ways of performing work tasks (13)	○	○	○	○	○

Q23

The items below ask about your social-political ideology. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Neither agree or disagree (3)	Agree (4)	Strongly Agree (5)
I believe that laws should be strictly enforced (1)	○	○	○	○	○
I believe that there is no absolute right or wrong (2)	○	○	○	○	○

I like to stand during the national anthem (3)	○	○	○	○	○
I believe that we should be tough on crime (4)	○	○	○	○	○
I believe that we coddle criminals too much (5)	○	○	○	○	○
I believe too much tax money goes to support artists (6)	○	○	○	○	○
I tend to vote for conservative political candidates (7)	○	○	○	○	○
I believe in one true religion (8)	○	○	○	○	○
I believe that criminal should receive help rather than punishment (9)	○	○	○	○	○
I tend to vote for liberal political candidates (10)	○	○	○	○	○

Thank you for completing the Questionnaire. We appreciate your participation in the survey.

End of Block: Contextual & Personal Factors

Appendix C: Low Risk Notification

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Date: 25 July 2017

Dear Rohit Subhash Piplani

Re: Ethics Notification - **4000018203 - Stuck in a rut, Can I try something different? The role of intrinsic motivation and mood in the creative performance of ICT workers.**

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please contact a Research Ethics Administrator.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:
"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director - Ethics, telephone 06 3569099 ext 86015, email humanethics@massey.ac.nz. "

Please note, if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to complete the application form again, answering "yes" to the publication question to provide more information for one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely