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Examining the Relationships between Factors of Employees' Perceptions of Knowledge Worker Productivity, Psychological Well-Being, and Performance

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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

EXAMINING THE RELATIONSHIPS BETWEEN FACTORS OF EMPLOYEES'

PERCEPTIONS OF KNOWLEDGE WORKER PRODUCTIVITY, PSYCHOLOGICAL

WELL-BEING, AND PERFORMANCE

A dissertation submitted in partial fulfillment of

the requirements for the degree of

DOCTOR OF BUSINESS ADMINISTRATION

by

Walter Liu

2021

To: Interim Dean William Hardin
    College of Business

This dissertation, written by Walter Liu, and entitled Examining the Relationships between Factors of Employees' Perceptions of Knowledge Worker Productivity, Psychological Well-Being, and Performance, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

_____
Karlene Cousins

_____
Ravi Gajendran

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George Marakas

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Fred O. Walumbwa, Major Professor

Date of Defense: May 24, 2021

The dissertation of Walter Liu is approved.

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Interim Dean William Hardin
College of Business

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Andrés G. Gil
Vice President for Research and Economic Development
and Dean of the University Graduate School

Florida International University, 2021

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DEDICATION

There are several individuals in my life to whom I would like to dedicate my dissertation. To my mother, Christina Liu, who has always been supportive of me in many ways, including pursuing my Doctor of Business Administration degree. To my sisters, Teresa and Jean Liu, for always being there when I needed help. To my daughter, Abigail Liu, who has inspired me to try to better myself. I hope my accomplishment inspires her to achieve more incredible things in life. To Bianca Liu for her encouragement throughout this journey. To my late father, Henry Liu, for helping me recognize the importance of a good education and stoking in me the desire to learn. To God for giving me the talents to complete this academic journey.

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ABSTRACT OF THE DISSERTATION

EXAMINING THE RELATIONSHIPS BETWEEN FACTORS OF EMPLOYEES'

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Florida International University, 2021

Miami, Florida

Professor Fred O. Walumbwa, Major Professor

Peter Drucker, known as the "father of modern management", suggested that the most valuable asset of a 21st-century institution would be knowledge workers and their productivity. Since then, there has been a steady shift from manual work to knowledge work over the past several decades and with it, an interest in knowledge worker productivity. A 2013 study identified six factors with the highest association regarding the performance of knowledge workers. Drawing on insights of relational cohesion theory, social exchange theory, transactive memory systems theory, goal setting theory, social network theory, and Fredrickson's (1998, 2001, 2004) broaden-and-build theory, the purpose of this dissertation study was to examine the relationship between the factors of knowledge worker productivity, psychological well-being, and task performance. Data from 283 respondents were analyzed using hierarchical linear regression analysis. The study's results supported the relationship between three of the six factors (i.e., social cohesion, information sharing, and vision & goal clarity) and task performance. Implications of these findings are discussed.

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ABBREVIATIONS AND ACRONYMS

AWA	Advanced Workplace Associates
CEBMa	Center for Evidence-Based Management
EC	External Communication
HIT	Human Intelligence task
IRB	Institutional Review Board
IS	Information Sharing
KMO	Kaiser-Meyer-Olkin
KWP	Knowledge Worker Productivity
MTurk	Mechanical Turk
PSS	Perceived Supervisory Support
PWB	Psychological Well-Being
SC	Social Cohesion
TRU	Trust
VGC	Vision & Goal Clarity

CHAPTER I. INTRODUCTION

Peter Drucker, referred to as the "father of modern management", introduced the term knowledge worker in 1959. He suggested that a 21st-century institution's most valuable asset would be knowledge workers and their productivity. True to this prediction, there has been a steady shift from manual work to knowledge work over the past several decades and with it an interest in knowledge worker productivity. The productivity of such workers is essential because it contributes to the performance and sustainability of organizations (Kianto, Shujahat, Hussain, Nawaz, & Ali, 2019). Furthermore, the productivity of knowledge workers can provide an opportunity to increase the profits of a company by improving the overall business process or product rather than just minimizing costs (Ramirez & Nembhard, 2004).

Although the state of knowledge worker productivity has been regarded as somehow dismal (Drucker, 1999), the demand and utilization of knowledge workers have continued to grow. A 2013 McKinsey Global Institute article stated that there were an estimated 230 million knowledge workers worldwide in 2012. In the past century, the proportion of knowledge workers has increased from 30% in 1920 to 50% in 1956, and 70% in 1980 (Rapid Evidence Assessment, 2014). The demand for knowledge workers will continue to grow, more so with the unprecedented times across the globe and the ever-growing knowledge-based service economy.

Knowledge worker productivity is about the gamesmanship of companies in the modern economy (Igielski, 2017). The productivity of knowledge workers has become a battlefield in the managerial world, especially for companies in the manufacturing sector (Ebert & Freibichler, 2017). Industrialized countries will likely rely more on the

productivity of knowledge workers rather than on enhancements in production equipment. Therefore, improving knowledge worker productivity will be imperative for companies in these countries (Wong & Neck, 2012).

Factors of Knowledge Worker Productivity

The Center for Evidence-Based Management (CEBMa), based in the Netherlands, is the leading authority on evidence-based practice in management and leadership. The independent, non-profit organization conducted a study in 2013 along with a workplace consultancy firm called Advanced Workplace Associates (AWA) which identified six factors with the highest association with the performance of knowledge workers. The CEBMa and AWA performed a Rapid Evidence Assessment which involved analyzing peer-reviewed, scholarly journals (covering the years 1980 to 2013) from three databases, including ABI/INFORM Global from ProQuest, Business Source Premier from EBSCO, and PsycINFO from Ovid. They conducted a search using combinations of different search terms, such as "productivity", "performance", "knowledge work," and "knowledge based business." Subsequently, the only studies analyzed were those in which the effect of an independent variable on the productivity, performance, or innovation of individual employees, teams, or organizations was measured.

The study concluded that a wide range of factors are associated with knowledge worker productivity, of which social cohesion, perceived supervisory support, information sharing, vision and goal clarity, external communication, and trust tend to demonstrate the largest effects sizes. The six factors they identified include: 1) s*ocial cohesion* defined as a shared liking or team attraction such as friendship bonds and enjoying one another's company; 2) *perceived supervisory support* defined as how

employees feel the supervisor helps them in times of need, praises them for a job well done, or recognizes them for extra effort; 3) *information sharing* defined as how teams pool and access their knowledge and expertise; 4) *vision and goal clarity* defined as the extent to which members of a team have a common understanding of objectives and are committed to those goals; 5) e*xternal communication* defined as the ability of teams to span team and organizational boundaries to seek information and resources; and 6) t*rust* defined as the firm belief in the reliability, truth, or ability of others.

Vision in this study refers to the notion of a valued outcome that signifies a higher order goal and motivating force at work. A clear vision at the team level tends to positively impact the performance of individual teams. That said, vision is the extent to which knowledge workers have a common understanding of objectives and display high commitment to team goals. For this reason, vision at the team level is considered as goal clarity (Rapid Evidence Assessment, 2014).

Purpose of the Dissertation

There have been numerous studies examining knowledge worker productivity and performance. These studies have suggested that various factors of knowledge worker productivity are positively related to performance (Black, Kim, Rhee, Wang, & Sakchutchawan, 2018; Jafar, Geng, Ahmad, Niu, & Chan, 2019; Van der Hoek, Groeneveld, & Kuipers, 2018). For example, a 2019 study of university academics found that perceived supervisor support is critical to performance because it builds employees' confidence regarding their abilities to complete tasks, resulting in increased performance (Afzal, Arshad, Saleem, & Farooq, 2019). Similarly, a study by Hoch (2013) on shared

leadership found a positive association between information sharing and team performance.

Although research has highlighted the significant role of knowledge worker productivity on performance, there has been little attention on *when* these critical factors of knowledge worker productivity are related to performance. For example, we know very little about how individual factors may enhance or inhibit how these factors relate to performance. As a result, managers lack a better understanding of when these important knowledge worker productivity factors are more or less likely to improve performance. Understanding *when* these otherwise important factors of knowledge worker productivity are more or less effective in promoting performance, is particularly important to help managers design their efforts to boost performance.

Drawing on Fredrickson's (1998, 2002, 2004) broaden-and-build theory and other relevant theoretical perspectives, the purpose of this study was to investigate: 1) the relationships between various factors of knowledge worker productivity and performance and 2) the role of psychological well-being in moderating these relationships. Psychological well-being broadly refers to a positive and negative affective or emotional experience that reflects the overall effectiveness of an individual's psychological functioning (Ryff & Keyes, 1995; Wright, 2005; Wright, Cropanzano, & Bonett, 2007). I focus on psychological well-being as a potential moderator because this construct has consistently related positively to performance across different study designs whether the criterion variables are measured objectively or subjectively (see Cropanzano & Wright, 2001). Notably, the construct has also been found to play a significant role as a potential

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moderator on job performance (e.g., Armeli, Eisenberger, Fasolo, & Lynch, 1998; Wright et al., 2007).

Fredrickson's broaden-and-build theory (1998, 2001, 2004) suggests that positive emotions broaden peoples' momentary thought-action repertoires, which in turn build their enduring personal resources, including physical and intellectual resources as well as social and psychological resources (Fredrickson, 1998, 2001, 2004). Specifically, the theory suggests that the moderating nature of psychological well-being is possibly more robust for those more psychologically well than for those less psychologically well (Fredrickson, 2001). In other words, individuals with higher psychological well-being are more easily able to broaden-and-build themselves and have greater creativity, resilience, social connections, and physical and mental health (Wright, 2005). Therefore, positive feeling states such as psychological well-being may have a primary effect on performance and provide a theoretical framework for the moderating influence of psychological well-being (Wright et al., 2007). Accordingly, the current dissertation was designed to explore the following research question: *What is the role of employees' psychological well-being in the relationships between various factors of knowledge worker productivity and performance*?

CHAPTER II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The CEBMa and AWA study mentioned earlier identified six factors that have the greatest association with knowledge worker productivity. These factors were identified as 1) social cohesion; 2) perceived supervisory support; 3) information sharing; 4) vision and goal clarity; 5) external communication; and 6) trust.

Employees' Perceptions of Social Cohesion

Cohesiveness refers to forces that interact to keep a group together (Yang & Tang, 2004). Initially, cohesion was regarded as unidimensional, however, a three-factor concept of the term was developed that consisted of task cohesion, social cohesion, and group pride (Festinger, Schachter, & Back, 1950). Subsequent research showed that group pride was almost always related to the context of sports and hence, often excluded from studies. Task cohesion has been described as the shared commitment of a group and coordinated efforts of a team to accomplish goals. Social cohesion is defined as shared liking or attraction to a group, emotional bonds of friendship, and enjoyment of other's company (Castaño, Watts, & Tekleab, 2013). Many studies have shown an association between social/team/group cohesion and performance. About relational cohesion theory, individuals in an exchange relation perceive the relationship they are in as a unifying element, and these perceptions produce more outstanding commitment and collective orientation (Thye, Yoon, & Lawler, 2002). The rationale is that the greater the team's cohesiveness, the greater the mutual commitment to accomplishing goals and tasks (Chiniara & Bentein, 2018). This joint commitment should help improve performance.

A quasi-experimental study using a group of college business students showed that team cohesion was positively related to performance (Black et al., 2018). Similarly,

Chiniara and Bentein (2018) conducted a study that integrated principles of servant leadership with the social comparison theoretical framework. Specifically, the study examined how servant leadership induces low perceived differentiation in leader-member relationship quality, which strengthens team cohesion and, as a result, positively influences team task performance and service-oriented organizational citizenship behaviors. The study found a significant correlation between team cohesion and both types of performance. Another study by Soldan (2010) assessed the relationship between group cohesiveness and group performance and the role diversity plays in the relationship. The results of this study showed a positive relationship between group cohesiveness and performance. Finally, a study by Braun, Kozlowski, Brown, and DeShon (2020) on newly formed teams hypothesized that teams with greater cohesion would have higher levels of performance than teams lower in cohesion. The study's findings provided empirical support for the hypothesis. Consistent with these prior studies, I propose the following:

> Hypothesis 1: Employees' perceptions of social cohesion positively relate to performance.

Employees' Perceptions of Perceived Supervisory Support

Perceived supervisor support has been described as the degree to which employees form impressions that their superiors are supportive, appreciate their contributions, and care about their well-being (Cole, Bruch, & Vogel, 2006). Perceived supervisory support has been shown to result in positive attitudinal and behavioral outcomes (Chen & Wu, 2020). A link between performance and perceived supervisory support has been demonstrated in various studies. Based on the social exchange theory

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principle of reciprocity, shared perceptions among employees regarding high levels of supervisor support should result in greater felt obligations to reciprocate by collectively helping managers attain their goals. This reciprocation is likely to result in better performance (Dysvik & Kuvaas, 2012).

Supporting the above arguments, the results of a study on call center organizations in Thailand confirmed that employees with a higher level of perceived supervisory support performed better (Oentoro, Popaitoon, & Kongchan, 2016). In another study, Dysvik and Kuvaas (2012) investigated the associations between perceived supervisor support climate, perceived investment in employee development climate, and the business unit performance among gas stations located in Norway. Perceived supervisor support climate was defined as the shared views of employees regarding the degree to which their manager values their contribution and cares about their well-being. The results showed a positive relationship between perceived supervisor support and unit performance. Finally, Chen and Wu (2020) conducted a study of hotel workers in Taiwan. The researchers found a positive relationship between perceived supervisor support and performance. Thus, drawing on theory and previous findings, I propose the following:

Hypothesis 2: Employees' perceptions of perceived supervisory support positively relate to performance.

Employees' Perceptions of Information Sharing

An organization's competitive advantage can result from how it creates, identifies, shares, and applies knowledge (Choi, Lee, & Yoo, 2010). Teams and not individuals perform most of the work done in organizations. Organizations have made

tremendous investments to facilitate knowledge sharing among team members (Choi et al., 2010). Information sharing is defined as "conscious and deliberate attempts on the part of team members to exchange work-related information, keep one another apprised of activities, and inform one another of key developments" (Bunderson & Sutcliffe, 2002, p. 881). Studies have shown that information or knowledge sharing impacts performance. This relationship can be explained using transactive memory systems theory, which states that individual team members learn, remember, and communicate information and implicitly share the cognitive labor of these activities. The division of labor arises as individual members rely on each other for knowledge in different but complementary domains. Individual team members with transactive memory systems retain and apply more knowledge and perform better than those without such systems (Lee, Bachrach, & Lewis, 2014).

Providing support for the above arguments, a study by Zulfadil, Hendriani, and Machasin (2020) focusing on hospitals found a significant and direct influence of knowledge sharing on performance. The sample for the study consisted of the Director, Deputy Director, Heads of Division/Section Heads, and Subdivision Heads/Subsection Heads of the hospitals. Another study on health care institutions found a positive relationship between knowledge sharing and team performance (e.g., Jamshed & Majeed, 2018). The study involved interprofessional teams working in Pakistani health institutions. It is important to note that these studies' results are in line with past research showing that knowledge sharing positively impacts performance in different contexts (Argote & Ingram, 2000; Cummings, 2004; Hansen, 2002). Thus, drawing from

transactive memory systems theory and consistent with prior findings, I propose the following:

Hypothesis 3: Employees' perceptions of information sharing positively relate to performance.

Employees' Perceptions of Vision and Goal Clarity

The goal-setting theory states that asking employees to pursue clear, specific, and challenging goals generates more significant performance benefits than when asking them to pursue vague and easy goals (Locke et al., 1990). The theory suggests that goals activate mechanisms including direction, effort, perseverance, and strategy that stimulate performance. In other words, when employees know better what is expected of them, the course of action they should pursue to achieve goals becomes more apparent, which in turn increases the chances of achieving the goals (Van der Hoek et al., 2018). Both lab and field studies have shown that individuals perform better when working toward well-specified goals than without goals. It has also been observed that individuals with concrete goals tend to allocate more time to specific micro-tasks related to those goals. In a similar sense, clear goals allow managers to evaluate better and provide feedback on employee performance (Anderson & Stritch, 2016).

Consistent with the above arguments, one study examined whether and under what conditions precise goals impact team performance in the Dutch public sector. The study's findings supported the hypothesis that teams with a higher level of goal clarity performed better than teams with lower clarity levels (Van der Hoek et al., 2018). In another study, Anderson and Stritch (2016) conducted a laboratory experiment with participants focusing on a task performance exercise. The results from the experiment

provided support that increases in goal clarity led to gains in performance. Finally, a study on a public organization illustrated a positive relationship between higher goal clarity and performance (Park & Choi, 2020).

Studies have shown a positive link between a clear vision at the team level and the performance of individual teams. Vision can be regarded as the extent to which individuals have a common understanding of objectives and display a high commitment to team goals. That being said, vision at the team level can be seen as synonymous with goal clarity (Rapid Evidence Assessment, 2014). Lynn and Kalay (2016) conducted a study to assess vision components and role clarity and their impact on performance. Specifically, they researched the impact of the two components of vision (i.e., vision clarity and vision support) and role clarity on overall team performance. Data collected from 75 team members found that vision clarity had a positive effect on team performance. Consistent with goal setting theory and prior studies, I propose the following:

Hypothesis 4: Employees' perceptions of vision and goal clarity positively relate to performance.

Employees' Perceptions of External Communication

External communication is the degree of information exchange with individuals outside the team, whether in other areas of the organization or even outside the organization (Sivasubramaniam, Liebowitz, & Lackman, 2012). Relationships with the external environment are essential for team members to perform their tasks and maintain vitality. In other words, external activities or boundary-spanning activities are becoming increasingly critical for team members' performance. Team members need to integrate

themselves with external actors inside and outside the organization, and thus, they need to define their boundaries. The resulting boundary activities enable closer connections among organizational units and between organizations and their environments (Choi, 2002). Interpersonal relations with people outside one's own team or organization can increase the likelihood of establishing new knowledge and perspectives (Hülsheger, Anderson, & Salgado, 2009).

Several studies provide evidence of a relationship between external communication and organizational benefits. By engaging in external communication, an individual can access new knowledge to improve performance (Shah, Levin, & Cross, 2018). Focusing on social network theory, networking with outsiders can be a valuable source of advice and information. Given the significance of the information and knowledge gained from a social network, scholars have emphasized the impact of social networks on performance (Liu, Jiang, Chen, Pan, & Lin, 2018). For example, a meta-analytic study of teams by Hülsheger et al. (2009) found that external communication was positively related to better performance as measured by innovation. Another study focused on inter-organizational links (i.e., cooperative relationships among distinct but related organizations), which are assumed to promote innovative processes in organizations. The researchers conceptualized various types of inter-organizational links as opportunities for learning and resource sharing in the pursuit of innovation. The study covered 400 California hospitals over ten years and found considerable support for the relationship between inter-organizational links and innovation (Goes & Park, 1997). Similarly, Sivasubramaniam et al. (2012) conducted a meta-analytic study examining the effects of new product development team characteristics on three different measures of

success, including effectiveness (i.e., market success), efficiency (i.e., meeting budgets and schedules), and speed-to-market. Results from 38 studies were aggregated, and they showed that external communication was one of the critical determinants of new product development team performance. This finding is consistent with Ancona and Caldwell (1992), who found that external communication resulted in a greater knowledge worker performance. Thus, based on theory and previous research, I propose the following:

Hypothesis 5: Employees' perceptions of external communication positively relate to performance.

Employees' Perceptions of Trust

Trust is defined as the feeling one can have for another individual or other individuals and is formed by the expectation that another individual's actions will be to one's benefit or, at a minimum, not detrimental to oneself (Gambetta, 1988). According to Cook and Wall (1980), interpersonal trust at work is the extent to which team members are willing to attribute good intentions to and have confidence in coworkers and management's words and actions. Numerous studies have shown a positive relationship between trust and performance (Dirks and Ferrin, 2001; Olvera, Llorens, Acosta, & Salanova, 2017). Trust allows team members to work together more efficiently and effectively and exchange resources that positively impact performance (Dirks, 1999). Among individual-level factors that influence the development of transactive memory, trust is critical because it affects whether members of a group are willing to share and exchange knowledge and information. In turn, knowledge sharing and transactive memory impact group and organizational outcomes (Choi et al., 2010). Trust is a factor that impacts how well individuals and groups cooperate and collaborate in organizations.

In turn, cooperation allows teammates to engage in valuable sharing of information and knowledge, which is an essential component of transactive memory systems. Leveraging transactive memory systems theory, trust enhances knowledge sharing and transactive memory systems, positively impacting performance (Robertson, Gockel, & Brauner, 2013).

Providing support for the above arguments, a meta-analysis on trust and performance conducted by De Jong, Dirks, and Gillespie (2016) showed a positive and above-average effect size estimate for intrateam trust and performance. One criterion to be included in the meta-analysis was that a study needed to measure trust in either the team (members) or the team leader. Another study involving workers in Mexico showed a positive and significant relationship between trust and job performance (e.g., Daniel, 2019). In yet another study, Dirks and Ferrin (2001) found that higher performance levels occurred due to high levels of trust. Finally, Olvera et al. (2017) conducted a study on transformational leadership and trust as antecedents of team performance. They analyzed 388 workers in 54 teams from four healthcare sector organizations and found a positive and significant relationship between team trust and team performance. Consistent with this extant literature and prior findings, I propose the following:

Hypothesis 6: Employees' perceptions of trust positively relate to performance.

Psychological Well-Being

The relationship between a happy worker and a productive worker has been relatively well studied (Cropanzano & Wright, 2001; García-Buades, Peiró, Montañez-Juan, Kozusznik, & Ortiz-Bonnín, 2020; Wright, Cropanzano, Denney, & Moline, 2002). Happiness is often more formally referred to as well-being, of which there are various

types (Cropanzano & Wright, 2001; Ryff, 1989). A highly cited article by Bradburn and Caplovitz (1965) indicated that there is a dimension called psychological well-being (synonymous with mental health, subjective adjustment, and happiness). They conceptualized psychological well-being as a single dimension and whether individuals are high or low on the measurement depends on the balance of positive and negative feeling states. The term psychological well-being has been interpreted as happiness or life satisfaction (Ryff, 1989) and has been referred to as positive mental health or overall effectiveness of psychological functioning (Murthy, 2014). Ryff and Keyes (1995) defined psychological well-being as the positive psychological functioning of individuals and suggested that it involves feeling good and functioning effectively. However, it is essential to note that sustainable well-being does not mean people need to feel good constantly. Painful emotions such as failure and grief are normal, and managing these negative emotions is crucial for long-term well-being. Extreme and long-lasting negative emotions impact a person's ability to function in daily life, which adversely affects psychological well-being (Huppert, 2009).

Carol Ryff, academic and psychologist, is one of the pioneers of a systematic theory of psychological well-being. She developed a six-factor model of psychological well-being that is both highly scientifically verified and empirically rigorous (Ryff, 1989; Springer & Hauser, 2006). The six dimensions she identified include: 1) *self-acceptance* defined as a positive attitude toward oneself and one's past life; 2) *positive relations with others* defined as high quality, satisfying relationships with others; 3) *autonomy* defined as a sense of self-determination, independence, and freedom from norms; 4) *environmental mastery* defined as the ability to manage life and one's surroundings; 5)

purpose in life defined as having life goals and a belief that one's life is meaningful; and 6) *personal growth* defined as being open to new experiences as well as having continued personal growth.

To explain the role of psychological well-being in influencing the relationship between the six factors of knowledge worker productivity and performance, I draw on the broaden-and-build theory proposed by Fredrickson (2000, 2001). The broaden-and-build theory states that certain positive emotions such as joy, interest, pride, and love can broaden people's momentary thought-action repertoires and build enduring personal resources, including physical, intellectual, social, and psychological resources (Fredrickson, 2001). Joy's thought-action tendency involves playing or getting involved, which results in skills obtained through experiential learning. Interest's thought-action tendency involves exploring and learning, which helps build knowledge. Pride's thought-action tendency involves dreaming big, which produces the motivation to achieve. Love is a combination of positive emotions such as joy, interest, and pride, and its thought-action tendency can be any or all of those associated with other positive emotions along with mutual care. The resources accrued through love can be any or all of the resources obtained through the other positive emotions, especially social bonds (Fredrickson, 2013). These various thought-action tendencies are ways that positive emotions broaden modes of thinking or acting and build an individual's physical, intellectual, and social resources. These resources can be accessed later in other contexts and other emotional states (Fredrickson, 1998).

Fredrickson (2000) suggested that the broaden-and-build theory can help explain the relationship between positive emotions and individual growth and development.

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Individuals may become more creative, knowledgeable, resilient, and socially integrated through positive emotions. Regularly experiencing positive emotions allows individuals to move towards optimal functioning. The theory can also highlight benefits to social groups and organizations. That is, the work environment provides opportunities to experience positive emotions. The positive emotions an individual experiences can be contagious, which results in an overall organizational transformation. Finally, the broaden-and-build theory proposes that positive emotions in the workplace can result in individuals and organizations functioning at greater levels. Positive emotions broaden the modes of thinking of workers, positively affecting social connections, organizational climates, and business success.

The Moderating Role of Psychological Well-Being in the Relationship between Factors of Knowledge Worker Productivity and Performance

According to Fredrickson's broaden-and-build theory, positive emotions, which include the experience of psychological well-being, help broaden a person's momentary thought-action repertories and help build enduring personal resources that are physical, intellectual, social, and psychological (Fredrickson, 2001). Experiencing positive emotions can be crucial to a person's capacity to develop psychologically and mentally (Wright et al., 2007). Empirical research has shown that significant links exist between employee psychological well-being and job-related performance (Wright & Cropanzano, 2004). For example, Wright et al. (2002) assessed the relationship between emotional exhaustion, positive-negative affectivity, and psychological well-being and performance. They concluded that psychological well-being was the only factor related to performance. Another study involving nurses found support for the hypothesis that psychological well-

being has a positive and significant effect on performance (e.g., Wahyunigsih & Wulansari, 2016). Wright and Cropanzano (2004) experimented with business students, which demonstrated that participants high on well-being had more significant interpersonal behaviors and performance ratings. The study suggested that there is an increase in performance when psychological well-being is high. In support of the direct effect of psychological well-being on performance, Fredrickson's broaden-and-build theory suggests that positive emotions such as psychological well-being may have a moderating (i.e., broadening and building) effect (Wright et al., 2007).

In terms of the six factors of knowledge worker productivity, high levels of psychological well-being may likely help employees that have positive experiences with these factors more easily broaden and build themselves. For example, if an individual experiences greater social cohesion with teammates, the positive feeling can be enhanced through psychological well-being to improve performance. In support, Markova and Perry (2014) found a significant and positive link between group cohesion and individual well-being. A link between perceived supervisor support and well-being has also been found (e.g., Hämmig, 2017). In a study involving hotel workers, Gordon, Tang, Day, and Adler (2019) found a connection between perceived supervisor support and subjective well-being. Studies have also shown that the sense of well-being of individuals is significantly and positively associated with empathy which is a feeling that is fundamental to knowledge or information sharing (Chumg, Seaton, Cooke, & Ding, 2016). Thus, I expect employees' psychological well-being to enhance or inhibit the influence of any of the six factors on performance depending on whether employees' psychological well-being is high or low.

Wong, Tschan, Messerli, and Semmer (2003) hypothesized that positive emotions should foster goal attainment in social interactions at work. Their study analyzed the pursuit of a goal by 113 employees and showed that accurate display of positive emotions supported goal attainment, suggesting that affective responses impact people's evaluation of the level of trust in others. There is also some evidence suggesting that emotional states affect trust (e.g., Rawat, Bhattacharjee, & Ganesh, 2020). For example, Dunn and Scheitzer (2005) found that incidental emotions considerably impacted trust. Specifically, happiness and gratitude increase trust, whereas anger decreases trust. Therefore, it is conceivable that emotions like psychological well-being can impact how trust relates to performance.

It is not inconceivable that an individual's well-being may play a role in the relationship between the various factors of knowledge worker productivity and performance. Social cohesion involves interacting with others and may be affected by an individual's well-being. Assume someone is happy and has high psychological well-being, this person may be in a good mood and want to engage with others whereas being sad and having lower psychological well-being may result in someone being withdrawn and not engaging with others. A similar argument can be made for information sharing, when someone has high psychological well-being, he/she may be more willing to cooperate and work with others. Conversely, an individual that is experiencing negative mental health may be less cooperative and therefore, not willing to share information or other resources. Imagine a highly stressed worker who is low on psychological well-being, this individual may have lower or inaccurate perceptions of a supervisor's support and therefore may not be motivated to perform as well as he or she could. Now imagine

when the same worker is not stressed and has high psychological well-being, both perceptions and performance may be different under this scenario. Likewise, having low psychological well-being may influence how an individual sees and interprets vision and goals. That is, a happy worker who is high on psychological well-being may have greater mental clarity as opposed to someone low on well-being. Thus, psychological well-being may likely enhance or inhibit the influence of employee perceptions of social cohesion on their performance.

Finally, there is a notion that individuals who are trusting tend to be optimistic whereas those who distrust tend to be pessimistic. That said, it would not be surprising to find that an individual with high psychological well-being who is positive and optimistic is more trusting than someone with low psychological well-being who is negative and pessimistic. External communication in this study has been defined as boundary spanning. The elements of boundary spanning involve aspects of information sharing and trust and therefore, the reasons why well-being may affect information sharing and trust may apply to external communication.

Taking together all the above arguments and drawing on the broad-and-build theory (Fredrickson, 1998, 2000, 2001), I propose the following:

Hypothesis 7: Psychological well-being will moderate the relationship between employees' perceptions of social cohesion and performance. This association will be stronger when psychological well-being is high and weaker when psychological well-being is low.

Hypothesis 8: Psychological well-being will moderate the relationship between employees' perceptions of perceived supervisory support and performance. This

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association will be stronger when psychological well-being is high and weaker when psychological well-being is low.

Hypothesis 9: Psychological well-being will moderate the relationship between employees' perceptions of information sharing and performance. This association will be stronger when psychological well-being is high and weaker when psychological well-being is low.

Hypothesis 10: Psychological well-being will moderate the relationship between employees' perceptions of vision and goal clarity and performance. This association will be stronger when psychological well-being is high and weaker when psychological well-being is low.

Hypothesis 11: Psychological well-being will moderate the relationship between employees' perceptions of external communication and performance. This association will be stronger when psychological well-being is high and weaker when psychological well-being is low.

Hypothesis 12: Psychological well-being will moderate the relationship between employees' perceptions of trust and performance. This association will be stronger when psychological well-being is high and weaker when psychological well-being is low.

Figure 1 below summarizes the hypothesized model tested in the current dissertation.

Figure 1

Conceptual Model
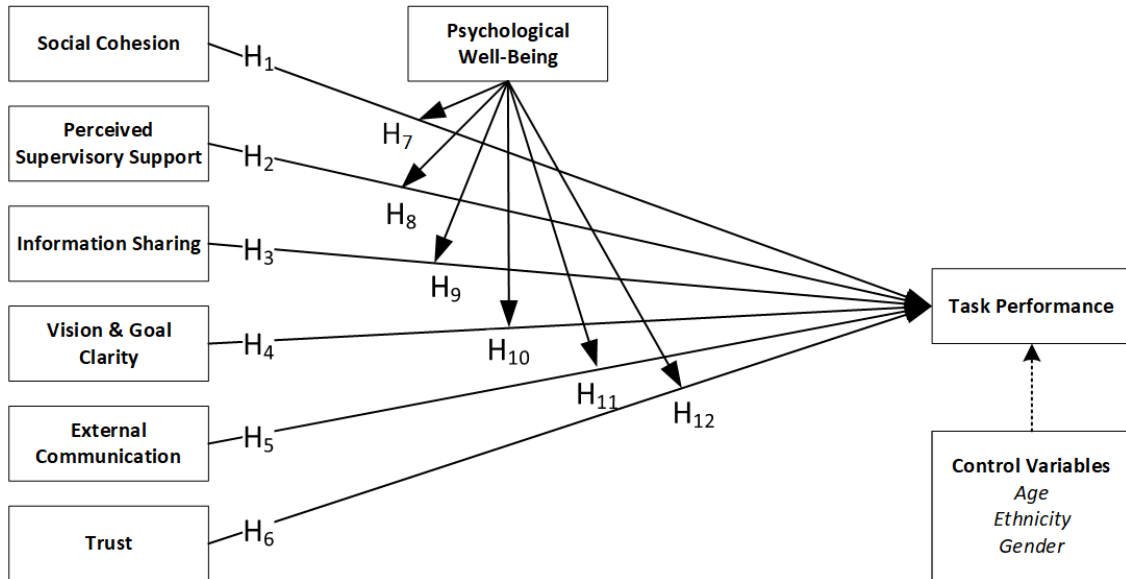
CHAPTER III. METHODOLOGY

Sample and Data Collection

A pilot study was conducted by obtaining feedback on the survey from employees at a multinational produce company based in Coral Gables, Florida. According to Connelly (2008), a pilot sample size should be 10% of the proposed sample size. The sample size for the final questionnaire was planned to be 200 respondents. Based on this sample size, the pilot survey questionnaire was administered to approximately 20 individuals. No major revisions were made to the survey based on comments from the participants in the pilot study.

To formally test the hypotheses, the final survey questionnaire with structured response items was sent via the Internet to individuals recruited through Amazon Mechanical Turk (MTurk). A proposed ad listed details of the study (see Appendix A). Each respondent received a compensation of $1.00 for a completed questionnaire as a sign of thank you. Approval was obtained from the Institutional Review Board (IRB). An informational letter was included at the beginning of the questionnaire to explain the study to participants (see Appendix B). To help minimize non-response bias while addressing potential common method variance concerns, a psychological separation was included in the questionnaire between the items measuring the independent and dependent variables (Podsakoff, MacKenzie, & Podsakoff, 2012).

Measures

A cross-sectional survey questionnaire was used to collect data. The sections of the questionnaire contained items measuring the factors of knowledge worker productivity, psychological well-being, and task performance. The survey questionnaire

(see Appendix C) contained 31 items on factors of knowledge worker productivity, 8 items on psychological well-being, 5 items on task performance, and 5 items on demographics. Assuming respondents answered 6-8 items per minute, the 49-item survey took about 10 minutes to complete.

Factors of knowledge worker productivity. Factors of knowledge worker productivity were measured using 31 items from the Center for Evidence-Based Management survey (Rapid Evidence Assessment, 2014). The survey consisted of scales measuring a respondent's perception of social cohesion (5 items), perceived supervisory support (6 items), information sharing (5 items), vision & goal clarity (5 items), external communication (3 items), and trust (7 items). The scales were scored using a 5-point Likert scale ranging from Strongly disagree (1) to Strongly agree (5).

Psychological well-being. Psychological well-being was measured with the 8-item Index of Psychological Well-Being developed by Berkman (1971) and used by Avey, Luthans, Smith, and Palmer (2010) and Wright et al. (2007). The Berkman scale evaluates an individual's well-being on a single affective index. It employs items from Bradburn and Caplovitz's (1965) classic measure of affect, albeit with a more general or open-ended time horizon (Wright & Staw, 1999). The items were asked in random order and introduced by the statement: "Here is a list that describes some of the ways people feel at different times. How often do you feel each of these ways?" The index measures the reported frequency of an individual's positive and negative feelings (Wright & Bonett, 1992). The items were scored on a 3-item Likert scale format as follows: Never (1), Sometimes (2), and Often (3). The negative and positive categories consisted of five and three items, respectively. The measures of negative and positive feelings were combined

to form the Index of Psychological Well-Being. The responses "Never", "Sometimes", and "Often" received weights of 0, 1, and 3, respectively. The weights were then cumulated into scores for each measure, ranging from 0 to 9 for positive feelings and 0 to 15 for negative feelings. All or almost all positive feelings were denoted by an Index value of 1. All or nearly all negative feelings were represented by an Index value of 7. Differing balances of positive and negative feelings were denoted by Index values of 2 through 6, with 4 designating approximately as many positive as negative feelings. The Index value ranged between 1, representing high psychological well-being, and 7 representing low psychological well-being (Berkman, 1971).

Task performance. Task performance was measured with five items from the Individual Work Performance Questionnaire developed and validated by Koopmans, Bernaards, Hildebrandt, Lernerc, De Vet, and Van Der Beek (2016) using a 5-point Likert rating scale format ranging from Seldom (1) to Always (5). This study employed the American-English version of the questionnaire with known positive results regarding internal consistency and content validity (Koopmans et al., 2016). The items had a recall period of 3 months. A mean score for the Individual Work Performance Questionnaire task performance scale was calculated by adding the item scores and dividing their sum by the number of items in the scale. The scores ranged between 0 and 4, with higher scores reflecting higher task performance (Koopmans et al., 2016). The reliability of the measures will be discussed in the Data Analysis & Results section.

Control variables. The questionnaire included items capturing demographic data, including participants' age, ethnicity, and gender, to be used as control variables. Data

were also collected on level of education and number of years worked at current company.

Hypothesis Testing

The data for the study were collected via Qualtrics and analyzed with SPSS 26. A hierarchical linear regression analysis was performed to assess the relationship between each of the six factors of knowledge worker productivity and task performance (see Hypotheses 1 to 6 below) while controlling for age, ethnicity, and gender of the respondent. The regression analysis also tested the moderating effect of psychological well-being on the association between each of the factors of knowledge worker productivity and task performance (see Hypotheses 7 to 12 below). The hierarchical linear regression was performed in three blocks to assess the incremental contribution of each block. The first block involved entering the control variables, including age, ethnicity, and gender. The second block included entering the main effects (i.e., each factor of knowledge worker productivity and psychological well-being). The third block consisted of entering the interaction variables between each factor of knowledge worker productivity and psychological well-being. The variables for knowledge worker productivity and psychological well-being were mean-centered before performing the regression analyses.

Data Analysis and Results

The questionnaire was created in Qualtrics and distributed through Amazon Mechanical Turk. Certain qualifications were selected in MTurk to help improve the quality of respondents. One stipulation was that workers had to have a Masters to be allowed to complete the questionnaire. The Masters qualification means that a worker

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has demonstrated excellence across a wide range of tasks. Another stipulation was that workers had to have human intelligence task (HIT) approval rate (%) for all requesters' HITs greater than or equal to 95 resulting in workers with higher approval rates.

Data were collected over four weeks, and 285 participants responded to the questionnaire. Each respondent received a $1 reward. Two respondents were removed from the data set as one individual did not complete the questionnaire, and another individual did not have a valid completion code. Of the 283 survey respondents, 58% (164) were male, and 42% (119) were female. The ages of the respondents ranged between 24 and 76 years old. The highest frequencies were those aged 30 (6% each or 17 respondents) and 33 years (6% each or 17 respondents). Respondents between 24 and 39 years old made up 51.6% (146) of the sample. In terms of ethnicity, 83.4% (236) were White, 9.2% (26) were Asian or Pacific Islander, 3.5% (10) were Black or African American, and 2.1% (6) were Hispanic or Latino. Gender, age, and ethnicity were used as control variables. Additional information collected on the respondents included education level and years of experience at the current company. As for education, 44.2% (125) had a bachelor's degree, 19.8% (56) had an associate degree, 9.9% (28) had a master's degree, and 1.4% (4) had a doctoral degree. Eighteen percent (51) listed having no degree, and 6.7% (19) indicated "other". For years of experience at the current company, 37.1% (105) had 3 to 5 years, 27.9% (79) had 6 to 10 years, 14.1% (40) had 1 to 2 years, 11.3% (32) had 11 to 15 years, and 9.5% (27) had 16+ years.

An exploratory factor analysis was performed on the items measuring the six factors of knowledge worker productivity, psychological well-being, and task performance. Specifically, a principal axis factor analysis was conducted on the 44 items

with oblique rotation (i.e., direct oblimin). The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the analysis as the KMO was 0.934, which is considered to be "marvelous" (Kaiser, 1974, p. 35). The KMO values for individual items were greater than 0.86, with one at 0.76, which is well above the acceptable limit of 0.50. Nine factors had eigenvalues over Kaiser's criterion of 1 and, in combination, explained 67.47% of the variance. The scree plot was ambiguous and showed inflections that would justify retaining both eight and nine factors. Nine factors were retained because of the large sample size, the convergence of the scree plot, and Kaiser's criterion on this value. According to Yong and Pearce (2013), model fit can be assessed by examining the reproduced correlation matrix. As a rule of thumb, a good fit model will have less than 50% of the non-redundant residuals with absolute values greater than 0.05. In this case, a good model fit was observed with 4% non-redundant residuals with absolute values greater than 0.05.

The items of the three measurement scales were subjected to principal-component analysis to determine the factor structure of each scale. Measures for the overall and individual Kaiser-Meyer-Olkin were calculated to measure sampling adequacy (see Table 1). The KMO measure of sampling adequacy was 0.934 (i.e., marvelous). The Bartlett's test was also performed to assess the hypothesis that a correlation matrix is an identity matrix. The test returned a value of .000.

Table 1

Kaiser-Meyer-Olkin and Bartlett's Test

Kaiser-Meyer-Olkin Measure of sampling adequacy		.934
Bartlett's Test of Sphericity	Approx. Chi-Square	7757.329
	df	946
	Sig.	.000

Cronbach's alpha calculations were performed to check how closely related a set of items were as a group. It is considered as a measure of scale reliability. For Cronbach's alpha, a score above 0.70 is deemed reliable (James, Demaree, & Wolf, 1984). The following guide was used to assess the Cronbach alpha values: 0.70 to 0.79 (acceptable), 0.80 to 0.89 (good), and 0.90 to 0.99 (excellent) (Habidin, Zubir, Fuzi, Latip, & Azman, 2015). The questionnaire consisted of scales measuring each of the six factors of knowledge worker productivity, one scale measuring psychological well-being, and one scale measuring task performance for a total of 8 scales. Based on the ratings, the scales measuring social cohesion and external communication had Cronbach's alpha values that were acceptable. The scales assessing information sharing, vision & goal clarity, trust, and psychological well-being were good. The scales for perceived supervisory support and task performance were excellent. The values for each scale are shown in Table 2 below.

Table 2

Reliability Statistics

Scale	Cronbach's alpha	Cronbach's alpha based on standardized items	n of Items
Social Cohesion	0.774	0.787	5
Perceived Supervisory Support	0.928	0.929	6
Information Sharing	0.846	0.850	5
Vision & Goal Clarity	0.817	0.818	5
External Communication	0.707	0.707	3
Trust	0.839	0.843	7
Psychological Well-Being	0.814	0.811	8
Task Performance	0.903	0.904	5

The mean score and standard deviation for each construct and control variable are summarized in Table 3. The primary constructs, including the independent variables (i.e., six factors of knowledge worker productivity) and moderating variable (i.e., psychological well-being), were mean-centered and had a mean of zero.

Table 3

Descriptive Statistics

	M	SD	n
Task Performance	4.0968	.71763	283
Gender	1.42	.495	283
Age	41.19	11.091	283
Ethnicity	1.62	1.459	283
Social Cohesion	.0000	.75478	283
Perceived Supervisory Support	.0000	1.04629	283
Information Sharing	.0000	.79021	283
Vision & Goal Clarity	.0000	.67751	283
External Communication	.0000	.82278	283
Trust	.0000	.78678	283
Psychological Well-Being	.0000	1.81876	283
Social Cohesion x PWB	.5623	1.36322	283
Perceived Supervisory Support x PWB	.9662	1.88439	283
Information Sharing x PWB	.4519	1.44180	283
Vision & Goal Clarity x PWB	.4726	1.17107	283
External Communication x PWB	.4616	1.54629	283
Trust x PWB	.5027	1.44758	283

Note. PWB = Psychological Well-Being.

A Pearson's correlation coefficient analysis was conducted to assess the

relationship among the study variables. Hinkle, Wiersma, and Jurs (2003) provide a rule

of thumb for interpreting the size of a correlation coefficient (i.e., .90-1.00 = very high;

.70-.90 = high; .50-.70 = moderate; .30-.50 = low; .00-.30 = negligible). Table 4 below

shows the correlations between the various scales. None of the scales had very high

correlations. All of the correlations were either moderate, low, or negligible except for

two.

Table 4

Pearson's Correlations

	TP	SC	PSS	IS	VGC	EC	TRU	PWB
TP	-							
SC	0.488**	-						
PSS	0.351**	0.684**	-					
IS	0.532**	0.707**	0.573**	-				
VGC	0.580**	0.543**	0.505**	0.618**	-			
EC	0.274**	0.511**	0.423**	0.478**	0.301**	-		
TRU	0.495**	0.601**	0.631**	0.704**	0.647**	0.274**	-	
PWB	0.476**	0.411**	0.510**	0.316**	0.385**	0.310**	0.353**	-

Note. TP (task performance); SC (social cohesion); PSS (perceived supervisory support); IS (information sharing); VGC (vision & goal clarity); EC (external communication); TRU (trust); PWB (psychological well-being).
**. Correlation is significant at the 0.01 level (2-tailed).

Harman's One Factor test was employed to check for common method variance, and the % of variance was 33.307%, which is well under the 50% threshold (see Appendix D). A hierarchical linear regression analysis was then conducted to examine the relationship between the factors of knowledge worker productivity and task performance while controlling for the respondent's age, ethnicity, and gender. The regression analysis also examined the interaction between each factor of knowledge worker productivity and psychological well-being as predictors of task performance while controlling for the respondent's age, ethnicity, and gender. Again, all results reported are based on mean-centered predictors as well as their product. In summary, Model 1 contained the control variables, Model 2 contained the main effects, and Model 3 contained the interaction variables (see Table 5).

Table 5

Variables Entered/Removed

Model	Variables entered	Variables removed	Method
1	Ethnicity, Gender, Age[b]	.	Enter
2	External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing[b]	.	Enter
3	External Communication x Psychological Well-Being, Vision & Goal Clarity x Psychological Well-Being, Perceived Supervisory Support x Psychological Well-Being, Social Cohesion x Psychological Well-Being, Trust x Psychological Well-Being, Information Sharing x Psychological Well-Being[b]	.	Enter

a. Dependent Variable: Task Performance

b. All requested variables entered.

Table 6

Model Summary

					Change statistics				
Model	R	R square	Adjusted R square	SE of the estimate	R square change	F change	df1	df2	Sig. F change
1	.202[a]	.041	.030	.70666	.041	3.941	3	279	.009
2	.693[b]	.480	.461	.52707	.439	32.787	7	272	.000
3	.707[c]	.500	.470	.52263	.020	1.773	6	266	.105

a. Predictors: (Constant), Ethnicity, Gender, Age
b. Predictors: (Constant), Ethnicity, Gender, Age, External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing
c. Predictors: (Constant), Ethnicity, Gender, Age, External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing, External Communication x Psychological Well-Being, Vision & Goal Clarity x Psychological Well-Being, Perceived Supervisory Support x Psychological Well-Being, Social Cohesion x Psychological Well-Being, Trust x Psychological Well-Being, Information Sharing x Psychological Well-Being
d. Dependent Variable: Task Performance

Based on the model summary in Table 6, there was no significant improvement from Model 2 to Model 3. Specifically, the R squared value only increased from .480 to .500. The F change value from Model 2 to Model 3 was .105 and, therefore, not significant. Based on these facts, the hypotheses were assessed based on the data from Model 2.

To evaluate outliers, a case-wise diagnostics table was produced (see Table 7) to identify cases with residuals that are three or more standard deviations away from the mean. These are the cases with the largest errors and may well be outliers. There is only one case that appeared in the case-wise diagnostics; however, it did not lead to a standardized residual larger than 3 (meaning the standardized residual followed a normal distribution). To help assess the data set, residual statistics were analyzed. The maximum value of the Cook's Distance which is a measure of a data point's influence,

should not be greater than 1, and in this case, it was .055 (Cook & Weisburg, 1982). As

well, the standard residual was basically between -3 and +3 (see Table 8). In addition,

tests of normality including Kolmogorov-Smirnov and Shapiro-Wilk tests on the

dependent variable (i.e., task performance), were also performed (see Table 9). The

results were significant, meaning the data was technically not normally distributed.

However, in reviewing the Q-Q plot (Appendix E), the data looked fairly normally

distributed. The residuals show lighter skew of the residuals than one would expect if

they followed a standard normal distribution. The histogram (Appendix F) and P-P plot

(Appendix G) of the residuals show a very light skew of the residuals near the center of

the distribution than one would expect if they followed a standard normal distribution.

The scatterplot (Appendix H) of the standardized predicted values against the

standardized residuals looks fairly random. There is no discernible pattern that marks the

presence of a non-linear relationship or a violation of the assumption of

homoscedasticity. The full model was significant [$F(10,272) = 25.076, p < .001$] and

explained 48.0% of the variance in task performance (see Table 10). Neither Tolerance

nor VIF statistics indicated the presence of marked multicollinearity (see Table 11).

Table 7

Case-Wise Diagnostics

Case number	Std. residual	Task Performance	Predicted value	Residual
45	-3.102	2.20	3.8213	-1.62129

a. Dependent Variable: Task Performance

Table 8

Residuals Statistics

	Minimum	Maximum	*M*	*SD*	*n*
Predicted Value	2.0180	4.9577	4.0968	.50729	283
Std. Predicted Value	-4.098	1.697	.000	1.000	283
Std. Error of Predicted Value	.062	.272	.122	.038	283
Adjusted Predicted Value	1.8051	4.9543	4.0955	.51345	283
Residual	-1.62129	1.17185	.00000	.50759	283
Std. Residual	-3.102	2.242	.000	.971	283
Stud. Residual	-3.181	2.321	.001	1.003	283
Deleted Residual	-1.70465	1.30702	.00136	.54205	283
Stud. Deleted Residual	-3.237	2.340	.001	1.007	283
Mahal. Distance	2.989	75.572	15.943	11.372	283
Cook's Distance	.000	.055	.004	.008	283
Centered Leverage Value	.011	.268	.057	.040	283

a. Dependent Variable: Task Performance

Table 9

Normality Tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Task Performance	.139	283	.000	.931	283	.000

a. Lilliefors Significance Correction

Table 10

Analysis of Variance

	Model	Sum of squares	df	Mean square	*F*	Sig.
1	Regression	5.904	3	1.968	3.941	.009[b]
	Residual	139.323	279	.499		
	Total	145.227	282			
2	Regression	69.664	10	6.966	25.076	.000[c]
	Residual	75.563	272	.278		
	Total	145.227	282			
3	Regression	72.570	16	4.536	16.605	.000[d]
	Residual	72.657	266	.273		
	Total	145.227	282			

a. Dependent Variable: Task Performance
b. Predictors: (Constant), Ethnicity, Gender, Age
c. Predictors: (Constant), Ethnicity, Gender, Age, External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing
d. Predictors: (Constant), Ethnicity, Gender, Age, External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing, External Communication x Psychological Well-Being, Vision & Goal Clarity x Psychological Well-Being, Perceived Supervisory Support x Psychological Well-Being, Social Cohesion x Psychological Well-Being, Trust x Psychological Well-Being, Information Sharing x Psychological Well-Being

Table 11

Regression Coefficients and Multicollinearity Diagnostics

Model	Unstandardized coefficients		Standardized coefficients				
	B	SE	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	3.666	.201		18.241	.000		
Gender	-.082	.088	-.056	-.934	.351	.943	1.061
Age	.013	.004	.206	3.365	.001	.913	1.095
Ethnicity	-.002	.029	-.005	-.077	.938	.961	1.041
2 (Constant)	4.105	.154		26.697	.000		
Gender	-.006	.066	-.004	-.094	.925	.925	1.081
Age	-9.060E-5	.003	-.001	-.029	.977	.821	1.219
Ethnicity	.003	.022	.005	.115	.909	.930	1.075
SC	.159	.069	.167	2.302	.022	.362	2.763
PSS	-.179	.048	-.261	-3.744	.000	.394	2.536
IS	.188	.069	.207	2.734	.007	.334	2.993
VGC	.323	.066	.305	4.876	.000	.489	2.047
EC	-.020	.047	-.023	-.427	.670	.658	1.520
TRU	.099	.066	.108	1.493	.137	.363	2.753
PWB	.129	.021	.327	6.159	.000	.680	1.471
3 (Constant)	4.152	.154		27.028	.000		
Gender	.008	.066	.005	.114	.909	.905	1.105
Age	-.001	.003	-.018	-.380	.704	.804	1.244
Ethnicity	.002	.022	.004	.090	.928	.924	1.082
SC	.112	.072	.118	1.559	.120	.330	3.026
PSS	-.162	.051	-.236	-3.174	.002	.341	2.934
IS	.186	.071	.205	2.605	.010	.305	3.276
VGC	.359	.070	.339	5.152	.000	.435	2.299
EC	-.003	.050	-.003	-.053	.958	.582	1.720
TRU	.069	.067	.076	1.027	.305	.346	2.892
PWB	.130	.021	.329	6.220	.000	.673	1.487
SC x PWB	-.101	.040	-.192	-2.544	.012	.329	3.038
PSS x PWB	.002	.028	.004	.056	.956	.351	2.851
IS x PWB	-.028	.044	-.055	-.629	.530	.243	4.109
VGC x PWB	-.016	.039	-.026	-.419	.675	.473	2.114
EC x PWB	.032	.027	.070	1.197	.232	.556	1.800
TRU x PWB	.080	.042	.162	1.935	.054	.268	3.729

Note. SC (social cohesion); PSS (perceived supervisory support); IS (information sharing); VGC (vision & goal clarity); EC (external communication); TRU (trust); PWB (psychological well-being).

For Hypothesis 1, the unstandardized coefficient for social cohesion was .159, indicating that, while holding age, ethnicity, and gender constant, each unit increase in social cohesion leads to an increase of .159 units in task performance, in the same direction as predicted in the research model. This relationship is significantly different from zero [$t(272) = 2.302, p < .05$]. These results do provide support for the positive relationship between social cohesion and task performance, as predicted in Hypothesis 1.

For Hypothesis 2, the unstandardized coefficient for perceived supervisory support was -.179, indicating that, while holding age, ethnicity, and gender constant, each unit increase in perceived supervisory support leads to a decrease of .179 units in task performance, in the opposite direction as predicted in the research model. This relationship is significantly different from zero [$t(272) = -3.744, p < .001$]. These results do not provide support for the positive relationship between perceived supervisory support and task performance, as predicted in Hypothesis 2.

For Hypothesis 3, the unstandardized coefficient for information sharing was .188, indicating that, while holding age, ethnicity, and gender constant, each unit increase in information sharing leads to an increase of .188 units in task performance, in the same direction as predicted in the research model. This relationship is significantly different from zero [$t(272) = 2.734, p < .05$]. These results do provide support for the positive relationship between information sharing and task performance, as predicted in Hypothesis 3.

For Hypothesis 4, the unstandardized coefficient for vision & goal clarity was .323, indicating that, while holding age, ethnicity, and gender constant, each unit increase in vision & goal clarity leads to an increase of .323 units in task performance, in the same

direction as predicted in the research model. This relationship is significantly different

from zero [$t(272)$ = 4.876, p < .001]. These results do provide support for the positive

relationship between vision & goal clarity and task performance, as predicted in

Hypothesis 4.

For Hypothesis 5, the unstandardized coefficient for external communication was

-.020, indicating that, while holding age, ethnicity, and gender constant, each unit

increase in external communication leads to a decrease of .020 units in task performance,

in the opposite direction as predicted in the research model. This relationship is not

significantly different from zero [$t(272)$ = -.427, p = .670]. These results do not provide

support for the positive relationship between external communication and task

performance, as predicted in Hypothesis 5.

For Hypothesis 6, the unstandardized coefficient for trust was .099, indicating

that, while holding age, ethnicity, and gender constant, each unit increase in trust leads to

an increase of .099 units in task performance, in the same direction as predicted in the

research model. This relationship is not significantly different from zero [$t(272)$ = 1.493,

p = .137]. These results do not provide support for the positive relationship between trust

and task performance, as predicted in Hypothesis 6.

Although a direct relationship between psychological well-being and task

performance was not hypothesized, the unstandardized coefficient for psychological well-

being was .129 indicating that, while holding age, ethnicity, and gender constant, each

unit increase in psychological well-being leads to an increase of .129 units in task

performance. This relationship is significantly different from zero [$t(272)$ = 6.159, p <

.001]. Given that the model with the interaction effects (i.e., Model 3) was not a

significant improvement on Model 2, Hypotheses 7 through 12 were not supported. A

summary of the supported and not supported hypotheses based on Model 2 is shown in

Table 12 below.

Table 12

Summary of Hypotheses

H1 (Social Cohesion)   Supported
H2 (Perceived Supervisory Support)   Not Supported
H3 (Information Sharing)   Supported
H4 (Vision & Goal Clarity)   Supported
H5 (External Communication)   Not Supported
H6 (Trust)   Not Supported
H7 (Social Cohesion x Psychological Well-Being)   Not Supported
H8 (Perceived Supervisory Support x Psychological Well-Being)   Not Supported
H9 (Information Sharing x Psychological Well-Being)   Not Supported
H10 (Vision & Goal Clarity x Psychological Well-Being) Not Supported
H11 (External Communication x Psychological Well-Being) Not Supported
H12 (Trust x Psychological Well-Being)   Not Supported

Exploratory Model 2A (Analysis of Significant Interactions)

Although Model 3 did not show a significant improvement over Model 2, two of

the interactions, including social cohesion and psychological well-being as well as trust

and psychological well-being were significant. The value for the former interaction was

$p < .05$. The value for the latter was .05, which is significant. A regression analysis was

performed to help better understand the relationship between the main effects and the two

significant interactions, resulting in an exploratory model labeled Model 2A, which

shows the six main effects, the moderating variable, and the two significant interactions.

The means and standard deviations for the variables of Model 2A are listed in Table 13

below.

Table 13

Descriptive Statistics for Model 2A

	M	SD	n
Task Performance	4.0968	.71763	283
Gender	1.42	.495	283
Age	41.19	11.091	283
Ethnicity	1.62	1.459	283
Social Cohesion	.0000	.75478	283
Perceived Supervisory Support	.0000	1.04629	283
Information Sharing	.0000	.79021	283
Vision & Goal Clarity	.0000	.67751	283
External Communication	.0000	.82278	283
Trust	.0000	.78678	283
Psychological Well-Being	.0000	1.81876	283
Social Cohesion x Psychological Well-Being	.5623	1.36322	283
Trust x Psychological Well-Being	.5027	1.44758	283

The second hierarchical linear regression analysis was performed to examine the relationship between the factors of knowledge worker productivity and task performance while controlling for the respondent's age, ethnicity, and gender. The regression analysis also examined the interaction between each of two factors of knowledge worker productivity (i.e., social cohesion and trust) and psychological well-being as predictors of task performance while controlling for age, ethnicity, and gender of the respondent. All results reported are based on mean-centered predictors as well as their product. Specifically, block 1 contained the control variables, block 2 included the main effects, and block 3 had the two significant interactions identified in Model 3 (see Table 14). Table 16 shows that Model 2A was a significant improvement over Model 2. Specifically, the F change value from Model 2 to Model 2A was .012.

Table 14

Variables Entered/Removed for Model 2A

Model	Variables entered	Variables removed	Method
1	Ethnicity, Gender, Age[b]	.	Enter
2	External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing[b]	.	Enter
2A	Social Cohesion x Psychological Well-Being, Trust x Psychological Well-Being[b]	.	Enter

a. Dependent Variable: Task Performance
b. All requested variables entered.

Table 15

Model Summary for Model 2A

Model	R	R square	Adjusted R square	SE of the estimate	Change statistics				
					R square change	F change	df1	df2	Sig. F change
1	.202[a]	.041	.030	.70666	.041	3.941	3	279	.009
2	.693[b]	.480	.461	.52707	.439	32.787	7	272	.000
2A	.705[c]	.496	.474	.52041	.017	4.504	2	270	.012

a. Predictors: (Constant), Ethnicity, Gender, Age
b. Predictors: (Constant), Ethnicity, Gender, Age, External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing
c. Predictors: (Constant), Ethnicity, Gender, Age, External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing, Social Cohesion x Psychological Well-Being, Trust x Psychological Well-Being
d. Dependent Variable: Task Performance

A case-wise diagnostics table was produced (see Table 16) to identify cases with residuals that are three or more standard deviations away from the mean. These are the cases with the largest errors and may well be outliers. There is only one case that appeared in the case-wise diagnostics; however, it did not lead to a standardized residual

larger than 3 (meaning the standardized residual followed a normal distribution).

Residual statistics were analyzed to help assess the data set. The maximum value of the

Cook's Distance which is a measure of a data point's influence, should not be greater

than 1, and in this case, it was .046 (Cook & Weisburg, 1982). As well, the standard

residual was basically between -3 and +3 (see Table 17). The histogram (Appendix I)

and P-P plot (Appendix J) show some very light skew of the residuals near the center of

the distribution than one would expect if they followed a standard normal distribution.

The scatterplot (Appendix K) of the standardized predicted values against the

standardized residuals looks fairly random. There is no discernible pattern that marks the

presence of a non-linear relationship or a violation of the assumption of

homoscedasticity. The full model was significant [$F(12,270) = 22.186, p < .001$] and

explained 49.6% of the variance in task performance (see Table 19). Neither Tolerance

nor VIF statistics indicated the presence of marked multicollinearity (see Table 19).

Table 16

Case-Wise Diagnostics for Model 2A

Case number	Std. residual	Task Performance	Predicted value	Residual
45	-3.136	2.20	3.8320	-1.63197

a. Dependent Variable: Task Performance

Table 17

Residuals Statistics for Model 2A

	Minimum	Maximum	*M*	*SD*	*n*
Predicted Value	2.0826	5.0414	4.0968	.50565	283
Std. Predicted Value	-3.983	1.868	.000	1.000	283
Std. Error of Predicted Value	.061	.220	.108	.029	283
Adjusted Predicted Value	1.9313	5.0437	4.0955	.50963	283
Residual	-1.63197	1.15501	.00000	.50922	283
Std. Residual	-3.136	2.219	.000	.978	283
Stud. Residual	-3.200	2.303	.001	1.003	283
Deleted Residual	-1.69932	1.25622	.00136	.53510	283
Stud. Deleted Residual	-3.256	2.322	.001	1.007	283
Mahal. Distance	2.907	49.586	11.958	7.261	283
Cook's Distance	.000	.046	.004	.007	283
Centered Leverage Value	.010	.176	.042	.026	283

a. Dependent Variable: Task Performance

Table 18

Analysis of Variance for Model 2A

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	5.904	3	1.968	3.941	.009[b]
	Residual	139.323	279	.499		
	Total	145.227	282			
2	Regression	69.664	10	6.966	25.076	.000[c]
	Residual	75.563	272	.278		
	Total	145.227	282			
2A	Regression	72.103	12	6.009	22.186	.000[d]
	Residual	73.124	270	.271		
	Total	145.227	282			

a. Dependent Variable: Task Performance

b. Predictors: (Constant), Ethnicity, Gender, Age

c. Predictors: (Constant), Ethnicity, Gender, Age, External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing

d. Predictors: (Constant), Ethnicity, Gender, Age, External Communication, Trust, Psychological Well-Being, Vision & Goal Clarity, Social Cohesion, Perceived Supervisory Support, Information Sharing, Social Cohesion x Psychological Well-Being, Trust x Psychological Well-Being

Table 19

Regression Coefficients and Multicollinearity Diagnostics for Model 2A

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Tolerance	VIF
		B	SE	Beta				
1	(Constant)	3.666	.201		18.241	.000		
	Gender	-.082	.088	-.056	-.934	.351	.943	1.061
	Age	.013	.004	.206	3.365	.001	.913	1.095
	Ethnicity	-.002	.029	-.005	-.077	.938	.961	1.041
2	(Constant)	4.105	.154		26.697	.000		
	Gender	-.006	.066	-.004	-.094	.925	.925	1.081
	Age	-9.060E-5	.003	-.001	-.029	.977	.821	1.219
	Ethnicity	.003	.022	.005	.115	.909	.930	1.075
	SC	.159	.069	.167	2.302	.022	.362	2.763
	PSS	-.179	.048	-.261	-3.744	.000	.394	2.536
	IS	.188	.069	.207	2.734	.007	.334	2.993
	VGC	.323	.066	.305	4.876	.000	.489	2.047
	EC	-.020	.047	-.023	-.427	.670	.658	1.520
	TRU	.099	.066	.108	1.493	.137	.363	2.753
	PWB	.129	.021	.327	6.159	.000	.680	1.471
2A	(Constant)	4.143	.152		27.191	.000		
	Gender	.006	.066	.004	.098	.922	.907	1.102
	Age	-.001	.003	-.013	-.267	.790	.815	1.227
	Ethnicity	.001	.022	.003	.056	.955	.929	1.077
	SC	.117	.070	.123	1.673	.096	.345	2.895
	PSS	-.162	.048	-.237	-3.407	.001	.386	2.588
	IS	.194	.069	.214	2.827	.005	.325	3.073
	VGC	.357	.066	.337	5.380	.000	.474	2.110
	EC	-.019	.047	-.022	-.403	.688	.647	1.547
	TRU	.074	.066	.081	1.123	.262	.355	2.815
	PWB	.130	.021	.329	6.257	.000	.676	1.480
	SC x PWB	-.093	.031	-.177	-2.991	.003	.530	1.886
	TRU x PWB	.059	.030	.118	1.986	.048	.525	1.905

Note. SC (social cohesion); PSS (perceived supervisory support); IS (information sharing); VGC (vision & goal clarity); EC (external communication); TRU (trust); PWB (psychological well-being).

For Hypothesis 1, the unstandardized coefficient for social cohesion was .117, indicating that, while holding age, ethnicity, and gender constant, each unit increase in social cohesion leads to an increase of .117 units in task performance, in the same direction as predicted in the research model. This relationship is not significantly different from zero [$t(270) = 1.673$, $p = .096$]. These results do not provide support for the positive relationship between social cohesion and task performance, as predicted in Hypothesis 1.

For Hypothesis 2, the unstandardized coefficient for perceived supervisory support was -.162, indicating that, while holding age, ethnicity, and gender constant, each unit increase in perceived supervisory support leads to a decrease of .162 units in task performance, in the opposite direction as predicted in the research model. This relationship is significantly different from zero [$t(270) = -3.407$, $p < .05$]. These results do not provide support for the positive relationship between perceived supervisory support and task performance, as predicted in Hypothesis 2.

For Hypothesis 3, the unstandardized coefficient for information sharing was .194, indicating that, while holding age, ethnicity, and gender constant, each unit increase in information sharing leads to an increase of .194 units in task performance, in the same direction as predicted in the research model. This relationship is significantly different from zero [$t(270) = 2.827$, $p < .05$]. These results do provide support for the positive relationship between information sharing and task performance, as predicted in Hypothesis 3.

For Hypothesis 4, the unstandardized coefficient for vision & goal clarity was .357, indicating that, while holding age, ethnicity, and gender constant, each unit increase

in vision & goal clarity leads to an increase of .357 units in task performance, in the same direction as predicted in the research model. This relationship is significantly different from zero [$t(270) = 5.380$, $p < .001$]. These results do provide support for the positive relationship between vision & goal clarity and task performance, as predicted in Hypothesis 4.

For Hypothesis 5, the unstandardized coefficient for external communication was -.019, indicating that, while holding age, ethnicity, and gender constant, each unit increase in external communication leads to a decrease of .019 units in task performance, in the opposite direction as predicted in the research model. This relationship is not significantly different from zero [$t(270) = -.403$, $p = .688$]. These results do not provide support for the positive relationship between external communication and task performance, as predicted in Hypothesis 5.

For Hypothesis 6, the unstandardized coefficient for trust was .074, indicating that, while holding age, ethnicity, and gender constant, each unit increase in trust leads to an increase of .074 units in task performance, in the same direction as predicted in the research model. This relationship is not significantly different from zero [$t(270) = 1.123$, $p = .262$]. These results do not provide support for the positive relationship between trust and task performance, as predicted in Hypothesis 6.

For Hypothesis 7, the unstandardized coefficient for the interaction between social cohesion and psychological well-being was -.093, indicating that, while holding age, ethnicity, and gender constant, each unit increase in the interaction between social cohesion and psychological well-being leads to a decrease of .093 units in task performance, in the opposite direction as predicted in the research model. This

relationship is significantly different from zero [$t(270) = -2.991$, $p < .05$]. These results

do not provide support for the positive relationship between the interaction of social

cohesion & psychological well-being and task performance, as predicted in Hypothesis 7.

For Hypothesis 12, the unstandardized coefficient for the interaction between trust

and psychological well-being was .059, indicating that, while holding age, ethnicity, and

gender constant, each unit increase in the interaction between external communication

and psychological well-being leads to an increase of .059 units in task performance, in

the same direction as predicted in the research model. This relationship is significantly

different from zero [$t(270) = 1.986$, $p < .05$]. These results do provide support for the

positive relationship between the interaction of trust & psychological well-being and task

performance, as predicted in Hypothesis 12.

Although a direct relationship between psychological well-being and task

performance was not hypothesized, the unstandardized coefficient for psychological well-

being was .130, indicating that, while holding age, ethnicity, and gender constant, each

unit increase in psychological well-being leads to an increase of .130 units in task

performance. This relationship is significantly different from zero [$t(270) = 6.257$, $p <$

.001]. A summary of the supported and not supported hypotheses is shown in Table 20

below.

Table 20

Summary of Hypotheses for Model 2A

H1 (Social Cohesion)	Not Supported
H2 (Perceived Supervisory Support)	Not Supported
H3 (Information Sharing)	Supported
H4 (Vision & Goal Clarity)	Supported
H5 (External Communication)	Not Supported
H6 (Trust)	Not Supported
H7 (Social Cohesion x Psychological Well-Being)	Not Supported
H12 (Trust x Psychological Well-Being)	Supported

Simple slope analyses were performed for the significant interactions. The plot of the relationship between social cohesion, psychological well-being, and task performance (see Figure 2 below) indicated that the relationship between social cohesion and task performance, which is negative, is exacerbated (i.e., the slope takes on a steeper angle) for higher values of psychological well-being. Conversely, the relationship is attenuated for lower values of psychological well-being. The plot of the relationship between trust, psychological well-being, and task performance (see Figure 3 below) indicated that the relationship between trust and task performance, which is positive, is exacerbated (i.e., the slope takes on a steeper angle) for higher values of psychological well-being. Conversely, the relationship is attenuated for lower values of psychological well-being.

Figure 2

Slope Analysis of Social Cohesion, Psychological Well-Being, and Task Performance
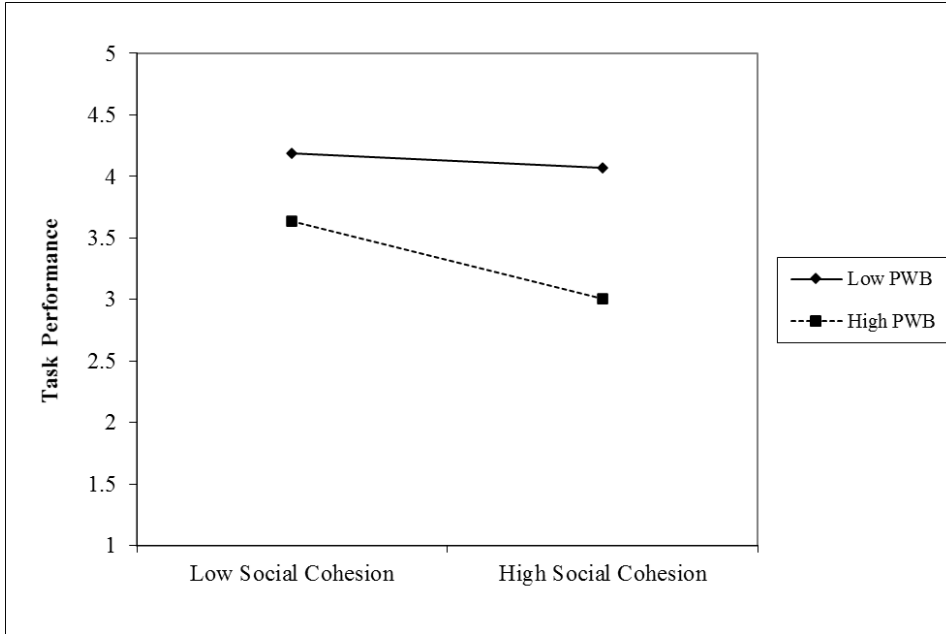
Figure 3

Slope Analysis of Trust, Psychological Well-Being, and Task Performance
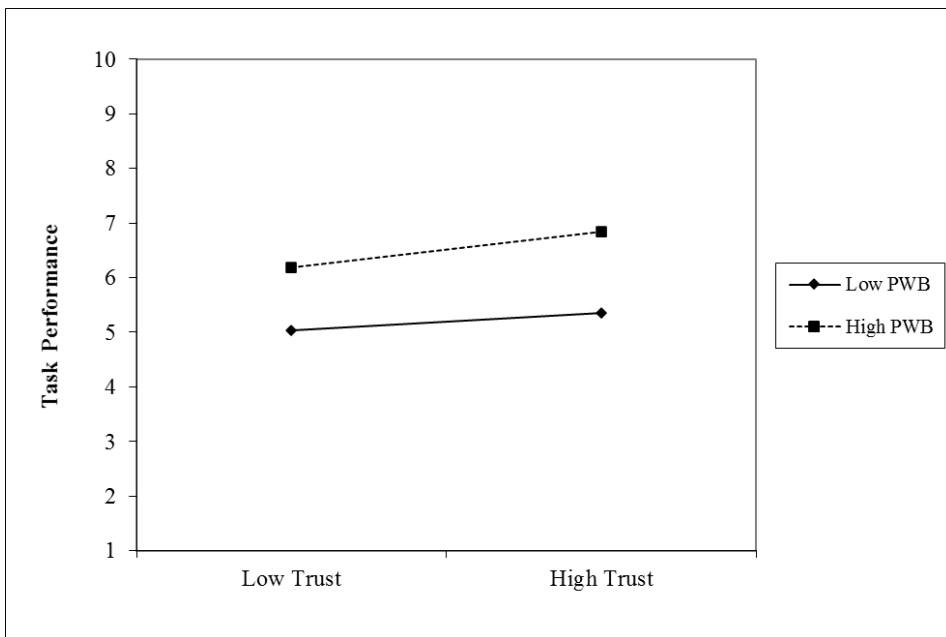
CHAPTER IV. DISCUSSION

A significant amount of research has been done on knowledge worker productivity and performance. This research study assesses the impact of perceptions of factors of knowledge worker productivity on task performance. Specifically, the study examines the relationship between the perceptions of factors of knowledge worker productivity, psychological well-being, and task performance. The study's results based on Model 2 support the hypotheses involving social cohesion, information sharing, and vision & goal clarity. The results based on Model 2A support the hypotheses concerning information sharing, vision & goal clarity, and the interaction between trust and psychological well-being. Based on these limited findings, organizations can improve worker performance by emphasizing social cohesion, information sharing, vision & goal clarity, and the interaction between trust and psychological well-being. Even though most of the hypotheses were not supported, the fact that three main effects were supported in Model 2 and two main effects and an interaction were supported in Model 2A should encourage others to conduct future studies to build on this study's findings.

Theoretical Implications

In both Model 2 and Model 2A, the relationship between perceived supervisory support and task performance was significant. However, the relationship was in the opposite direction from what was hypothesized. This finding is inconsistent with many previous studies assessing the relationship between perceived supervisor support and performance. The interaction between social cohesion and psychological well-being and its relationship to task performance was significant in Model 3 and Model 2A. However, the relationship was in the opposite direction from what was hypothesized. Further

research can be conducted to understand better why these relationships were not in the expected direction.

The six factors of knowledge worker productivity were initially identified in a 2013 study (Rapid Evidence Assessment, 2014) and have not been covered in academic research. This study was an attempt to assess the impact of these factors on performance. It is essential to be mindful that the items measuring the factors of knowledge worker productivity should have been ideally administered to members of the same team. This one difference may have resulted in more hypotheses being supported.

It is important to note that the study was conducted in 2020 which was a year that was marked by a pandemic. The psyche of individuals and their circumstances, both personal and professional, were likely affected by the pandemic in some way, shape, or form. For example, many organizations had employees working remotely (i.e., virtually). A June 2020 article in HR Magazine indicated that trust, information sharing, and social cohesion are the top areas most at risk due to working remotely (Jackson, 2020). The same article mentioned a survey by Advanced Workplace Institute, whose parent company is Advanced Workplace Associates, a collaborator with the Center for Evidence-Based Management, that identified the six factors of knowledge worker productivity. The main recommendation from the survey's findings was that trust and communication must be integral parts of virtual teams as they affect cohesion, supervision, information sharing, and performance. A quick Internet search reveals countless articles talking about the impact of the pandemic on psychological well-being. It would certainly be interesting to conduct the study during more "normal" periods. For example, several studies have also been published over the past year examining the role

of remote working (e.g., Gómez, Mendoza, Ramírez, & Olivas-Luján, 2020; Wang, Liu, Kan, & Parker, 2021). Many companies have also already revised their work from home policy to allow employees to work remotely more often. Thus, future studies should consider the factor of remote working on knowledge worker productivity.

Practical Implications

The study's results show that employees' perceptions of social cohesion, information sharing, and vision & goal clarity are positively related to performance. These findings can help managers and organizations realize the importance of all three factors in managing the performance of their employees. Although the relationship between information sharing and performance or vision & goal clarity and performance may not be that surprising, the finding regarding social cohesion is important for managers and organizations. Based on anecdotal evidence, companies have often underestimated the importance of social cohesion. One reason for this is because some of the activities which contribute to teams being more socially cohesive often involve "non-work" activities such as going out to lunch with colleagues or engaging in small talk. For this reason, companies have not supported all the activities which build more socially cohesive teams. The findings of this study suggest that managers should focus on both formal (e.g., team-building exercises) and informal activities (e.g., happy hour) to help enhance the social cohesion of their employees, as doing so should positively impact performance.

I have been working remotely, as have my colleagues, since the start of the pandemic in March 2020. This work setup has undoubtedly impacted the social cohesion of the team of which I am a part. Specifically, I have noticed that team members have

grown apart without the daily small talk we had in person or going out to lunches together. I went from chatting with colleagues multiple times a day in the office to, at times, not speaking to them for a couple of weeks while working remotely. Although I have remained productive for the most part during this period, the lack of social cohesion has somehow affected our performance in some instances. Finally, the study's results show that psychological well-being moderates the relationship between employees' perceptions of trust and performance, such that this association is stronger when psychological well-being is high and weaker when psychological well-being is low. This finding suggests that employees' well-being is a critical factor that managers can use to enhance the beneficial effects (e.g., increased performance) resulting from their trusting relationship with their direct reports.

Limitations

As with all empirical investigations, certain limitations must be acknowledged when interpreting the study's results. One limitation is that a cross-sectional survey design was employed, which means that caution should be taken when interpreting the results. A snapshot of a single point in time may not accurately assess the variables under study. Future research can be conducted using a longitudinal study design. A second limitation is that single-source data was used. Future studies can obtain data from more than one source. A third limitation is that the research was conducted using respondents from various backgrounds, so the results may not be generalizable. A fourth limitation is that there were likely other factors that influenced knowledge worker productivity, psychological well-being, and task performance that were not considered in

this study. Future research can assess the impact of other independent variables on the dependent variable.

A fifth limitation is that the study of the six factors of knowledge worker productivity is a relatively novel concept, and therefore, the construct is not fully understood. Future research can build on the learnings from this study. A sixth limitation is that the knowledge worker productivity questionnaire items were designed to obtain feedback from respondents on the same team. Future research can focus on recruiting respondents that are team members from different departments. A seventh limitation is that the sample size was not very large due to resource restrictions. Larger sample sizes can be obtained in the future. An eighth limitation is that the questionnaire's responses were based on self-reporting, which may have introduced self-reporting bias. Future studies may consider using employees to complete independent and moderator variables and supervisors completing performance measures or have measures completed at different points in time to alleviate potential problems associated with common method bias (Podsakoff et al., 2012).

Summary

Peter Drucker wrote a 1992 Harvard Business Review article in which he discussed the topic of transformation. He stated that a transformation that changes society happens every few hundred years and that, at the time of writing the article, the world was in the midst of such a transformation. Specifically, he was referring to the transformation into a knowledge society where knowledge was the leading resource for individuals and the economy. He suggested that this transformation would not be complete until 2010 or 2020 (Drucker, 1992). Whether or not his timeline is accurate,

knowledge, knowledge workers, and knowledge worker productivity remain relevant and essential topics today.

My 20-year career as a knowledge worker employed by three multinational organizations provides the impetus for this study. In my experience, no real effort has ever been paid to improving my performance or productivity. My intention in conducting this study was to investigate the factors that impact performance. I hope my study inspires others to research further what I have uncovered to gain greater insight into knowledge worker productivity and performance. Knowledge workers are a significant portion of the workforce in American society and the world at large. To help these individuals perform better and hopefully at their best should be in the interest of individuals, organizations, and society.

REFERENCES

Afzal, S., Arshad, M., Saleem, S., & Farooq, O. (2019). The impact of perceived supervisor support on employees' turnover intention and task performance: Mediation of self-efficacy. *Journal of Management Development*, *38*(5), 369-382. https://doi.org/10.1108/JMD-03-2019-0076

Ancona, D.G., & Caldwell, D.F. (1992). Bridging the boundary: External activity and performance in organizational teams. *Administrative Science Quarterly*, *37*(4), 634-665. https://doi.org/10.2307/2393475

Anderson, D.M., & Stritch, J.M. (2016). Goal clarity, task significance, and performance: Evidence from a laboratory experiment. *Journal of Public Administration Research And Theory*, *26*(2), 211-225. https://doi.org/10.1093/jopart/muv019

Argote, L., & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes*, *82*(1), 150-169. https://doi.org/10.1006/obhd.2000.2893

Armeli, S., Eisenberger, R., Fasolo, P., & Lynch, P. (1998). Perceived organizational support and police performance: The moderating influence of socioemotional needs. *Journal of Applied Psychology*, *83*(2), 288-297. https://doi.org/10.1037/0021-9010.83.2.288

Avey, J.B., Luthans, F., Smith, R.M., & Palmer, N.F. (2010). Impact of positive psychological capital on employee well-being over time. *Journal of Occupational Health Psychology*, *15*(1), 17-28. https://doi.org/10.1037/a0016998

Berkman, P.L. (1971). Life stress and psychological well-being: A replication of Langner's analysis in the midtown Manhattan study. *Journal of Health and Social Behavior*, *12*(1), 35-45. https://doi.org/10.2307/2948452

Black, J., Kim, K., Rhee, S., Wang, K., & Sakchutchawan, S. (2018). Self-efficacy and emotional intelligence: Influencing team cohesion to enhance team performance. *Team Performance Management: An International Journal*, *25*(1/2), 100-119. https://doi.org/10.1108/TPM-01-2018-0005

Bradburn, N. M., & Caplovitz, D. (1965). *Reports on Happiness*. Aldine.

Braun, M.T., Kozlowski, S.W.J., Brown, T.A., & DeShon, R.P. (2020). Exploring the dynamic team cohesion-performance and coordination-performance relationships of newly formed teams. *Small Group Research*, *51*(5), 1-30. https://doi.org/10.1177/1046496420907157

Bunderson, J.S., & Sutcliffe, K.M. (2002). Comparing alternative conceptualizations of functional diversity in management teams: Process and performance effects. *The Academy of Management Journal*, *45*(5), 875-893. https://doi.org/10.2307/3069319

Castaño, N., Watts, T., & Tekleab, A.G. (2013). A reexamination of the cohesion-performance relationship meta-analyses: A comprehensive approach. *Group Dynamics: Theory, Research, and Practice*, *17*(4), 207-231. https://doi.org/10.1037/a0034142

Centre for Evidence-Based Management (2014). Rapid evidence assessment of the research literature on the factors associated with knowledge worker productivity. File was provided by Centre for Evidence Based Management. https://cebma.org

Chen, T.J., & Wu, C.M. (2020). Can newcomers perform better at hotels? Examining the roles of transformational leadership, supervisor-triggered positive affect, and perceived supervisor support. *Tourism Management Perspectives*, *33*, 1-15, Article 100587. https://doi.org/10.1016/j.tmp.2019.100587

Chiniara, M., & Bentein, K. (2018). The servant leadership advantage: When perceiving low differentiation in leader-member relationship quality influences team cohesion, team task performance and service OCB. *The Leadership Quarterly*, *29*(2), 333-345. https://doi.org/10.1016/j.leaqua.2017.05.002

Choi, J.N. (2002). External activities and team effectiveness: Review and theoretical development. *Small Group Research*, *33*(2), 181-208. https://doi.org/10.1177/104649640203300202

Choi, S.Y., Lee, H., & Yoo, Y. (2010). The impact of information technology and transactive memory systems on knowledge sharing, application, and team performance: A field study. *MIS Quarterly*, *34*(4), 855-870. https://doi.org/10.2307/25750708

Chumg, H.F., Seaton, J., Cooke, L., & Ding, W.Y. (2016). Factors affecting employees' knowledge-sharing behaviour in the virtual organisation from the perspectives of well-being and organisational behaviour. *Computers in Human Behavior*, *64*, 432-448. https://doi.org/10.1016/j.chb.2016.07.011

Cole, M.S., Bruch, H., & Vogel, B. (2006). Emotion as mediators of the relations between perceived supervisor support and psychological hardiness on employee cynicism. *Journal of Organizational Behavior*, *27*(4), 463-484. https://doi.org/10.1002/job.381

Connelly, L.M. (2008). Pilot studies. *Medsurg nursing: official journal of the Academy of Medical-Surgical Nurses*, *17*(6), 411-412.

Cook, J., & Wall, T. (1980). New work attitude measures of trust, organizational commitment and personal need non-fulfilment. *Journal of Occupational Psychology*, *53*(1), 39-52. https://doi.org/10.1111/j.2044-8325.1980.tb00005.x

Cook, R., & Weisberg, S. (1982). Criticism and Influence Analysis in Regression. *Sociological Methodology*, *13*, 313-361. https://doi.org/10.2307/270724

Cropanzano, R., & Wright, T.A. (2001). When a "happy" worker is really a "productive" worker: A review and further refinement of the happy-productive worker thesis. *Consulting Psychology Journal: Practice and Research*, *53*(3), 182-199. https://doi.org/10.1037/1061-4087.53.3.182

Cummings, J. N. (2004). Work groups, structural diversity, and knowledge sharing in a global organization. *Management Science*, *50*(3), 352-364. https://doi.org/10.1287/mnsc.1030.0134

Daniel, J.L. (2019). Trust as a mediator of workplace spirituality and job performance. *Journal of Business and Behavioral Sciences*, *31*(2), 80-103.

De Jong, B.A., Dirks, K.T., & Gillespie, N. (2016). Trust and team performance: A meta-analysis of main effects, moderators, and covariates. *Journal of Applied Psychology*, *101*(8), 1134-1150, https://doi.org/10.1037/apl0000110

Dirks, K.T. (1999). The effects of interpersonal trust on work group performance. *Journal of Applied Psychology*, *84*(3), 445-455. https://doi.org/10.1037/0021-9010.84.3.445

Dirks, K.T. & Ferrin, D.L. (2001). The role of trust in organizational settings. *Organization Science*, *12*(4), 450-467. https://doi.org/10.1287/orsc.12.4.450.10640

Drucker, P.F. (1992, September-October). *The New Society of Organizations*. Harvard Business Review. https://hbr.org/1992/09/the-new-society-of-organizations

Drucker, P.F. (1999). Knowledge-worker productivity: The biggest challenge. *California Management Review*, *41*(2), 79-94. https://doi.org/10.2307/41165987

Dunn, J.R. & Schweitzer, M.E. (2005). Feeling and believing: The influence of emotion on trust. *Journal of Personality and Social Psychology*, *88*(5), 736-748. https://doi.org/10.1037/0022-3514.88.5.736

Dysvik, A. & Kuvaas, B. (2012). Perceived supervisor support climate, perceived investment in employee development climate, and business-unit performance. *Human Resource Management*, *51*(5), 651-664. https://doi.org/10.1002/hrm.21494

Ebert, P., & Freibichler, W. (2017). Nudge management: Applying behavioural science to increase knowledge worker productivity. *Journal of Organization Design*, *6*(4), 1-6. https://doi.org/10.1186/s41469-017-0014-1

Festinger, L., Schachter, S., & Back, K. (1950). *Social pressures in informal groups: A study of human factors in housing*. Stanford University Press.

Fredrickson, B.L. (1998). What good are positive emotions? *Review of General Psychology*, *2*(3), 300-319. https://doi.org/10.1037/1089-2680.2.3.300

Fredrickson, B.L. (2000). Why positive emotions matter in organizations: Lessons from the broaden-and-build model. *The Psychologist-Manager Journal*, *4*(2), 131-142. https://doi.org/10.1037/h0095887

Fredrickson, B.L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218-226. https://doi.org/10.1037//0003-066x.56.3.218

Fredrickson, B.L. (2004). The broaden-and-build theory of positive emotions. *Phil. Trans. R. Soc. Lond. B*, *359*(1449), 1367-1377. https://doi.org/10.1098/rstb.2004.1512

Fredrickson, B.L. (2013). Positive emotions broaden and build. *Advances in Experimental Social Psychology*, *47*, 1-83. https://doi.org/10.1016/B978-0-12-407236-7.00001-2

Gambetta, D.G. (1988). *Trust: Making and Breaking Cooperative Relations*. Basil Blackwell.

García-Buades, M.E., Peiró, J.M., Montañez-Juan, M.I., Kozusznik, M.W., & Ortiz-Bonnín, S. (2020). Happy-productive teams and work units: A systematic review of the 'happy-productive worker thesis'. *International Journal of Environmental Research and Public Health Review*, *17*(1), 1-39. https://doi.org/10.3390/ijerph17010069

Goes, J., & Park, S.H. (1997). Interorganizational links and innovation: The case of hospital services. *Academy of Management Journal*, *40*(3), 673-696. https://doi.org/10.5465/257058

Gómez, S.M., Mendoza, O.E.O, Ramírez, J., & Olivas-Luján, M.R. (2020). Stress and myths related to the COVID-19 pandemic's effects on remote work. *Management Research: Journal of the Iberoamerican Academy of Management*, *18*(4), 401-420. https://doi.org/10.1108/MRJIAM-06-2020-1065

Gordon, S., Tang, C.H., Day, J., & Adler, H. (2019). Supervisor support and turnover in hotels: Does subjective well-being mediate the relationship? *International Journal of Contemporary Hospitality Management*, *31*(1), 496-512. https://doi.org/10.1108/IJCHM-10-2016-0565

Habidin, N.F., Zubir, A.F.M., Fuzi, N.M., Latip, N.A.M., & Azman, M.N.A. (2015). Sustainable performance measures for Malaysian automotive industry. *World Applied Sciences Journal*, *33*(6), 1017-1024. https://doi.org/10.5829/idosi.wasj.2015.33.06.257

Hämmig, O. (2017). Health and well-being at work: The key role of supervisor support. *SSM - Population Health*, *3*(C), 393-402. https://doi.org/10.1016/j.ssmph.2017.04.002

Hansen, M.T. (2002). Knowledge networks: Explaining effective knowledge sharing in multiunit companies. *Organization Science*, *13*(3), 232-248. https://doi.org/10.1287/orsc.13.3.232.2771

Hinkle, D.E., Wiersma, W., & Jurs, S.G. (2003). *Applied Statistics for the Behavioral Sciences*. Houghton Mifflin.

Hoch, J.E. (2014). Shared leadership, diversity, and information sharing in teams. *Journal of Managerial Psychology*, *29*(5), 541-564. https://doi.org/10.1108/JMP-02-2012-0053

Hülsheger, U.R., Anderson, N., & Salgado, J.F. (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology*, *94*(5), 1128-1145. https://doi.org/10.1037/a0015978

Huppert, F.A. (2009). Psychological well-being: Evidence regarding its causes and consequences. *Applied Psychology: Health and Well-Being*, *1*(2), 137-164. https://doi.org/10.1111/j.1758-0854.2009.01008.x

Igielski, M. (2017). Assumptions to the model of managing knowledge workers in modern organizations. *Management (1429-9321)*, *21*(1), 133-147. https://doi.org/10.1515/manment-2015-0085

Jackson, B. (2020, June 17). *Remote working putting team cohesion at risk, study finds*. HR Magazine. https://www.hrmagazine.co.uk/article-details/remote-working-putting-team-cohesion-at-risk-awi-study-finds

Jafar, R.M.S., Geng, S., Ahmad, W., Niu, B., & Chan, F.T.S. (2019). Social media usage and employee's job performance: The moderating role of social media rules. *Industrial Management & Data Systems*, *119*(9), 1908-1925. https://doi.org/10.1108/IMDS-02-2019-0090

James, L.R., Demaree, R.G., & Wolf, G. (1984). Estimating within-group inter-rater reliability with and without response bias. *Journal of Applied Psychology, 69*(1), 85-98. https://doi.org/10.1037/0021-9010.69.1.85

Jamshed, S. & Majeed, N. (2018). Relationship between team culture and team performance through lens of knowledge sharing and team emotional intelligence. *Journal of Knowledge Management*, *23*(1), 90-109. https://doi.org/10.1108/JKM-04-2018-0265

Kaiser, H.F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31-36. https://doi.org/10.1007/BF02291575

Kianto, A., Shujahat, M., Hussain, S., Nawaz, F., & Ali, M. (2019). The impact of knowledge management on knowledge worker productivity. *Baltic Journal of Management*, *14*(2), 178-197. https://doi.org/10.1108/BJM-12-2017-0404

Koopmans, L., Bernaards, C.M., Hildebrandt, V.H., Lernerc, D., De Vet, H., & Van Der Beek, A.J. (2016). Cross-cultural adaptation of the individual work performance questionnaire. *Work*, *53*(3), 609-619. https://doi.org/10.3233/WOR-152237

Lee, J.Y., Bachrach, D.G., & Lewis, K. (2014). Social network ties, transactive memory, and performance in groups. *Organization Science*, *25*(3), 951-967. https://doi.org/10.1287/orsc.2013.0884

Liu, S., Jiang, K., Chen, J., Pan, J., & Lin, X. (2018). Linking employee boundary spanning behavior to task performance: The influence of informal leader emergence and group power distance. *The International Journal of Human Resource Management*, *29*(12), 1879-1899. https://doi.org/10.1080/09585192.2016.1216872

Locke, E.A., Latham, G.P., Smith, K.J., Wood, R.E., & Bandura, A. (1990). *A Theory of Goal Setting & Task Performance*. Prentice Hall.

Lynn, G.S., & Faruk, K. (2016). The effect of vision and role clarity on team performance. *International Journal of Economic and Administrative Studies*, *17*, 175-196.

Markova, G., & Perry, J.T. (2014). Cohesion and individual well-being of members in self-managed teams. *Leadership & Organization Development Journal*, *35*(5), 429-441. https://doi.org/10.1108/LODJ-04-12-0058

Murthy, R.K. (2014). Psychological well-being, emotional intelligence and job satisfaction. *International Journal of Multidisciplinary Educational Research*, *3*, 236-248.

Oentoro, W., Popaitoon, P., & Kongchan, A. (2016). Perceived supervisory support and service recovery performance: The moderating role of personality traits. *Asia-Pacific Journal of Business Administration*, *8*(3), 298-316. https://doi.org/10.1108/APJBA-11-2015-0094

Olvera, J., Llorens, S., Acosta, H., & Salanova, M. (2017). Transformational leadership and horizontal trust as antecedents of team performance in the healthcare context. *Anales de Psicología*, *33*(2), 365-375. http://dx.doi.org/10.6018/analesps.33.2.237291

Park, S., & Choi, S. (2020). Performance feedback, goal clarity, and public employees' performance in public organizations. *Sustainability*, *12*(7), 1-18. https://doi.org/10.3390/su12073011

Podsakoff, P.M., MacKenzie, S.B., & Podsakoff, N.P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*(1), 539-569. https://doi.org/10.1146/annurev-psych-120710-100452

Ramirez, Y.W., & Nembhard, D.A. (2004). Measuring knowledge worker productivity: A taxonomy. *Journal of Intellectual Capital*, *5*(4), 602-628. https://doi.org/10.1108/14691930410567040

Rawat, P.S., Bhattacharjee, S.B., & Ganesh, V. (2019). Selective incivility, trust and general well-being: A study of women at workplace. *Journal of Indian Business Research*, *12*(3), 301-324. https://doi.org/10.1108/JIBR-04-2018-0107

Robertson, R., Gockel, C., & Brauner, E. (2013). Trust your teammates or bosses? Differential effects of trust on transactive memory, job satisfaction, and performance. *Employee Relations*, *35*(2), 222-242. https://doi.org/10.1108/01425451311287880

Rosenthal, R., & Rosnow, R. (2007). *Essentials of Behavioral Research: Methods and Data Analysis* (3rd Edition). McGraw-Hill.

Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1069-1081. https://doi.org/10.1037/0022-3514.57.6.1069

Ryff, C.D., & Keyes, C.L.M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, *69*(4), 719-727. https://doi.org/10.1037/0022-3514.69.4.719

Shah, N.P., Levin, D.Z., & Cross, R. (2018). Secondhand social capital: Boundary spanning, secondhand closure, and individual performance. *Social Networks*, *52*, 18-27. https://doi.org/10.1016/j.socnet.2017.04.005

Sivasubramaniam, N., Liebowitz, S.J., & Lackman, C.L. (2012). Determinants of new product development team performance: A meta-analytic review. *The Journal of Product Innovation Management*, *29*(5), 803-820. https://doi.org/10.1111/j.1540-5885.2012.00940.x

Soldan, Z. (2010). Group cohesiveness and performance: The moderating effect of diversity. *International Journal of Interdisciplinary Social Sciences*, *5*(4), 155-168.

Springer, K.W., & Hauser, R.M. (2006). An assessment of the construct validity of Ryff's scales of psychological well-being: Method, mode, and measurement effects. *Social Science Research*, *35*(4), 1080-1102. https://doi.org/10.1016/j.ssresearch.2005.07.004

Thye, S.R., Yoon, J., & Lawler, E.J. (2002). The theory of relational cohesion: Review of a research program. *Advances in Group Processes*, *19*, 139-166. https://doi.org/10.1016/S0882-6145(02)19006-0

Van der Hoek, M., Groeneveld, S., & Kuipers, B. (2018). Goal setting in teams: Goal clarity and team performance in the public sector. *Review of Public Personnel Administration*, *38*(4), 472-493. https://doi.org/10.1177/0734371X16682815

Wahyunigsih, D., & Wulansari, N.A. (2016). The impact of psychological capital on nurses' performance: The mediating role of psychological well-being and work-family conflict. *Management Analysis Journal*, *5*(4), 325-338.

Wang, B., Liu, Y., Qian, J., & Parker, S.K. (2021). Achieving effective remote working during the COVID-19 pandemic: A work design perspective. *Applied Psychology: An International Review*, *70*(1), 16–59. https://doi.org/10.1111/apps.12290

Wong, E., Tschan, F., Messerli, L., & Semmer, N.K. (2013). Expressing and amplifying positive emotions facilitate goal attainment in workplace interactions. *Frontiers in Psychology*, *4*(188), 1-15. https://doi.org/10.3389/fpsyg.2013.00188

Wong, P.S., & Neck, P.A. (2012). A practitioner's approach to Drucker's knowledge - worker productivity in the 21st century: A new model (part two). *Review of International Comparative Management*, *13*(4), 543-560.

Wright, T.A. (2005). The role of "happiness" in organizational research: Past, present and future directions. *Research in Occupational Stress and Well Being*, *4*, 221-264. https://doi.org/10.1016/S1479-3555(04)04006-5

Wright, T.A., & Bonett, D.G. (1992). The effect of turnover on work satisfaction and mental health: Support for a situational perspective. *Journal of Organizational Behavior*, *13*(6), 603-615. https://doi.org/10.1002/job.4030130606

Wright, T.A., & Cropanzano, R. (2004). The role of psychological well-being in job performance: A fresh look at an age-old quest. *Organizational Dynamics*, *33*(4), 338-351. https://doi.org/10.1016/j.orgdyn.2004.09.002

Wright, T.A., Cropanzano, R., & Bonett, D.G. (2007). The moderating role of employee positive well being on the relation between job satisfaction and job performance. *Journal of Occupational Health Psychology*, *12*(2), 93-104. https://doi.org/10.1037/1076-8998.12.2.93

Wright, T.A., Cropanzano, R., Denney, P.J., & Moline, G.L. (2002). When a happy worker is a productive worker: A preliminary examination of three models. *Canadian Journal of Behavioural Science*, *34*(3), 146-150. https://doi.org/10.1037/h0087165

Wright, T.A., & Staw, B.M. (1999). Affect and favorable work outcomes: Two longitudinal tests of the happy-productive worker thesis. *Journal of Organizational Behavior*, *20*(1), 1-23. https://doi.org/10.1002/(SICI)1099-1379(199901)20:1<1::AID-JOB885>3.0.CO;2-W

Yang, H.L., & Tang, J.H. (2004). Team structure and team performance in IS development: A social network perspective. *Information & Management*, *41*(3), 335-349. https://doi.org/10.1016/S0378-7206(03)00078-8

Yong, A.G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology*, *9*(2), 79-94. https://doi.org/10.20982/tqmp.09.2.p079

Zulfadil, Hendriani, S., & Machasin (2020). The influence of emotional intelligence on team performance through knowledge sharing, team conflict, and the structure mechanism. *Journal of Management Development*, *39*(3), 269-292. https://doi.org/10.1108/JMD-12-2018-0354

APPENDIX A

Amazon Mechanical Turk Ad

Answer a survey focusing on knowledge worker performance			
Requester: Walter Liu	**Reward:** $1.00 per task	**Tasks available:** 0	**Duration:** 2 Hours
Qualifications Required: HIT Approval Rate (%) for all Requesters' HITs greater than or equal to 95 , Location is US , Masters has been granted			

Survey Link Instructions (Click to expand)

Survey link:	https://fiu.qualtrics.com/jfe/form/SV_1GJFmVEH52FHZKB

Provide the survey code here:

e.g. 123456

Submit

APPENDIX B

Informational Letter

What is the role of employees' psychological well-being in the relationships between various factors of knowledge worker productivity and performance?

Hello, my name is Walter Liu. You have been chosen at random to be in a research study about knowledge workers. The purpose of this study is to determine the role of psychological well-being in knowledge worker productivity and performance. If you decide to be in this study, you will be one of 200 people in this research study. Participation in this study will take approximately 10 minutes of your time. If you agree and qualify to be in the study, I will ask you to do the following things:

1) Answer 31 items measuring perceptions of knowledge worker productivity.
2) Answer 8 items measuring psychological well-being.
3) Answer 5 items measuring task performance.
4) Answer 5 items on demographics.

There are no foreseeable risks or benefits to you for participating in this study. It is expected that this study will benefit society by providing insights into improving knowledge worker performance and satisfaction.

There is no cost to you. You will only be compensated if you complete the survey questionnaire. If you have questions while taking part, please stop and ask.

You will remain anonymous and your answers are confidential.

If you have questions for one of the researchers conducting this study, you may contact Walter Liu at 786-877-8158.

If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

Your participation in this research is voluntary and you will not be penalized or lose benefits if you refuse to participate or decide to stop. You may keep a copy of this form for your records.

APPENDIX C

Survey Questionnaire

Consent **INFORMATIONAL LETTER**

Hello, my name is Walter Liu, a doctoral candidate at Florida International University's Chapman Graduate College of Business. You have been chosen at random to be in a research study about knowledge workers in today's organizations. If you decide to participate, you will be one of 300 people in this research study. Participation in this study will take approximately 6-8 minutes of your time. If you agree and qualify to be in the study, I ask that you kindly respond to all items. Please note that the survey consists of four sets of items which are not related to each other.

There are no foreseeable risks or benefits to you for participating in this study. It is expected that this study will benefit society by providing insights into improving knowledge worker performance. There is no cost to you. Thank you in advance for your support and generous time.

You will remain anonymous and your answers are confidential. If you have questions for one of the researchers conducting this study, you may contact Walter Liu at 786-877-8158. If you would like to speak with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu. Your participation in this research study is voluntary and you will not be penalized or lose benefits if you refuse to participate or decide to stop. You may keep a copy of this form for your records.

KWPF Below are 31 statements that describe how you feel about your work. Using the 1 to 5 scale below, indicate your agreement with each item by indicating that response for each statement.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Social Cohesion Members of my department, team/group, or unit like to spend time together outside of work hours.	○	○	○	○	○
Members of my department, team/group, or unit get along with each other.	○	○	○	○	○
Members of my department, team/group, or unit would rather get together as a team than go out on their own.	○	○	○	○	○
Members of my department, team/group, or unit defend each other from criticism by outsiders.	○	○	○	○	○
Members of my department, team/group, or unit help each other on the job.	○	○	○	○	○

Perceived Supervisory Support					
My supervisor is willing to extend him- or herself in order to help me perform my job to the best of my ability.	○	○	○	○	○
My supervisor takes pride in my accomplishments at work.	○	○	○	○	○
My supervisor tries to make my job as interesting as possible.	○	○	○	○	○
My organization values my contribution to its well-being.	○	○	○	○	○
My organization strongly considers my goals and values.	○	○	○	○	○
My organization really cares about my well-being.	○	○	○	○	○

Information Sharing					
Members of my department, team/group, or unit share their work reports and official documents with members of other departments, teams/groups, or units.	○	○	○	○	○
Members of my department, team/group, or unit share their experience or know-how with members of other departments, teams/groups, or units.	○	○	○	○	○
Information to make key decisions is freely shared among the members of my department, team/group, or unit.	○	○	○	○	○
Members of my department, team/group, or unit trust that the knowledge of members of other departments, teams/groups, or units is credible.	○	○	○	○	○

Members of my department, team/group, or unit are confident of relying on the information that members of other departments, teams/groups, or units bring to the discussion.	○	○	○	○	○

Vision & Goal Clarity

My department, team/group, or unit has clearly defined goals.	○	○	○	○	○
Department, team/group, or unit goals are clear to everyone.	○	○	○	○	○
It is easy to explain the goals of my department, team/group, or unit to outsiders.	○	○	○	○	○
I have specific, clear goals to aim for in my job.	○	○	○	○	○
If I have more than one goal to accomplish, I know which ones are most important and which are least important.	○	○	○	○	○

External Communication					
Members of my department, team/group, or unit use information obtained from external departments, teams/groups, or units everyday.	○	○	○	○	○
My department, team/group, or unit is contacted by outside departments, teams/groups, or units for knowledge and information.	○	○	○	○	○
My department, team/group, or unit scans the external environment for ideas and solutions.	○	○	○	○	○
Trust					
Members of my department, team/group, or unit withhold information from each other.	○	○	○	○	○
Members of my department, team/group, or unit withhold information from management.	○	○	○	○	○

Members of my department, team/group, or unit in general trust each other.	○	○	○	○	○
Management trusts my department, team/group, or unit to do their work well.	○	○	○	○	○
Members of my department, team/group, or unit can trust the information that comes from management.	○	○	○	○	○
Management withholds important information from members of my department, team/group, or unit.	○	○	○	○	○
Members of my department, team/group, or unit are able to express their views and feelings toward management.	○	○	○	○	○

End of Block: KWP Factors

Start of Block: Psychological Well-Being

PWB Below are 8 statements that describe how you feel in general. Using the 1 to 3 scale below, indicate your agreement with each item by indicating that response for each statement. How often do you feel each of these ways?

	Never (1)	Sometimes (2)	Often (3)
Very lonely or remote from other people.	○	○	○
Depressed or very unhappy.	○	○	○
Bored.	○	○	○
So restless you couldn't sit long in a chair.	○	○	○
Vaguely uneasy about something without knowing why.	○	○	○
On top of the world.	○	○	○
Particularly excited or interested in something.	○	○	○
Pleased about having accomplished something.	○	○	○

End of Block: Psychological Well-Being

Start of Block: Psychological Separation

Q24
Thank you for completing the first section of the survey. Before moving to the next section, here are some tips on how to protect yourself and others during the pandemic.
1) Wash your hands often
2) Stay at least 6 feet away from others
3) Cover your nose and mouth with a mask
4) Cover coughs and sneezes

5) Clean and disinfect
6) Monitor your health daily

TP Below are 5 statements that describe how you may think about your work. Using the 1 to 5 scale below, indicate your agreement with each item by indicating that response for each statement. In the past 3 months...

	Seldom (1)	Sometimes (2)	Regularly (3)	Often (4)	Always (5)
I was able to plan my work so that I finished it on time.	○	○	○	○	○
I kept in mind the work result I needed to achieve.	○	○	○	○	○
I was able to set priorities.	○	○	○	○	○
I was able to carry out my work efficiently.	○	○	○	○	○
I managed my time well.	○	○	○	○	○

Gen Gender

   ◯ Male

   ◯ Female

Age Age

   _____

Eth Ethnicity

   ◯ White

   ◯ Hispanic or Latino

   ◯ Black or African American

   ◯ Asian or Pacific Islander

   ◯ Other

Edu Education

   ◯ Associate's degree

   ◯ Bachelor's degree

   ◯ Master's degree

   ◯ Doctoral degree

   ◯ Other

   ◯ No degree

Yrs Number of Years Worked at Current Company

○ 1-2

○ 3-5

○ 6-10

○ 11-15

○ 16+

ID Here is your ID: ${e://Field/Random%20ID}
Copy this value to paste into MTurk.
When you have copied this ID, please click the next button to submit your survey.

APPENDIX D

Harman's One Factor Test

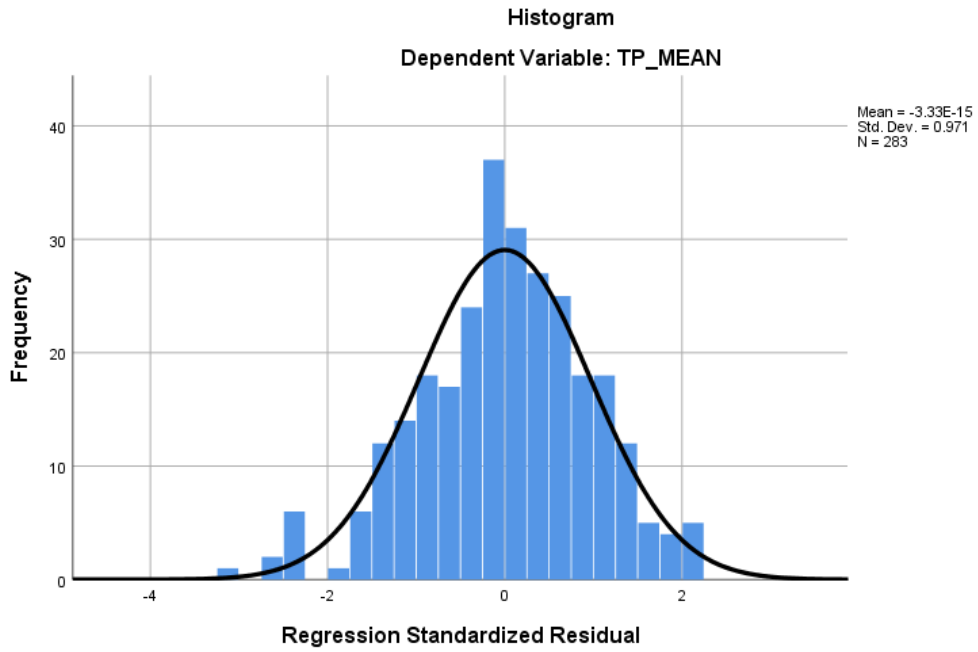| Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15.263	34.690	34.690	14.655	33.307	33.307
2	3.152	7.165	41.854			
3	2.822	6.414	48.268			
4	2.101	4.775	53.043			
5	1.555	3.535	56.578			
6	1.468	3.336	59.914			
7	1.252	2.844	62.759			
8	1.052	2.390	65.149			
9	1.021	2.322	67.470			
10	0.893	2.030	69.500			
11	0.831	1.890	71.389			
12	0.768	1.746	73.135			
13	0.753	1.711	74.846			
14	0.701	1.593	76.439			
15	0.676	1.537	77.976			
16	0.623	1.417	79.393			
17	0.569	1.294	80.687			
18	0.550	1.249	81.936			
19	0.510	1.159	83.095			
20	0.489	1.110	84.205			
21	0.476	1.081	85.286			
22	0.463	1.052	86.339			
23	0.447	1.015	87.353			
24	0.433	0.984	88.337			
25	0.412	0.935	89.272			
26	0.354	0.804	90.077			
27	0.347	0.788	90.865			
28	0.339	0.770	91.635			
29	0.314	0.714	92.350			
30	0.310	0.704	93.054			
31	0.296	0.673	93.727			
32	0.278	0.632	94.359			
33	0.266	0.604	94.963			
34	0.261	0.593	95.556			
35	0.254	0.576	96.133			
36	0.243	0.552	96.685			
37	0.225	0.512	97.197			
38	0.222	0.506	97.703			
39	0.201	0.458	98.160			
40	0.195	0.442	98.602			
41	0.178	0.404	99.006			
42	0.168	0.383	99.389			
43	0.146	0.331	99.720			
44	0.123	0.280	100.000			

Extraction Method: Principal Axis Factoring.

APPENDIX E

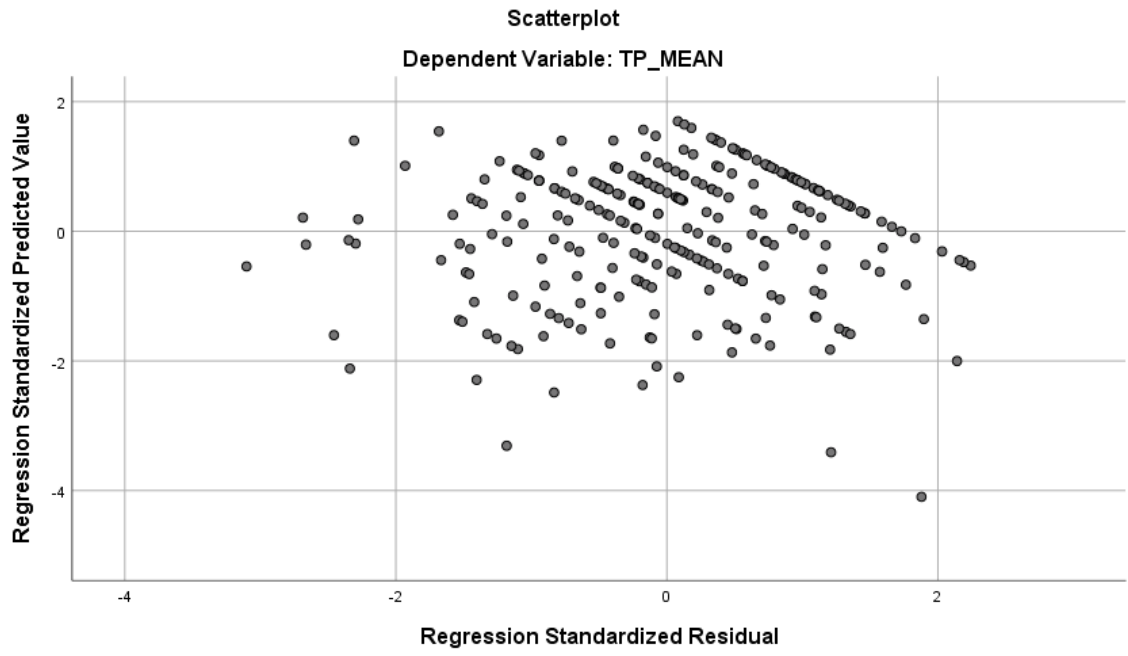Normal Q-Q Plot for Model 2
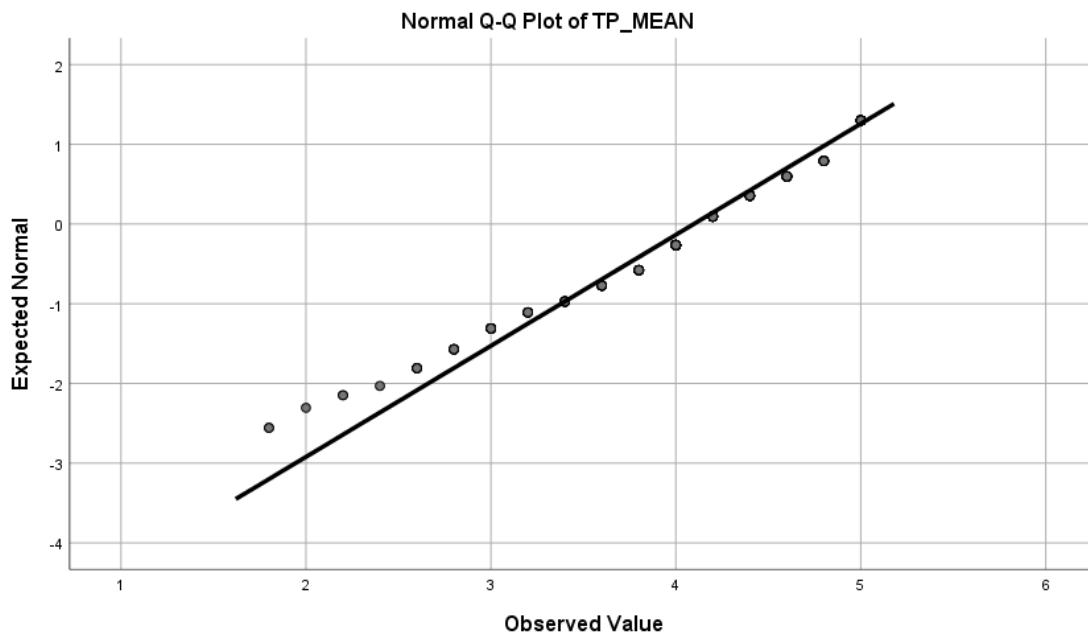
APPENDIX F

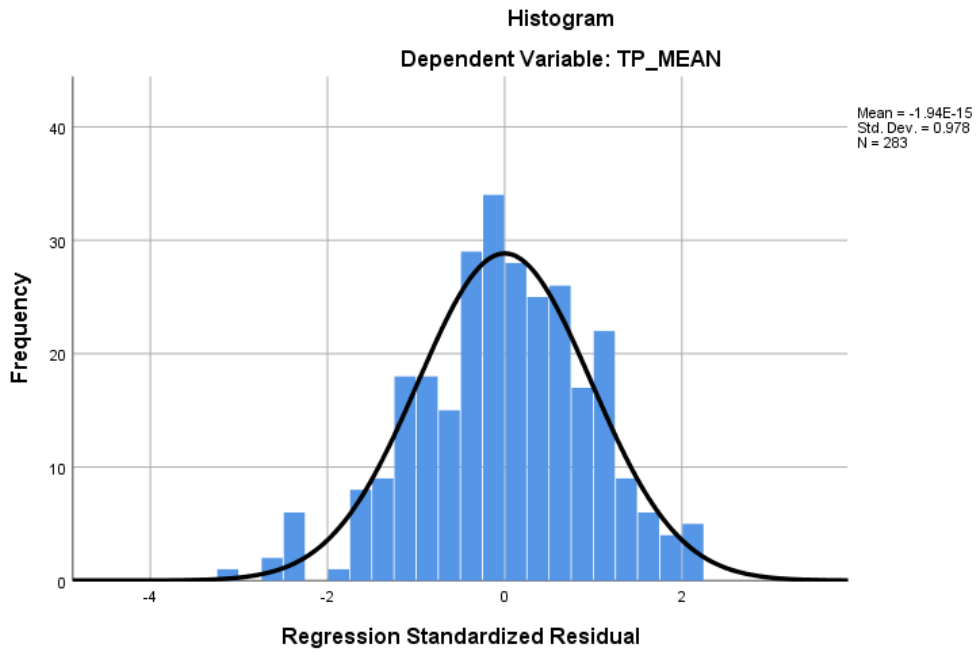Histogram for Model 2

APPENDIX G

Normal P-P Plot for Model 2

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: TP_MEAN
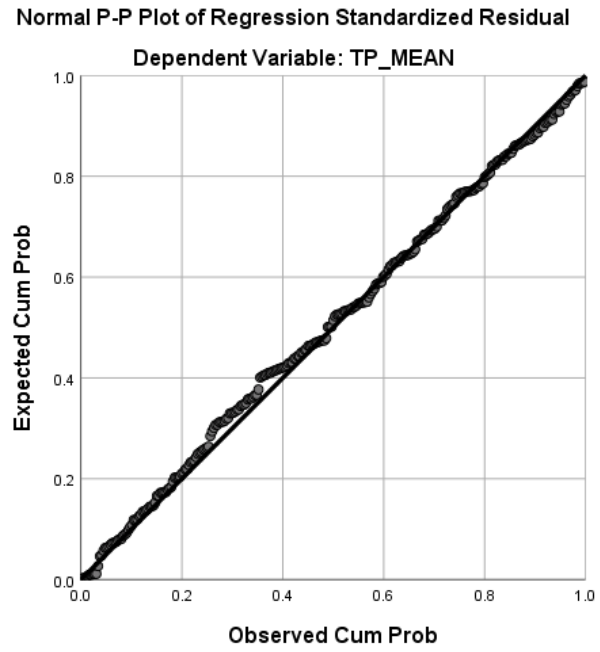
APPENDIX H

Scatterplot for Model 2

Scatterplot
Dependent Variable: TP_MEAN

APPENDIX I

Histogram for Model 2A

Histogram
Dependent Variable: TP_MEAN

Mean = -1.94E-15
Std. Dev. = 0.978
N = 283

APPENDIX J

Normal P-P Plot for Model 2A

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: TP_MEAN
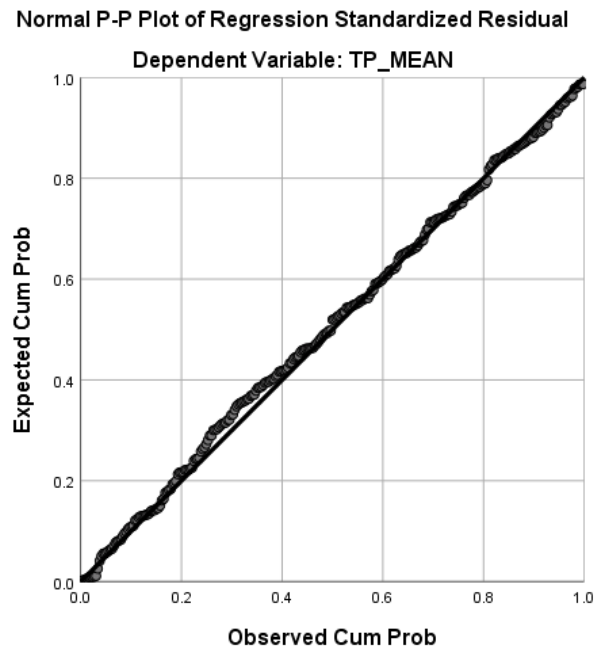
APPENDIX K

Scatterplot for Model 2A
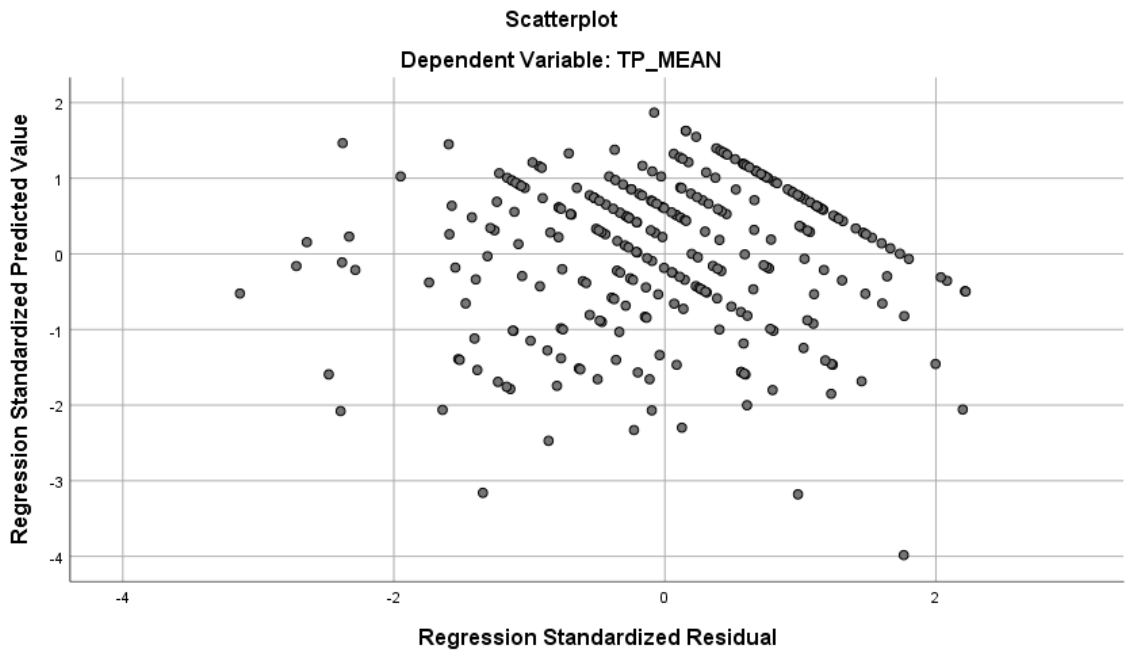
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