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Relationship Between Virtual Employee Engagement, Self-Efficacy, and Productivity

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Walden University
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Abstract

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MBA, Cameron University, 2010

BS, Cameron University, 2007

Doctoral Study Submitted in Partial Fulfillment

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Abstract

The low productivity in organizations can cost millions of dollars in lost revenue. Low productivity is important to organizational leaders because it can lead to lower profits for businesses. Organizational leaders who understand employee behaviors that increase productivity can reduce lost revenue from high turnover rates and low employee retention. Grounded in social cognitive theory, the purpose of this quantitative correlational study was to examine the relationship between virtual employee engagement, employee self-efficacy, and productivity. Survey data from 81 virtual workers were analyzed using multiple linear regression. Results indicated the full model containing 2 predictor variables (employee self-efficacy and employee engagement) was significantly related to productivity, $F(2, 78) = 11.78$, $p < .001$, $R^2 = .22$. Employee self-efficacy was statistically significant ($\beta = .42$, $p < .01$. Employee engagement ($\beta = .09$, $p = .37$) did not provide any significant variation in productivity. A key recommendation is for virtual business managers to implement policies that boost self-efficacy enhancers such as goal setting and performance, selection and promotion decisions, and training and development methods. The implications for positive social change include the opportunity for virtual business managers to improve virtual employees' work behaviors and outcomes, enhancing employees' health and well-being, the growth of the community they work in, and the sustainability of their organizations.

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Dedication

This study is dedicated to my wife, Dr. Shakira Henderson, my family, and my faith. Without their support, guidance, and divine intervention, this work would not have been possible. Dr. Shakira Henderson is not only my wife, but my mentor who has always been a motivational force in my life. Thank you for fueling my passion. I greatly appreciate your unwavering support and encouragement. Also, this study is dedicated to my parents because they are the foundation of my growth and life experiences. My mom, Melizia St. Aimee, taught me to work hard, pray hard, and not to worry as much because it all works out. My dad, Lennox St. Aimee, has been a constant source of inspiration. He has always modeled how to never give up. My sisters (Marion, Imee, Aimee), brothers (Lenny, Eddie, Max), and in-laws thank you for your continued love and support. Finally, I am grateful for this life experience written by God. Thank you always and forever.

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Throughout this journey, I had the privilege of mentorship and support from many of the Walden University faculty and staff and would like to acknowledge their contribution and dedication. I will be forever thankful to all of the Walden University faculty and staff who interreacted with me and helped me complete my study. In particular, I would like to extend my sincere appreciation and thanks to Dr. Stokes, Dr. Jepma, and Dr. Cave, who provided expert leadership and guidance. I also acknowledge my leaders, professional colleagues, and research platform members. Thank you all for your support.

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Section 1: Foundation of the Study

Financial services managers are blamed for not being able to motivate employees and causing disengagement and turnover (Reina, Rogers, Peterson, Byron, & Hom, 2017). Disengaged employees and high turnover rates can reduce organization productivity and cost millions of dollars in revenue (Osborne & Hammoud, 2017). Employee productivity is a necessary mechanism to enhance organizational success (Adeinat & Kassim, 2019). Therefore, it is essential to understand the key factors that influence productivity for organizational sustainability (Jalal, 2016). To ensure productive employees, management needs to find new methods to engage and empower employees in a dynamic workforce (Kim & Gatling, 2018). In this correlational study, I examined the relationships between employee engagement, employee self-efficacy, and employee productivity in the virtual workspace.

Background of the Problem

The high value of engagement and the increasing cost associated with disengagement require greater accountability by management (Jungsun & Gatling, 2018). A practical process or framework is necessary to help guide managers to increase employee engagement, well-being, and productivity. Highly engaged employees directly and indirectly increase organizational profitability and serve as an authoritative source of competitive advantage (Megha, 2016). Disengaged and unmotivated employees cause companies to lose millions of dollars (Young, Duff, & Stanney, 2016). Further research was needed to measure aspects of the organization leaders need to support and improve. The extensive growth and acceptance of virtual teams in organizations have prompted

further research and guidelines on how management motivates employees in the remote workspace (Dulebohn & Hoch, 2017). According to Heidrich, Kása, Shu, and Chandler (2015), the concept of engagement extends beyond physical locations and time zones in the form of globally connected virtual teams. Examining the relationship between employee engagement, employee self-efficacy, and employee productivity in the virtual workspace may help leaders understand and act on improving productivity and organizational profitability.

Problem Statement

Disengaged and unmotivated employees are costly and can cause serious financial risks to organizational productivity (Osborne & Hammoud, 2017). Aslam, Muqadas, Imran, and Rahman (2018) concluded that disengaged employees cost the United States $450 billion to $550 billion in lost productivity per year. The general business problem was that disengaged employees have a negative impact on workplace productivity. The specific business problem was that some managers do not understand the relationship between virtual employee engagement, self-efficacy, and productivity.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between virtual employee engagement, self-efficacy, and productivity. The independent variables were employee engagement and employee self-efficacy. The dependent variable was employee productivity. The targeted population consisted of virtual business leaders in the United States. Positive social change implications include new ways of working, increased employee productivity, and prosperity. Prosperous

employees may be happier and more engaged in community issues such as education, crime prevention, and affordable housing.

Nature of the Study

I considered three methods of research for this study: quantitative, qualitative, and mixed. Researchers use quantitative methods to provide information for prediction, correlation, causation, and producing generalizable results (J. Park & Park, 2016). Quantitative methods are also useful in studies in which a theory justifies examining relationships among variables (S. Park & Chae, 2017). Because the intent of the current study was to examine the relationships among constructs, the quantitative method was the most appropriate. In qualitative research, researchers study participants in the field or natural setting using methods such as unstructured interviews, focus groups, and observations (Barnham, 2015). Because the intent of my study was to examine relationships among variables using statistical procedures rather than gathering data through interviews and observations, a qualitative method was not appropriate. Mixed-methods researchers combine quantitative and qualitative approaches to better understand research problems (Schoonenboom & Johnson 2017). A mixed-methods study is complex to plan and conduct, and requires significant time and resources (Tunarosa & Glynn, 2017). Due to limited resources and time, the mixed-methods approach was not be suitable for examining relationships among the three constructs in the current study.

Examples of quantitative designs are correlational design, experimental, quasi-experimental, and descriptive. Researchers use correlational designs to examine the relationships among variables based on existing theory (Shantz, Alfes, & Latham, 2016).

The correlational design was appropriate because the intent of my study was to examine the relationships between the predictor variables (employee engagement and perceived employee self-efficacy) and the dependent variable (employee productivity). Researchers use experimental and quasi-experimental designs to examine cause-effect relationships among variables (Harty, Gustafsson, Bjorkdahl, & Moller, 2016). In experimental designs, researchers test causality through controlling variables and assigning specific values to independent variables (Dunphy, 2016). Because the predictor variable could not be controlled or manipulated in the current study, an experimental design was not a good fit. Researchers using descriptive designs to observe, describe, and document the characteristics of the study subjects (Sing, Misra, & Srivastava, 2017). Descriptive researchers obtain data about the current status of phenomena and the frequency of behavior as it naturally occurs. A descriptive design was not practical for the current study because the intent was not to describe phenomena but to use statistical analysis to examine associations among variables.

Research Question

What is the relationship between virtual employee engagement, self-efficacy, and productivity?

Hypotheses

H_o: The linear combination of employee engagement and employee self-efficacy does not significantly predict employee productivity.

H_a: The linear combination of employee engagement and employee self-efficacy significantly predicts employee productivity.

Theoretical Framework

The guiding theoretical framework for this study was Bandura's (1986) social cognitive theory (SCT). Bandura synthesized SCT through three concepts called reciprocal determinism. According to Bandura, reciprocal determinism is a dynamic and correlative interaction of person (individual with a set of learned experiences), environment (external social context), and behavior (responses to stimuli to achieve goals). SCT comprises four processes of goal realization: self-reaction, self-efficacy, self-evaluation, and self-observation. These components are interrelated, each having an effect on motivation and goal attainment (Bandura, 1986).

One of the main areas of focus in SCT theory is the concept of self-efficacy. According to Muslichah (2018), self-efficacy refers to an assessment of capabilities to organize and execute courses of action required to attain designated types of performance. Self-efficacy is also a function of self-beliefs to help accomplish a task (Bandura, 1986). High perseverance associated with self-efficacy and work engagement may lead to productivity. I used Bandura's SCT to examine whether and to what extant constructs of self-efficacy and engagement correlate with employee productivity. SCT was appropriate for this study because research connections among employee environment and employee behaviors can impact organizations. Social cognitive theory was also a suitable theoretical basis to examine how managers' cognitive, motivational processes operate to initiate, execute, and maintain employee work behavior. The core principle of SCT is reciprocal determinism, which represents how changes in the environment can lead to changes in human behavior and development. Based on the

premise of reciprocal determinism, I expected the independent variables (employee engagement and employee self-efficacy) to predict employee productivity.

Operational Definitions

The major terms of this study were employee engagement, employee productivity, employee self-efficacy, knowledge worker, social cognitive theory, and virtual employment. In this section, I define the terms based on their use in this study.

Employee engagement: Employees who are physiologically involved in their job with high enthusiasm, emotionally attached to their organization, and go the extra mile beyond the contractual agreement (Antony, 2018).

Employee productivity: Individual outcomes or quality of an employee work over a period of time (Yadav, 2016).

Employee self-efficacy: An individual's perception of their ability to execute their job task (Bandura, 1977).

Knowledge worker: A person who works primarily with information or develops and uses knowledge at the workplace (Drucker, 1999).

Social cognitive theory: An individual's societal interactions, experiences, societal practices, and environmental impact on behavior (Bandura, 1989).

Virtual employment: Employees who are not customer facing and telecommute, also known as working from home (Haijian & Fangfang, 2018).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are claims that are believed to be true even though the direct evidence of their truth is either absent or limited (Wolgemuth, Hicks, & Agosto, 2017). The first assumption was that participants would answer the survey questions accurately and comprehend the virtual workspace. The second assumption was that survey participants would be diverse enough for a representative sample. The third assumption was that perceived employee self-efficacy would impact employee engagement and employee productivity.

Limitations

Limitations are weaknesses or disadvantages that potentially limit the validity of results (Wolgemuth et al., 2017). Limitations in this study included utilizing a convenience sample of an online virtual group with 3,500 professional members. This limitation may have posed a threat in the representativeness of the population. Another potential limitation was low participation rate. The virtual professionals may have decided the web-based survey was too long to complete.

Delimitations

Delimitations are boundaries to which a study is intentionally confined (Wolgemuth et al., 2017). A delimitation of this study was the sample population. I delimited the sample population to current business leaders who work virtually within the geographical boundaries of the United States. Moreover, this study was conducted in the United States and may not represent the experiences of nonvirtual business leaders or

views of business leaders in other geographical locations. The purpose of this study was not to introduce other potential factors impacting virtual business leaders' relationships, but to build on the current body of knowledge to aid businesses and virtual employees.

Significance of the Study

Contribution to Business Practice

Significant changes in workplace dynamics pose a challenge for managers to engage and motivate employees (Jungsun & Gatling, 2018). Disengaged and unmotivated employees lead to low morale, elevated stress, and reduced productivity (Ghuman, 2016)). However, evidence indicated that engaged employees can increase business productivity (Setiyani, Djumarno, Riyanto, & Nawangsari, 2019). The results of the current study may add knowledge to enable business leaders to develop effective strategies to increase employee engagement and motivation in virtual workplace settings. The results of this study may also enable managers to be more knowledgeable to train employees to increase self-efficacy.

Implications for Social Change

The results from this study may contribute to positive social change by helping organizational leaders restructure strategies to increase community development where employees live and work. Strategies that can increase employee engagement, self-worth, and pride may catalyze social change (S. Park, Lee, & Kim, 2018). For example, increased employee engagement at work may lead to improved customer service, workplace giving, volunteering, and a better quality of life for the members of the communities in which they live and work.

A Review of the Professional and Academic Literature

Organizations seeking to gain a competitive edge to increase productivity in the global environment tend to focus on human resource management and innovation (Delery & Roumpi, 2017). One of the key indicators of an efficient human resource system is the extent to which employees get opportunities for advancement and training (Zhong, Wayne, & Liden, 2016). Researchers conducted numerous studies on how employee engagement and self-efficacy impact motivational outcomes (Hao, He, & Long, 2017). For example, Jalal (2016) explored how employee engagement is positively related to productivity. However, not many researchers focused on how employee engagement and self-efficacy impact productivity in the virtual workspace. In this literature review, I analyze contemporary theories and related research about employee engagement, self-efficacy, and productivity in the virtual workspace.

The purpose of this quantitative study was to examine the relationship between employee self-efficacy and employee engagement (predictor variables) and business productivity in the virtual workspace (criterion variable). The hypothesis was that employee self-efficacy and employee engagement would significantly predict employee productivity. The literature I reviewed on the theoretical framework included work by scholars and practitioners. Initially, I reviewed seminal work of Bandura (1986) and journal articles on SCT. A review of Bandura was also instrumental in exploring self-efficacy. I reviewed journal articles on self-efficacy, general self-efficacy scale, employee engagement, and Utrecht's work engagement scale. I used variations of *virtual employee*, *virtual work*, *work from home*, *telework*, *teleworking*, and *telecommute* to find

articles on the virtual workspace. The review of the literature included peer-reviewed articles, government sources, and books. Out of 255 total sources, 221 (86%) had publication dates between 2015 and 2019. A summary of the sources reviewed is provided in Table 1.

Table 1

Doctoral Study Sources

Source	Doctoral studies sources 2016 and later	Doctoral study sources pre-2016	Total
Peer-reviewed articles	218	43	261
Books	1	9	10
Professional and governmental websites	0	4	4
Total	219	56	275
% of total sources	84%	16%	100%
% of peer-reviewed sources	80%	20%	100%

The literature review is organized into four significant areas and is limited to the variables under investigation. The review begins with an evaluation of SCT. Secondly, self-efficacy is explored through the lens of SCT. The third section includes current literature on employee engagement and the impact on business productivity. Fourth, the foundations of productivity and the link between the independent variables in the virtual workspace are assessed. Lastly, a discussion is provided on virtual work and

organizational demands. The review of the literature on employee self-efficacy, engagement, and productivity included peer-reviewed articles and journals, books, websites, dissertations, and government reports. Primary research databases included those available through the Walden University library: ProQuest, Google Scholar, EBSCO Primary, and Emerald Management.

Social Cognitive Theory

SCT was developed from another approach known as social learning theory (SLT) developed by Rotter (1954). Bandura (1986) noted that SLT includes three primary interrelated constructs that assist in determining an individual's behavior choices. The constructs include cognitive factors, environmental factors, and behavioral factors. Bandura (1986) revised and renamed the theory SCT, and focused on the cognitive aspect of learning and behavior change. Bandura (2001) asserted that prior learning theories did not adequately explain the subjectivity, self-awareness, and human cognition necessary for examining behavior. Bandura (1986) noted that the goal of SCT is to explain how people regulate their behavior through control and reinforcement to achieve goal-directed behavior that can be maintained over time. Through feedback and reciprocity, a person's reality is formed by the interaction with the environment and the person's cognitions (Bandura, 1986). Environment refers to social and physical external factors that can affect a person's behavior (Bandura, 1986). Social environment can include family members, friends, and work colleagues (Bonsang, Skirbekk, & Staudinger, 2017). The physical environment can include the size of a room, the ambient temperature, or the workspace (D'Oca, Chen, Hong, & Belafi, 2017). Personal or

cognitive factors include knowledge, expectations, and attitudes (Bandura, 1986). Through cognitive factors, individuals can acknowledge the consequences of actions before engaging in the behavior (Lin & Chang, 2018).

Behavioral factors include skills and self-efficacy. Self-efficacy refers to the level of a person's confidence in their ability to successfully perform a behavior (Wood, 1986). The central notion of SCT is the trilogy agency in which behavior, cognition, and the environment influence each other (Bandura, 1977, 1986). Reciprocal determinism of human behavior explains how personal factors and behavioral factors, behavioral factors and environmental factors, and environmental factors and personal factors impact each other in a bidirectional nature. The bidirectional combinations of interactions operate in a triad that impacts human behavior and development. More importantly, the strength and timing of the impact of any one factor are not necessarily the same as those of the other factors (Bandura, 1989). In the personal and behavioral factors bidirectional combination, personal factors such as belief systems, feelings, aspirations, and expectations can impact behavior. Similarly, behavioral responses influence the outcomes of an individual's actions (Bandura, 1989). In the environmental and personal factors bidirectional combination, the social environment can modify an individual's expectations, belief systems, emotions, and cognitive abilities through modeling, training, and other social stimulants (Bandura, 1989). In the behavioral and environmental factors bidirectional combination, an individual's behavior modifies the conditions of the social environment. The social conditions change the behavior of the individual and others within the environment in the course of their daily activities. The immediate environment is a

system that can modify behavior by itself only if the mobility of the people within the environment is restricted (Bandura, 1989).

In organizations, the trilogy agency method of SCT is also applicable. For example, a person would include characteristics such as skill or ability, the environment would include performance metrics or ratings, and behavior would consist of previous achievements or failures (Domino, Wingreen, & Blanton, 2015). According to Stajkovic and Luthans (1998), organizational participants would at the same time be both products and producers of their motivation, environment, and behaviors. According to Ren and Zhu (2017), the theoretical perspective views people as self-organizing, proactive, self-reflective, and self-regulated, rather than as reactive organisms shaped by their environment. Unless employees believe they can impact behavioral, cognitive, and motivational resources to execute a task effectively, they will focus on the fearful aspects of delivering the required performance. In effect, the employee will show little effort and not do well or even fail at the task (Stajkovic & Luthans, 1998).

Reciprocal trilogy of human capabilities can also be explored through SCT. According to Bandura (1989), these capabilities include symbolizing, vicarious capability, forethought capability, self-regulatory capability, and self-reflective capability. These capabilities provide human beings with the cognitive means by which they are influential in determining a course of action (Stajkovic & Luthans, 1998). Moreover, the key components are interrelated and affect motivation and goal attainment (Stajkovic & Luthans, 1998). Browning (2017) noted that through symbolizing an individual can store information required to guide future behaviors. Symbolizing can be

used to assess a person's progress toward goal attainment and motivation (Hales et al., 2016). Bandura (1989) explained that the symbolism capability enables humans to store information in their memory that can be used to guide future behaviors. It is through this process that humans can model observed behavior. Symbols provide a visual tool to help solve and transform future actions in various environments (Stajkovic & Luthans, 1998). It is through foresight that individuals anticipate future action based on current events (Bandura, 1989). Kinsky and Bechard (2011) found that although preschoolers may not know brand names, they often know the product associated with a logo or symbol. When shopping, children often reach and point toward products at their level. The children recognize brands or products and comment on associations or experiences with them.

Vicarious capability refers to the human ability to learn from direct experiences and observation of others (Bandura, 2001). Observational learning is a capability that allows humans to expand knowledge and skills through copied information (Bandura, 1989). This information can then be coded into symbols and used as a guide for future action. Stajkovic and Luthans (1998) noted that vicarious learning is important for both learning and human performance. Moreover, to avoid making mistakes through trial and error, a person can use their vicarious capability to guide behavior quickly (Bandura, 1989). The four stages of observational learning are attention, retention, production, and motivation (Bandura, 1986, 1989). Attention involves selectively observing actions and behaviors in the environment. Retention involves the ability to create symbols from observed behavior from memory (Bandura, 1989). Production involves converting symbols into appropriate action. The production process is referred to as motor

reproduction (Bandura, 1989). Motivation is the degree to which a behavior is deemed a valued outcome (Bandura, 1989).

Another distinctive human characteristic is forethought capability. SCT individuals think before they act and, as a result, forethought plays an integral role in motivating behavior (Bandura, 1989). Additionally, Bandura (1986) noted that people who set goals, propose actions, select actions, and create courses of action are more likely to produce desired outcomes and avoid detrimental ones. Self-regulation capability involves comparing current performance with a desired performance or goal (Bandura, 1989). Individuals can set goals and challenges for themselves to motivate, guide, and regulate their activities (Li & Wu 2019). According to Charles, Aaron, and Kotaro (2018), one of the best ways to achieve goals is through self-regulation. The evaluation process involves developing a set of steps based on specific conditions, choice of methods of actions and succession, practical realization, and determining the relationship between what was planned, anticipated, and achieved with the goal. Bandura (1986) noted that when individuals achieve these goals, they are more likely to continue to make every effort because substandard performance will no longer provide satisfaction.

There are two important factors with regards to self-regulation, namely regularity and proximity (Ramnerö & Jansson, 2016). Regularity means the behavior should be continually observed whereas proximity means the behavior should be observed while it occurs, or shortly thereafter (Ramnerö & Jansson, 2016). Hales et al. (2016) used a social application to self-monitor weight loss. The result showed positive outcome expectations. Self-refection is another aspect of human capabilities in which a person can learn original

behavior without undergoing a trial and error process (Sumpter, Gibson, & Porath, 2017). Additionally, an individual can reevaluate their goals in conjunction with their attainments through self-refection (Bandura, 1989). If an individual has achieved a goal, they are likely to reevaluate and raise the standard or reevaluate at a lower standard to an achievable goal (da Motta Veiga & Turban, 2018). A person can also analyze their experiences, think about their thought processes, and alter their thinking accordingly in self-refection. One of the most important types of self-reflection is self-efficacy (Bandura, 1989). Self-efficacy also includes self-monitoring judgments regarding actions to evaluate physical reactions through behavior through the self-regulatory process. Self-efficacy involves making sense of experiences, exploring behavior and self-beliefs, engaging in self-evaluation, and altering thinking (Stajkovic & Luthans, 1998).

Several researchers have applied SCT in studies similar to the present study. O'Kelley (2019) used SCT to explain the importance of a safety culture at work. A. Newman, Le, North-Samardzic, and Cohen (2019) integrated moral disengagement with SCT and work outcomes. Cao and Chen (2019) explored SCT and how training programs at work can positively impact performance at work. Domino et al. (2015) examined the antecedents of individual corporate accountants' perceived personal fit with their organization's ethical climate. Domino et al. (2015) concluded that higher levels of perceived fit to the ethical climate of a firm are associated with higher levels of perceived job satisfaction and organizational commitment.

Ayub, Kokkalis and Masood-ul-Hassan (2017) found a positive relationship between social behavior, self-leadership development, social cognition, and increased

employee performance. Riaz, Xu, and Hussain (2018) examined the effect of thriving at work on innovation behavior via organizational support of innovation. Riaz et al. found that employees' thriving was positively related to organizational support of innovation, which in turn was positively related to innovative behavior. Tu and Lu (2016) noted how ethical leaders could instill confidence in their followers to encourage and empower them especially those who were intrinsically motivated. Chan, Kalliath, Brough, Siu, and Timms (2016) used SCT to examine how work-family enrichment contributes to job and family satisfaction through self-efficacy and work-life balance. Tu, Lu, and Yu (2017) confirmed through the lens of SCT that supervisors' ethical leadership was positively related to employee's moral awareness, moral identity, and job satisfaction. Fatima, Safdar, and Jahanzeb (2017) employed SCT to confirm a strong relationship between participative leadership and employee creativity.

Rival Theories of Social Cognitive Theory

Bandura's (as cited in Kim & Park, 2018) SCT has had important implications in research, yet critics have noted that Bandura failed to fully explain the complexity of human behavior, personalities, and differences. Carillo (2010) noted when exploring SCT that researchers should be cautious with studies that focus on either technological or individual factors when striving to understand and predict outcomes. According to Carillo, other limitations of SCT include high emphasis on self-efficacy to explain SCT, interinfluence of outcome expectations, lack of emotional considerations, and unexplored effects.

In the current study the rival theoretical frameworks that I considered include expectancy-value theory, attribution theory, goal orientation theory, and self-determination theory. According to Cook and Artino (2016), expectancy-value, attribution, goal orientation, and self-determination are some of the frameworks that compete with SCT in explaining human behavior. The main premise of expectancy-value theory is that within a domain an expected outcome is driven by individuals with higher belief in the success of that outcome and task value (Soyoung & Sungchan 2018). Although SCT and expectancy-value theory have some similarities, the theories differ. According to Bandura (1997), efficacy expectations in SCT refer to people's perception of their abilities, whereas expectations for success in expectancy-value theory refer to people's beliefs regarding the effectiveness of particular outcome. In attribution theory, learners try to explain an event after it occurs (Cook & Artino 2016). However, in SCT, self-efficacy beliefs are the key drivers of motivation (Bandura, 1989). In goal orientation theory, individuals can either engage in mastery or performance orientation to define accomplishment and judge perceived competence (Cook & Artino, 2016). In self-determination theory, learners function optimally when the universal psychological needs of competence, relatedness, and autonomy are supported (Jacobi, 2018). Bandura (1989) emphasized that many conceptual systems are focused on terminology, but they remain prescriptively ambiguous regarding how those systems affect psychosocial changes. However, to understand the competencies, self-regulatory capabilities, and self-efficacy aptitude, researchers can follow the guidelines of SCT. Bandura (1989) also

demonstrated that self-efficacy has significant predictive powers and may have important implications for motivating human performance in organizations.

Self-Efficacy

Self-efficacy is an underlying characteristic of SCT self-reflective capability (Bandura, 1989). Self-reflective capability is the ability to analyze experiences, gain specific knowledge, and deal with environmental realities efficiently (Bandura, 1989). According to Bandura (1989), a person's capability to exercise some measure of control over their functioning and environment events is self-efficacy beliefs. Self-beliefs influence an individual choice, effort, and perseverance in difficult situations. Individuals with strong self-efficacy focus on skill mastery, and those with self-doubts focus on failures (Bandura 1989). Self-efficacy from an organizational context is a person's view of their ability to effectively fulfill a given task (Muslichah, 2018). Self-efficacy has also emerged as a significant construct that may explain work-related effectiveness (Consiglio, Borgogni, Di Tecco, & Schaufeli, 2016). Self-efficacy is at the core of human motivation and accomplishments (Chen, Li, & Leung, 2016). For employees to accomplish their goals and meet organizational objectives, they need to trust in themselves and believe in their abilities (Favero, Meier, & O'Toole, 2016).

Self-efficacy includes three dimensions: generality, magnitude, and strength (Bandura, 1997). Generality refers to how success or failure influences self-efficacy beliefs. In organizations, generality is the experiences an employee develops conducting specific tasks (Stajkovic & Luthans, 1998). Magnitude is the behavioral steps an individual takes to complete a task successfully. Magnitude is also how an employee

rates individual performance (Stajkovic & Luthans, 1998). Bandura (1997) noted strength is an individual's confidence at completing the various components of a task at various difficulty levels. To fully understand self-efficacy, researchers should explore the three dimensions (Bandura,1977).

Bandura (1986) noted four levels of experience in the development of self-efficacy: enactive mastery, vicarious experiences, verbal persuasion, and physiological arousal. Bandura (1986) explored the hierarchy of influence in developing self-efficacy. The hierarchy starts with enactive mastery with the most substantial force followed by vicarious experiences, verbal persuasion, and physiological arousal. Enactive mastery requires interest and willingness to learn and complete a task. Snell, Sok, and Danaher (2015) noted that satisfaction with a particular task creates mastery of that specific task. However, failure in a task can create negative self-efficacy, and individuals tend to avoid such tasks in the future (Snell et al., 2015). Vicarious experiences observe and emulate modeled behavior to produce an exact result (Bandura, 1977). Verbal persuasion convinces a person of their capability to perform a task (Bandura, 1982). Verbal persuasion also influences efficacy perceptions in some situations. Physiological arousal refers to the importance of overall health and well-being in developing and maintaining self-efficacy (Bandura, 1982). To assess self-efficacy, an individual’s perceptions of their physiological state or emotional state are important. For example, an individual in a negative arousal state may interpret the arousal as debilitating fear and feel excessively vulnerable to failure. A positive mood enhances the self-efficacy of the individual. According to Bandura (1989), although these experiences sway efficacy attitudes, it is the

individual's cognitive assessment of experiences that eventually determine self-efficacy. As a result, self-efficacy is an initial apprehension of performance capability coerced through the assimilation and integration of performance determinants.

One of the main concerns relating to self-efficacy is not having a clear definition of the construct and how it is measured (Cetin, 2016). Another issue is the confusion among related constructs such as outcome expectancy pertaining to self-efficacy (Nimri, Bdair, & Al Bitar, 2015). Motivation is a key framework used to explain outcome expectancy (Nimri et al., 2015). Outcome expectancy is when an individual believes that their efforts will lead to successful performance or outcomes (Victor, 1964). Bandura (1986) counteracted these arguments explaining self-efficacy expectancies are recognizable, but the types of outcomes people anticipate are influenced strongly by self-efficacy expectancies. Self-efficacy has also been confused with related constructs such as self-esteem (Wright, O'Halloran, & Stukas, 2016). Although somewhat similar, self-efficacy differs from self-esteem in that self-esteem refers to a more general level of self-confidence, and feelings of adequacy, whereas self-efficacy, refers to a person's belief in specific task completion (Gist, Schwoerer, & Rosen, 1989). For example, an employee may have low self-efficacy for training a new employee, but this will not cause any negative feelings of perceived self-worth.

In the literature, researchers provided different possibilities to measure self-efficacy (Lyons & Bandura, 2018). Bandura (1989) noted that self-efficacy measurement requires that individuals respond yes or no to whether they are capable of performing a specific task. Nevertheless, many criticisms emerged from Bandura's measurement

process. Eastman and Marzillier (1984) questioned whether individuals could accurately predict their behavior. Other factors such as task complexity, assessment timing, ambiguous feedback, participants' experience also discredited the self-efficacy to performance relationship (Eastman & Marzillier, 1984). The main focus according to Gist et al. (1989), is that researchers need to determine whether low correlations between self-efficacy, and performance are due to task complexity or assessment of task familiarity.

Self-efficacy applies to the work setting (Newman, Tse, Schwarz, & Nielsen, 2018). Self-efficacy research is applicable in almost any work environment, with any task, and any individual demographic (Bandura, 1982). Hidayah Ibrahim, Suan, and Karatepe (2019) examined how self-efficacy reconciled with supervisor support and work engagement. Black, Kim, Rhee, Wang, and Sakchutchawan (2019) explored how self-efficacy and emotional intelligence influence team cohesion. Moreover, evidence has linked employee self-efficacy and performance outcomes (Yaakobi & Weisberg, 2018). Lee, Patterson, and Ngo (2017) investigated how personal self-efficacy increases productivity for front line employees in Vietnam. The researchers found support for positive productivity and customer satisfaction relationship. Von Thiele Schwarz, Hasson, and Tafvelin (2016) focused on how leadership training improved self-efficacy and increased safety and productivity amongst employees. Beltran-Martin, Bou-Llusar, Roca-Puig, and Belen Escrig-Tena (2017) used data from 102 Spanish professional service firms to examine how high-performance work systems contributed to enhancing proactive employee behaviors through role scope and self-efficacy. The above examples

can be extremely beneficial for organizations if employers can develop and improve their employees' self-efficacy beliefs by focusing on the four primary sources noted by (Bandura, 1982). Utilizing self-efficacy sources (performance outcomes, vicarious experiences, verbal persuasion, and emotional arousal) can help improve employee's effort, persistence, goal setting, and performance on specific tasks.

Employee Engagement

The phenomena of employee engagement are a common research topic by academic researchers and organizational business leaders (Meintjes & Hofmeyr, 2018). Employee engagement has emerged as a critical measurement tool that organizations deem essential to assess competitive advantage (Al Mehrzi & Singh, 2016). Bhatt and Sharma (2019) noted that all organizations should be aware of the importance of employee engagement. Kahan (1990) examined why individuals focus their energies on the performance of work roles. According to Kahn (1990), employees' engagement is a collective force to physically, mentally, and emotionally perform in their job roles. Kahn (1990) also proposed three psychological conditions under which work engagement is likely to occur: psychological meaningfulness, safety, and availability. Psychological meaningfulness is the feeling of being useful and valuable at work (Ugwu & Onyishi, 2018). Safety is experiencing little or no fear of self-image or consequences during job tasks (Binita & Usha, 2016). Availability is the level of emotional and physical resources available for investment into performance (Byrne, Albert, Manning, & Desir, 2017). Schaufeli and Bakker (2002) coined the second prominent definition of engagement. The authors expounded on the construct and focused on three key behaviors, vigor,

dedication, and absorption. Vigor refers to high energy, emotional resilience, and willingness to invest in more effort during work (Reis, 2016). Dedication involves enthusiasm, pride, inspiration, and challenge (Tomás, Santos, Georgieva, & Enrique, 2018). Absorption refers to a state of being completely concentrated and highly engrossed in a job role where time passes unbeknownst to an employee with no detachment difficulty (Schaufeli et al., 2002). The varying definitions of the construct by researchers also highlighted both inconsistencies and consistencies. The inconsistences noted amongst researchers encompass the conflicting views of how and when engagement occurs in an organization (Shuck & Wollard, 2010). Consistencies is engagement manifested and measured behaviorally (Kahan 1990). Another consistent belief is that employee engagement is about adaptive behaviors purposefully focused on meeting or exceeding organizational outcomes (Shuck & Wollard, 2010).

Researchers often describe disengagement as the opposite of engagement (Eriksson, 2016). Kahn (1990) was one of the first researchers to explore disengagement as influences on employees. According to Kahn (1990), disengagement is the withdrawal of physical, cognitive, and emotional absence from work roles to protect oneself from threats. The definition of disengagement postulated by Kahn (1990) also appears similar to that of burnout. Job burnout is the chronic, emotional, and interpersonal stressors on the job with three dimensions of exhaustion, cynicism, and a sense of inefficacy (Dishon-Berkovits, 2018). Exhaustion is a cognitive and emotional distancing from work roles (Anitha & James, 2016). Cynicism represents a negative and insensitive attitude towards coworkers and job tasks (Yasin & Khalid, 2015). Inefficacy resembles a feeling of

ineffectiveness to accomplish given tasks (Michailidis & Banks, 2016). Bandura (2016) also explored the impact of disengagement from an SCT standpoint and coined moral disengagement. Another SCT approach posited by Heald (2017) is that individuals are moral agents, constantly self-monitoring and regulating their actions and self-reactions based on an internal moral ruleset. Consequently, self-regulation of behavior impacts cognitive processes like moral disengagement (Minna-Maaria & Anna-Maija, 2019). Bandura (2016) identified moral disengagement mechanisms that affect the self-regulatory process in three critical ways. The first critical impact on self-regulation is cognitive construal, or making negative actions seem less unethical. The second is obscuring or distorting the adverse effects of ones' actions on others. The last mechanism is reducing identification with or dehumanization of the targets of one's harmful behavior. Cognitive construal, distorting, and identification reduction can be disengaging and can even impact organizations financially (Moore, Detert, Trevino, Baker, & Mayer, 2016).

Researchers have concluded that both organizational and individual factors can hinder employee engagement and productivity (Desmidt, 2016; Van Wingerden, Derks, & Bakker, 2017). Organizational factors that impede employee engagement include a lack of job resources such as management support (Srivalli & Mani Kanta, 2016). Inefficient equipment and technology can also decrease engagement and productivity (Sadatsafavi, Walewski, & Shepley, 2015). Interpersonal factors such as lack of management care for professional development may inhibit employee engagement (Tladinyane & van der Merwe, 2016). According to Hsieh and Wang (2015), low levels

of trust from management on completing tasks can impede engagement. From an organizational context, leadership ineffectiveness can limit employee engagement (Stander, de Beer, & Stander, 2015). Organizations can also limit engagement by allowing poor leadership style and miscommunication or lack of communication (Kang & Sung, 2017; Tucker, 2017). Engagement inhibitors can also include stress at work (Park & Jang, 2017). Byrne and Canato (2017) also explained how non-work-related factors such as work-life balance could diminish work engagement. Another inhibiting factor of individual engagement includes the lack of necessary fit or skill (Sulistiowati, Komari, & Dhamayanti, 2018). Khan (1990) also explored the inhibitors of engagement by looking at the factors that diminish psychological safety, psychological meaningfulness, and psychological availability. Employees exposed to discrimination, mistrust, and harsh criticism will compromise psychological safety (Vich & Kim, 2016). According to Kim and Park (2017), if employees cannot freely share their knowledge, quickly learn, and take risks to build their entrepreneurial abilities, their engagement level may decrease. To achieve psychological meaningfulness, employees must feel physically, cognitively, or emotionally in job roles (Song et al., 2017). According to Peral and Geldenhuys (2016), psychological meaningfulness is a state that specifically relates to the positive feeling that work is worthwhile or essential. Taking away an employee's ability to complete tasks or make work meaningful will diminish psychological meaningfulness and extension engagement. Psychological availability is defined as an individual's belief in the physical, emotional, or cognitive resources to engage oneself at work (Kahn, 1990). Factors that can inhibit psychological availability include personal resources, work

role insecurities, and out of work activities (Byrne, Peters, & Weston, 2016). All of these factors mentioned above have the potential to inhibit employee engagement.

The issue of employee engagement is a critical factor for organizational leaders (Al Mehrzi & Singh, 2016). Employees are knowledge-based assets, or critical determinants of an organization's ability to maintain a sustainable competitive advantage (Cabrilo & Dahms, 2018). In the literature, numerous researchers found a positive relationship between employee engagement and productivity (Al Mehrzi & Singh, 2016; Daneshgari & Moore, 2016). Further research of the literature also indicated that organizations with highly engaged employees are more profitable than companies with disengaged employees (Albrecht, Breidahl, & Marty, 2018; Shirin & Kleyn, 2017). Analysis of the research indicates that employees become engaged in work; management must be aware of key success factors. Success factors include facilitating sufficient resources for employees, including training (Memon, Salleh, & Baharom, 2016). Another success factor includes promoting visionary leadership to engage employees to feel motivated, emotionally attached and committed to the vision (Popli & Rizvi, 2015). Likewise, effective stress management policies, such as supervisor support, can help employees understand and manage stress (Horan et al., 2018). Additionally, advocating for flexibility and work-life balance services focuses on creating and sustaining a healthy mix of work, personal life, and personal pursuits to support each person's need for work-life effectiveness (Cain, Busser, & Jung, 2018). Facilitating a culture of trust by opening up information and gathering feedback from employees, managers can earn employee trust (Marouf, 2016). Trust provides a clear, consistent message with the appropriate

level of information for effective communication (Walden, Jung, & Westerman, 2017). One of the most critical success factors to engage employees is job crafting (Vogel, Rodell, & Lynch, 2016). Vogel et al. (2016) noted that job crafting involves customizing employee jobs by actively changing tasks and interactions with others. Welbourne, Gangadharan, and Esparza (2016) noted that managers should encourage support programs to limit incivility at work.

Employee Productivity

Employee productivity is an essential factor in every organization (Jacobs, Kraude, & Narayanan, 2016). To a large extent, profit and loss depend on labor productivity (Tavassoli & Karlsson, 2016). However, in academia and practice, an exact definition or measurement of employee productivity has not fully emerged. From a historical context, the definition of productivity developed from the manufacturing industry (Sink, 1985). According to Sink (1985), productivity is the ratio between outputs and inputs, where the inputs comprise all factors utilized to produce the output demand. Productivity is also how efficiently an organization uses resources to meet company goals (Lee et al., 2017). Aboelmaged (2018) explored how the traditional ideals of productivity may not apply to non-manufacturing organizations. For example, non-manufacturing organizations rely on knowledge work, as compared to routine manual work. Critical determinants of knowledge work productivity inputs include motivation and creativity, while outputs involve the appreciation of services (Aboelmaged, 2018). Variables such as motivation, creativity, and service outcomes incorporate both quality and quantity aspects to productivity. However, according to Aboelmaged (2018), quality aspects complicate

productivity in an organization. Berhe, Abebe, and Azene (2017) argued that organizations need to define and measure productivity accurately.

Employee productivity is a critical factor that increases overall business profitability (Street & Lacey, 2019). As a result, organizations tend to focus on how to measure and analyze the critical success factors that increase profitability (Black & La Venture, 2017; Pelinescu, 2016). If employee productivity is not measured accurately, there is an increased risk of incorrect forecasting, resource allocation, and financial loss (Strömberg, Aboagye, Hagberg, Bergström, & Lohela-Karlsson, 2017). However, there is no clear definition or standard measure of employee productivity (Walsh, Walgenbach, Evanschitzky, & Schaarschmidt, 2016). According to Public Health England (2015), researchers define productivity from three approaches; economist, accountant, or manager. The economist approach is a productivity measure utilizing the ratio of outputs to inputs expressed in real, quantifiable units. The accountant method focuses on the financial efficiency of organizations using financial ratios. The manager method measures intangible factors, including the quality of output, work disruptions, absenteeism, turnover, and customer satisfaction (Public Health England, 2015). Palvalin, Vuolle, Jääskeläinen, Laihonen, and Lönnqvist (2015) noted, however, the complexity of jobs tasks, the different types of jobs, and the workplace environment makes it difficult to measure productivity. Historically, productivity measurement focused on quantifying inputs to outputs (Drucker, 1999). However, according to Yuri and David (2004), the need to quantify the intangible aspects of productivity made it difficult to measure overall productivity. For example, it is highly problematic in the service industry to measure the

impact of productivity based on intangible service outcomes such as customer satisfaction (Walsh et al., 2016). Another difficulty also arises from how knowledge worker productivity is measured (Moussa, Bright, & Varua, 2017). According to Franssila, Okkonen, and Savolainen (2016), job type and task vary significantly among personnel, making it difficult to capture with a single measurement method. There are also challenges in the technical design of knowledge work productivity measures (Brochner, 2017). Many of these challenges relate to capturing outputs. It is not easy to define a standard output unit when the content of work varies. Moreover, in the literature, broad categories of measurement approaches are available instead of specific measurement methods. For example, subjective productivity measurement (SPM) is a measurement approach where researchers collect information about productivity through a questionnaire or an interview targeted to an interest group such as employees or managers (Strömberg et al., 2017). Self-report measures of productivity are the most common subjective measure, and these attain an individual-level view of productivity (Palvalin et al., 2015). However, Moussa et al. (2017) stated that subjective measures are appropriate when measuring factors that affect performance, whereas objective measures are suited for assessing output. Output productivity is the ratio of outputs to associated inputs expressed in real, quantifiable units (Sink, 1985). Another measurement approach is multidimensional measurement. According to Christ, Emett, Tayler, and Wood (2016), multidimensional measurement involves examining the quantity, quality, tangible and intangible tasks in unison. Finally, researchers use DEA statistical methods to analyze data where knowledge-workers' have similar roles (Lee & Johnson, 2015). To measure

productivity, researchers need to be aware of the many different factors that drive productivity (Walsh et al., 2016). Palvalin et al. (2015) acknowledged a no one-size-fits-all measure of productivity because of the organization's different units, industries, or sectors.

The physical office environment can impact employee productivity (Haynes, Suckley, & Nunnington, 2017). Researchers have found that aspects such as openness, noise, lighting, and temperature can affect productivity (Otterbring, Pareigis, Wästlund, Makrygiannis, & Lindström, 2018; Sharif, Zafarmand, Naeini, & Etemadi, 2016). Ankler (2014) noted how 69% of generation Y workers reported increased productivity based on office layout. The work environment is particularly relevant to this study due to the changing workspaces. According to Chadburn, Smith, and Milan (2017), the work environment changed from the industrial economy to a knowledge-based office environment, where workers currently apply learned experiences, collaboration, and personal drive. Moreover, significant technological growth advancements such as smartphones, video conferencing, and email communication have encouraged a shift in the working environment (Laitinen & Valo, 2018). As a result of the growth of knowledge-based industries and rapid development in technologies, there has been an essential change in the workspace's nature. For example, the workplace has evolved in the twentieth century from the first concept of a dedicated space to a cubicle office system, team-space offices, remote or work from home (Chadburn et al. 2017; Reis, 2016). However, the office environment's productivity measurement is challenging because of the definition of inputs and outputs in a modern office or remote office.

Haynes, Suckley, and Nunnington (2017) explored how environmental factors in the office environment could impact productivity. The authors focused on: (a) ratings perceived productivity, (b) cognitive performance tests (e.g., working memory, processing speed and concentration), (c) monitoring computer activity (e.g., keystrokes and mouse clicks), (d) absenteeism, (e) presenteeism, (f) reported frequency of health issues, (g) time lost to issues affecting productivity, (h) mood, (i) sleepiness, (j) job satisfaction, (k) job engagement, (l) intention to quit, and (m) turnover. Although there appear to be no universally accepted means of measuring office productivity, there does seem to be an acceptance that a self-assessed measure of productivity is better than no measure of productivity (Palvalin et al., 2015).

Knowledge Worker

Knowledge workers play an integral role in business productivity through their knowledge, skills, and abilities (Heidary, Ghezel, & Shojai, 2018). According to Upadhyay, Singh, Jahanyan, and Nair (2016), knowledge workers are critical drivers for strategic competitiveness as they contribute to an organization's performance. A knowledge worker is a concept first developed by Drucker (1999), who recognized that knowledge workers provide intangible outcomes for organizations. According to Drucker (1999), knowledge workers are top tier employees who use formal education to enhance or add to new products and services. Igielski (2017) noted that knowledge workers, in some instances, might not rely on formal education but experience and independent thinking. According to Shujahat et al. (2017), knowledge workers are highly intellectual agents who create and utilize knowledge to develop new products and services. For

example, analysts, programmers, software engineers, designers, concept designers, and managers are knowledge workers. Knowledge workers also use learned experiences to focus on customer expectations, solutions, and future demands (Kach, Azadegan, & Wagner, 2015). Additionally, knowledge workers renew knowledge through continuous learning. Drucker (1999) noted the six determinants of knowledge-worker productivity are task identification and knowledge-orientation, autonomy, continuous innovation, continuous learning and teaching, equality of quality and quantity, and knowledge workers are intellectual assets rather than cost. Consequently, according to Castaneda, Pardo, and Toulson (2015), knowledge-workers' outputs abstract nature may cause an enormous challenge to implement measurement systems. However, Kao (2017) found at the group level knowledge workers can positively influence self-efficacy and affect change-oriented organization behavior.

Virtual Work

In the United States, virtual employment is on the rise (Wu & Zhang, 2014). In 2015, 29% of employed people did some or all of their work at home (Bureau of Labor Statistics, 2018). Information technology has created new organizational structures for employees to work more efficiently at a reduced cost for businesses (Kumpikaitė-Valiūnienė et al., 2014). For example, virtual teams can lower costs by connecting interdependent workers worldwide without incurring travel expenses or relocation costs (Wu & Zhang, 2014). According to Kim and Gatling (2018), a standard definition of virtual work has not emerged from the literature. Terms such as telework, telecommute, work from home, and work anywhere are used interchangeably. Nyaanga, Ehiobuche,

and Ampadu-Nyarkoh (2013) focused on three virtual work concepts. The first concept is telecommuting, where an employee performs work-related activities from a fixed remote location. The second is remote access computing, in which an employee performs work activities from multiple fixed remote work locations. The third concept is nomadic computing, in which an employee performs work activities from variable remote work locations. Researchers Kirkman and Mathieu (2005) explored three dimensions that together comprise virtual employees. The dimensions include the extent of reliance on virtual tools, informational value, and synchronicity offered by such devices. The first dimension, the extent of reliance on virtual tools, describes the proportion of interaction via virtual means. Informational value is the extent to which virtual tools transmit data that is valuable for effectiveness. Finally, synchronicity is the extent to which interactions occur in real-time or incur a time lag. Ultimately, these three dimensions combine to determine a virtual worker. According to Nurmi and Hinds (2016), the concept of a virtual employee or virtual worker is employees who conduct organizational duties at home as compared to working at a formal centralized office. Virtual employees also rely heavily on computer resources strengthened by web communication technology (Raghupathi, 2016). To be operationally efficient virtual employees will need to be connected via computers, cellular phones, video conferencing, shared databases, and intranet.

Some of the most prominent challenges managers of virtual employees encounter are turnover and low productivity through disengagement (White, 2018). Distrust and ineffective team collaboration also threaten employee engagement (Alsharo, Gregg, &

Ramirez, 2017). Additionally, Marlow, Lacerenza, and Salas (2017) centralized how poor communication negatively influences engagement. Furthermore, with teams in different countries, cultural differences and discriminatory behavior can have a counteractive impact on engagement (Gallant & Martins, 2018). Trust is a crucial success factor in building relationships for cooperative and effective teamwork (Yang, 2014). Bernstrom and Svare (2017) noted that trust characteristics include risk, vulnerability, and uncertainty that team members must overcome to work collaboratively. Mathew and Martin (2016) argued that trust has many benefits, such as increasing team productivity, facilitating the resolution of conflicts and disagreements, and improving effectiveness. However, as organizations become more distributed, developing trust has become a concern. According to Alsharo, Gregg, and Ramirez (2017), trust and collaboration among team members in the virtual setting are difficult to establish. A key challenge is a limited opportunity for traditional face-to-face team interaction. Although Alsharo et al. (2017) noted the challenges of trust and team collaboration in the virtual setting, the authors propose that virtual teams collaborate effectively, team members must establish open communication and effectively share knowledge among each other. In the work environment, communication is a team process that can enhance team performance (Marlow, Lacerenza, & Salas, 2017). Recent advances in technological capabilities have facilitated webs of communication, which propelled the development of virtual teams (Kumpikaitė-Valiūnienė et al., 2014). According to Raghupathi (2016), virtual teams communicate primarily via virtual tools such as e-mail, instant messaging, and web cameras. Consequently, this new way of communication in the virtual setting is

detrimental to various team outcomes. Gheni, Jusoh, Jabar, and Ali (2016) explored how limited or slow internet speed could impact communication and hence team performance. Snyder (2015) explored how online group forums using video conferencing group dynamics were impacted in part by the degree to which employees were comfortable using the technology. Also, the facilitation of the meeting can impact the quality of team interaction. Synder (2015) identified five main dynamics significant to the quality of interaction. The five dynamics include visibility, online group dynamic, quality of sound, technological know-how, and engagement. Virtual team members often come from various organizations, countries, and continents, and perceived cultural differences may impact their self-conception and sense of belonging within virtual teams (Kramer, Shuffler, & Feitosa, 2017). Chumg, Seaton, Cooke, and Ding (2016) conducted a study using data from virtual teams found that perceived differences in national cultures and how people work within the cultures have a significant impact on identification in virtual teams. Cultural differences can also lead to unhealthy racial and national stereotypes, which cause conflict among team members. Han and Beyerlein (2016) noted that managers should have a robust training program to foster building trust, increase cultural awareness, create norms, and share knowledge when conflict arises. Managers should also understand the influence of cultural diversity in teams and develop individual skills to enhance team performance.

Significant growth in globalized markets has made leaders search for innovative opportunities to meet the needs of customers. As a result, organization leaders strategize ways for competitive advantages through downsizing, subcontracting, joint ventures,

strategic alliances, and other collaborative and network-based alternatives, which are typically facilitated by virtual teams (Lilian, 2014). Although there are many challenges to virtual teams, there are some advantages. For example, technological changes have made it possible to manage virtual work at any time globally through different time zones (Dulebohn & Hoch, 2017). Virtual teams can use the best talents because work, knowledge generation, management, and innovation are no longer locally or geographically bound (Olaisen & Revang, 2017). Team members can engage in different projects since some members may have different skillsets and experience (Maduka, Edwards, Greenwood, Osborne, & Babatunde, 2018). According to Lilian (2014), virtual teams can more efficiently respond to the environment's changing requirements by using the latest knowledge, adaptable working arrangements, and taking advantage of the increased application of information and communication technologies. Masuda, Holtschlag, and Nicklin (2017) focused on the positive impacts of virtual employment from an organization, individual, and social perspective. From an organizational context, advantages of virtual employment include: lower absenteeism, increased productivity, and quicker responsiveness to customer needs (Lilian, 2014). From an individual standpoint, virtual employment advantages include increased job satisfaction, reduced work-related expenses, increased self-empowerment, and the ability to get more quality work done (Eddleston & Mulki, 2017). Lastly, advantages of virtual employment to society include conservation of energy, reduction in work-related travel, preservation of the environment, and reduction in traffic-related hazards (Shabanpour, Golshani, Mohammadian, Tayarani, & Auld, 2018).

Organizations are continually developing new ways to improve their competitive advantage by utilizing technology and agile processes (Sénquiz-Díaz & Ortiz-Soto, 2019). However, with the advent of the virtual team's management, organizations are now faced with engagement, goal attainment, and productivity. Although many studies confirmed the positive impact of leadership engagement among face-to-face teams, seldom research theories were applied to managing virtual teams. Similarly, a search of the current literature indicated a gap in studies investigating the relationship between employee engagement, employee self-efficacy, and productivity among virtual teams' knowledge workers. A review of the current literature revealed the need for the current study to fill the research gap.

Transition

The material I presented in Section 1 included: the background of the study, the business problem, and the purpose of the study. Additionally, explained the nature of the study, the research question and hypothesis, the theoretical framework, the study definitions, assumptions, limitations. Lastly, in Section 1 I conducted a critical analysis and synthesis of the literature related to the study’s variables: employee engagement, employee self-efficacy, and employee productivity.

In Section 2, I addressed: the nature and structure of the research study, clarified the role of the researcher, clarify the participants, and outline the research method and design. I provided justification of the population and sampling method, a description of the survey instrument and techniques, and the analysis methods. Finally, I examined the reliability and validity of the procedures of the study. In Section 3, I presented an

overview of the study, the study findings, application to professional practice and implications for social change. I also provided recommendations for action and future research, my reflections, and study summary and conclusion.

Section 2: The Project

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between virtual employee engagement, self-efficacy, and productivity. The independent variables were employee engagement and employee self-efficacy. The dependent variable was employee productivity. The targeted population consisted of virtual business leaders in the United States. Positive social change implications include new ways of working, increased employee productivity, and prosperity. Prosperous employees may be happier and more engaged in community issues such as education, crime prevention, and affordable housing.

Role of the Researcher

Robustness, applicability, and ensuring the correct sample in the data collection process are critical responsibilities of the researcher. Moreover, quantitative studies should be repeatable by others and, under the same conditions, should yield similar results. In correlational studies, the data are collected without regard to the participants or the person collecting the data (Barnham, 2015). My role was to ensure ethical research standards, data consistency, and reliability, and also to mitigate bias. To ensure ethical standards, I participated in all stages of the study, adhered to Walden University guidelines, and secured approval from the Institutional Review Board (IRB) prior to commencing the study.

In conducting this study, I adhered to the three ethical principles identified in the Belmont Report: respect an individual’s right to make their own decisions, show

beneficence toward participants, and provide justice through equal treatment (U.S. Department of Health and Human Services, 1979). Respect for persons requires participants to enter the research project with sufficient information about the study and the knowledge that participation is voluntary (U.S. Department of Health and Human Services, 1979). Beneficence refers to maximizing the benefits of participating while minimizing risks of the individuals participating in the study (Strickland & Stoops, 2018). The principle of justice ensures fairness in the selection of participants (Williams & Anderson, 2018). I ensured the three principles were met by confirming participants were aware of their right to voluntarily participate or not participate in the study. The ethical considerations noted in the Belmont Report are important, but researchers should also keep personal beliefs and biases out of the study. I treated the participants with professionalism and honesty to promote trust in the research process. I used quantitative strategies in this study to reduce potential bias.

I am a knowledge worker with over 6 years of experience working virtually. Despite having access to the participants, I had no personal relationship with any of the virtual participants in the professional Slack group. The participants were not my subordinates, and I did not pressure or coerce the participants to participate in the study. My role as the researcher was not to associate with any other role or responsibility related to the participants. Although I work virtually, I had an obligation to maintain objectivity when collecting data from the population. According to Kaur (2016), objectivity means reaching to the truth while removing opinions, perceptions, and experiences. I collected the data anonymously through an online survey to mitigate bias. Online surveys reduce

both financial and time costs, enable the surveying of large groups, and offer a wide range of research tools at a high level of anonymity (Pecáková, 2016).

Participants

An excellent choice of study participants serves the vital purpose of ensuring study findings accurately represents the population of interest (Rezigalla, 2020). For this study, the participants consisted of virtual employees who are members of a work-from-home Slack group. The virtual employees included a combination of full-time and contracted employees who work in various industries with varied job roles. To be eligible, the participants in this study needed to be a current member of work-from-home Slack group, a virtual employee, at least 18 years of age, and able to provide informed consent. According to Michael, Martin, and Sangeeta (2018), eligible study participants are those who have the knowledge and experience to participate and have the ability to understand the context of providing informed consent.

The relationship between researchers and participants is integral to the quality of the research (Cascio & Racine, 2018). My strategy for gaining access to the participants was too work with the group administrator of work-from-home slack group. Work-from-home Slack is a web-based platform collaboration tool to link 3,600 remote workers in different countries. Christensen et al. (2017) noted that web-based recruitment can allow researchers to reach a diverse population quickly and at a low cost.

Celestina (2018) noted that for researchers to maintain a healthy relationship with participants, a high level of trust is required throughout the study to help ensure quality results. To build trust with participants, I focused on a collaborative communication

structure with group administrators and avoided any personal relationships. Additionally, to establish a working relationship with participants, I provided a validated informed consent process. With the administrator's guidance, I sent an introductory post in Slack with a link informing the participants about the study. Also, the link highlighted that participation was voluntary and anonymous. A statement within the participant's consent form also include the focus of the study and my background. Throughout the data collection process, I ensured participants' anonymity was ensured by not including names or personal identifiable information. The IRB telephone number and my email and telephone number were also be provided for questions or concerns about the study. According to Ross, Iguchi, and Panicker (2018), the foundation of human research protections should be firmly grounded in processes that hold human rights as paramount.

Research Method and Design

Research Method

For this study, I selected a quantitative method. The goal of the quantitative researcher is to collect numerical data from a group of people, then generalize those results to a larger group of people to explain a phenomenon (J. Park & Park, 2016). The three research methodologies are quantitative, qualitative, and mixed methods (Makrakis & Kostoulas-Makrakis, 2016). The basic characteristics of quantitative methods include objectivity, testing of theories, researcher independence, deductive process, structure, and accuracy through reliability and validity testing (J. Park & Park, 2016). According to McCusker and Gunaydin (2015), a quantitative method is appropriate when examining variable relationships, producing data in a numeric form to test a theory, and testing

variable relationships. A quantitative approach was appropriate for the current study because I needed to gather and analyze data from a sample population to test a hypothesis regarding variable relationships.

Qualitative methods are effective in developing an in-depth understanding of social behavior (McCusker & Gunaydin, 2015). Kaur (2016) noted that qualitative methods include unstructured interviews, focus group discussion, case study, and participant observation. Further, J. Park and Park (2016) noted that the essential characteristics of qualitative methods include subjectivity and theory development. Plus, the researcher should ensure accuracy through verification and should analyze data through an inductive process (J. Park & Park, 2016). A qualitative approach was not appropriate for my study because the goal was not to gain an understanding of the underlying reasons for using unstructured techniques. Moreover, determining statistically significant variable relationships is not possible using qualitative methods. Mixed methods are the integration of quantitative and qualitative methods to draw on the strengths of each to answer real-life research questions (Kaur, 2016). A mixed-methods approach was not appropriate for my study because the intent was not to develop a theory about a phenomenon and test it. According to Tunarosa and Glynn (2017), researchers use mixed methods to elaborate, clarify, and build on findings from another method. Moreover, the amount of time and effort involved in collecting, analyzing, and validating quantitative and qualitative data is significantly higher than employing only one method.

Research Design

I used a correlational design for this study drawing on multiple regression analysis and Likert-scale data. Researchers use correlational designs to explain how selected variables can predict outcomes in the work environment (Liu, Cho, & Putra, 2017). The goal of using correlational research is to measure two or more variables and then to determine whether there are statistically significant relationships between them (Bryman, 2016; Trochim, Donnelly, & Arora, 2016). The correlational design was an appropriate choice for this study because my aim was to examine the predictive relationship between the independent variables (employee engagement and self-efficacy) and the dependent variable (productivity). The alternative design choices include causal-comparative and experimental. To deduce or discover how and why a particular phenomenon occurs requires a casual-comparative design (Apuke, 2017). Additionally, researchers can use the casual-comparative design to observe difference between groups (Khan & Ramzan, 2019). In contrast, researchers can use the correlational design to examine relationships within a single group (Kim & Hyun, 2017). For the current study, a cause-effect relationship was not relevant because comparisons were within a single group. In exploratory research, the researcher investigates the treatment of an intervention into the study group and then measures the outcomes of the treatment (Apuke, 2017). The three types of exploratory approaches are pre-experimental, true experimental, and quasi-experimental. In a pre-experimental, either a single group or multiple groups are observed after some agent or treatment presumed to cause change (L. Zhang, Difang, Wang, Chen, & Fang, 2018). The quasi-experimental design involves a nonrandom selection of study

participants (Apuke, 2017). The experimental design was not appropriate because the focus of this study was to determine whether and to what degree relationships exist between two or more variables within a population.

Population and Sampling

In research, the targeted population consists of individuals, objects, or institutions that possess common characteristics (Asiamah, Mensah, & Oteng-Abayie, 2017). In the current study, the targeted population consisted of virtual business leaders in the United States. The population consisted of 3,600 potential participants from a professional virtual group. To ensure alignment with the focus of this study, I chose a sample from a population of business leaders who work virtually. The participants were solicited via a message posted from the group administrator. No preference was given to gender, ethnicity, or company. Members who completed the survey were the convenience sample.

The sampling process for this study was convenience sampling. Chaudhary and Lodhwal (2017) argued that an advantage of convenience sampling is limited selection rules that are easiest for the researcher. In convenience sampling, researchers select units from a population they are interested in studying (Setia & Panda, 2017). Researchers also use convenience sampling procedures to select units for inclusion in a sample because it is easy, quick, and cheap (Etikan, Musa, & Alkassim, 2016). However, Etikan et al. (2016) noted that some limitations of a convenience sample include lack of selection rules and not being able to decipher the population the sample group represents. I used the convenience sampling technique to extend knowledge of

the sample population regarding relationships between employee engagement, employee self-efficacy, and overall productivity.

I used G*Power version 3.1.9.2 to conduct a power analysis and determine the minimum sample size for this study. An assessment of the five types of power analysis can be conducted depending on the available resources, the phase of the research process, and the research question. The five types of power analysis are a priori, post hoc, sensitivity, criterion, and compromise analysis. For this study, the a priori method was used. An a priori analysis using an effect size of .15 and α of 05 indicated a minimum sample size of 68 participants to achieve a power of .80. Figure 1 displays the power as a function of sample size. Heidel (2016) concluded that the use of appropriate effect size, alpha level, and power level is necessary for producing valid research results. The use of an effect size of .15, an alpha level of .05, and a power level of .80 ensured a balance between available resources, type I error, and type II error (Cohen, 1992). Researchers examining relationships between employee engagement, employee self-efficacy, and productivity found statistical significance when utilizing an effect size of .15, an alpha level of .05, and a power level of .80 (Huertas-Valdivia, Llorens-Montes, & Ruiz-Moreno, 2018; Kim & Gatling, 2018; Lee et al., 2017; Lu, Xie, & Guo, 2018). An effect size of .15, an alpha level of .05, and a power level of .80 were appropriate to use in this study.

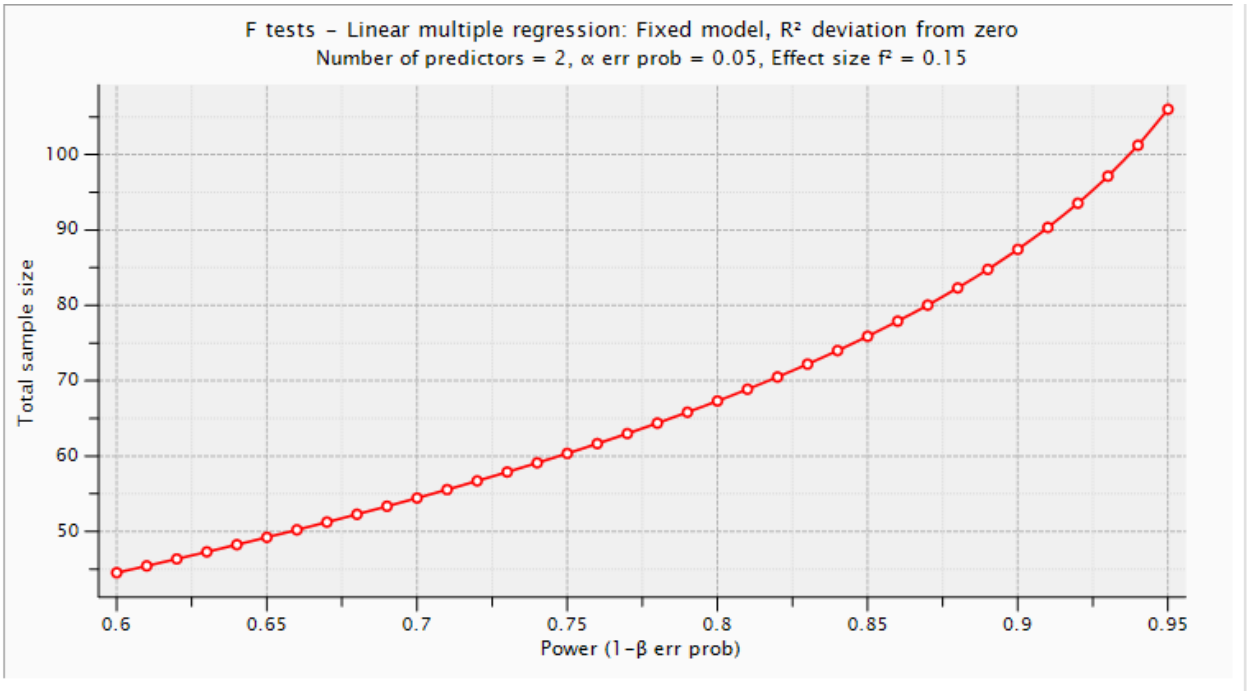

Figure 1. Power as a function of sample size.

Ethical Research

It is important for researchers to take responsibility for the people and organizations that are the recipients of the research activities (Wallace & Sheldon, 2015). The informed consent is an essential component of the data collection phase of the research project and involves a complete description of the research. According to Lokesh et al. (2013), the critical elements of an informed consent should include (a) statement that the activity is research, (b) purpose of the study, (c) study procedures, (d) duration, (e) potential risks, (f) confidentiality, (g) compensation if necessary, (h) contact persons, and (i) statement of voluntary participation. I stated the study's risks, benefits, procedures, voluntary participation, and statement of informed consent in the informed consent letter. According to Perrault and Keating (2018), the informed consent is a required document explaining rights and responsibilities of participants in a study.

One of the main principles of an ethically sound study is the right to withdraw (Gainotti et al., 2016). I informed participants that they could withdraw from the process at any time without any penalty by contacting me by phone or email. A small number of prepaid incentives is known to be an effective strategy to improve survey participation (C. Zhang, Lonn, & Teasley, 2017). However, compensating study participants may coerce or unduly influence them (Gelinas et al., 2018). Participants did not receive any compensation or any other incentives for participation in the current study. In the online survey process, different degrees of ethical concern regarding privacy, transparency, confidentiality, and security may arise (Gupta, 2017). I ensured the ethical protection of participants by maintaining anonymity through an online survey process. The principle risks involved in online surveys are a breach of confidentially and violation of privacy (Zhao, Li, Xue, & Ahn, 2016). Confidentiality and privacy help support respect for persons and beneficence, which are principles identified in the Belmont report (Wallace & Sheldon, 2015). I protected the identity of research participants and research data by using data encryption. I protected the participant's anonymity by utilizing an online survey process with the cookie-collection function disabled to prevent the recording of personal identifying participant markers and to delink participant identifiers from research data. I protected the identity of research participants and research data by using data encryption. I protected the participant's anonymity by utilizing an online survey process with the cookie-collection function disabled to prevent the recording of personal identifying participant markers and to delink participant identifiers from research data. I stored raw data, informed consent, and research results on an encrypted password-

protected computer flash drive. The file will remain safe for five years following the study's conclusion to protect participant confidentiality. The destruction of data occurs after five years from the dissertation approval date. After that date, the data collected will be shredded or erased. The Walden University IRB approval number for this study is (04-06-20-0575802).

Data Collection Instruments

To measure the independent variables, I used quantitative survey instruments by adopting versions of the Utrecht Work Engagement Scale UWES (Schaufeli & Bakker, 2003), and the Work Self-Efficacy Scale (Schyns & Collani, 2002). To measure the dependent variable, I used the SmartWOW questionnaire (Palvalin et al., 2015). The Utrecht work engagement scale instrument (see Appendix A) quantifies employee engagement. The Utrecht Work Engagement scale is free for use for non-commercial scientific research. To use the survey for Commercial and non-scientific researchers need written permission. The occupational self-efficacy scale assesses perceptions in the work domain (Schyns & von Collani, 2002). The creators provided approval to use the occupational self-efficacy scale (see Appendix E). The SmartWow questionnaire measures knowledge workers' productivity (Palvalin et al., 2015). The creators provided approval to use the SmartWow questionnaire (see Appendix D).

The Utrecht Work Engagement Scale measures three constituting dimensions of work engagement: vigor, dedication, and absorption. Schaufeli and Bakker (2003) conducted a psychometric analysis on the UWES scale, and the results confirmed factorial validity, high correlated dimensions, high internal consistency, cross-national

validity, and stability. For example, Schaufeli and Bakker (2003) found that the tool Cronbach's alpha measured internal consistency reliability ranged from .80 to .90. According to Lathabhavan, Balasubramanian, and Natarajan (2017), psychometric analysis improves or validates almost any instrument that measures human behavior, performance attitudes, abilities, or personality traits. Psychometric analysis is essential when an instrument produces a score for high stakes decisions in organizations, such as performance reviews (Mercado, Giordano, & Dilchert, 2017). Probst, Petitta, and Barbaranelli (2017) used psychometric analysis to explore the impact of culture audits in various organizational settings. Jangl (2016) verified the psychometric properties of their instrument to measure management effectiveness in European cultural conditions effectively.

Employee Engagement was measured using a 9-item short version of the Utrecht Work Engagement Scale. Cronbach's α of the instrument, including all nine items, varies from .89 to .97 (Schaufeli, & Bakker, 2003). I utilized the UWES 7-point response Likert-type scale to collect ordinal data for each of the three dimensions of engagement. The scale includes three sub-dimensions: vigor (3 items; e.g. "At my job, I feel bursting with energy"), dedication (3 items; e.g., "I am enthusiastic about my job") and absorption (3 items; e.g., "I get carried away when I am working"). The mean scale score of the three UWES subscales computed by adding the scores on the particular scale and dividing the sum by the number of items of the subscale involved. Hence, the UWES yields three subscale scores and a total score that range between 0 and 6. The Utrecht work engagement scale is reliable, valid, and used in several research studies to measure

employee engagement (Kulikowski, (2017; Ladyshewsky & Taplin, 2017; Vallières, Mcauliffe, Hyland, Galligan, & Ghee, 2017). The UWES was appropriate for this study because of its applicability to measuring employee engagement.

Employee self-efficacy was measured using the short 8- item version of the Occupational self-efficacy scale (OCCSEFF) (Schyns & Collani, 2002) (see Appendix B). The authors granted approval to use (OCCEFF) (see Appendix E). The scale was created to represent different aspects of mastery, optimism and self-efficacy expectations in the work domain. Confirmatory factor analysis (CFA) was conducted on this scale to determine the construct validity of the instrument. According to Safdari (2017), CFA allows researchers to evaluate the degree to which their pre-established measurement theory is consistent with actual data produced by the respondents. The eight items of the short form showed an excellent fit for a measurement model (Schyns & Collani, 2002). Additionally, Cronbach's alpha, a measure of internal consistency reliability was .88. I utilized the (OCCSEFF) Likert-type scale with six categories ranging from 1 (completely true) to 6 (note at all true) and collected ordinal data. High values indicate high occupational self-efficacy.

The OCCSEFF is a useful instrument for determining employee self-efficacy and has been used in many studies. For example, Chiesa, et al. (2016) noted how the OCCSEFF could aid as a tool to help management in assessing the self-efficacy of interviewees with great accuracy and reliability. In essence, selecting the right candidate and screening out the individuals with low self-efficacy beliefs will likely result in poor subsequent performance. Maggiori, Johnston, and Rossier (2016) highlighted differences

between groups showing variability in the relationship between personality, job strain, and occupational self-efficacy, and their effects on job satisfaction.

Employee productivity was measured using the SmartWow tool (see Appendix C). The SmartWow tool developed by Palvalin et al. (2015), is a subjective measure of worker productivity. The creators provided approval to use the tool (see Appendix D). The SmartWoW tool includes contextual factors, personal ways of working, well-being, and productivity. According to Palvalin et al. (2015), contextual factors and personal working methods are performance drivers. Well-being and productivity measure results and outcomes. Contextual factors include a physical location, virtual and social workplaces, and organizational context (Palvalin et al., 2015). Social workplace measures whether knowledge workers are supported or allowed to have autonomy and utilize new ways of working in terms of attitudes, typical routines, policies, and organizational habits (Palvalin et al., 2015). Social environment refers to cognitive constructs, thoughts, beliefs, and mental states that employees share (Palvalin et al., 2015). Well-being at work is overall job satisfaction, work engagement, stress, appreciation, and work-life balance (Palvalin et al., 2015). Productivity is measured by statements related to work efficiency and effectiveness, achieving results, goals, utilizing skills, quality of work, customer satisfaction, and team performance (Palvalin et al., 2015). The questionnaire consisted of the virtual workspace (6 items), social, organizational workspace (9 items), personal workspace practices (10 items), and productivity (7 items). The creators conducted Cronbach's alpha in different dimensions of SmartWoW. Palvalin et al. (2015) concluded that α in their study was relatively over 0.5, which is the minimum requirement.

Furthermore, each construct except for the virtual workplace exceeds the limit of 0.7, which is usually considered acceptable (Palvalin et al., 2015). Scoring consisted of a five-point Likert scale from 1 (disagree) to 5 (agree) to collect ordinal data.

he SmartWoW tool wasis an appropriate instrument for this study because it can be a part of a managerial toolbox of knowledge-intensive organizations. Moreover, according to Palvalin (2017), SmartWoW is useful for evaluating an organization's current work environment and practices and measuring the effects of work environment changes. SmartWoW tool can also provide managers information on the current state of the work environment, individual work practices, well-being at work, and productivity (Palvalin, 2017). Previously there has not been a tool that combines all these dimensions, which is vital with significant work environment changes.

I used construct validity to address validity within the study to measure the significance of the data collection instruments related to employee engagement, employee self-efficacy, and productivity. The use of construct validity involves testing a scale against theoretical hypotheses (Pallet, 2013). In essence, construct validity determines whether or not items measure the intended constructs (Kandiko, Howson, & Buckley, 2017). Construct validity processes were a critical step in measuring the validity of UWES, OCCSEFF, and SmartWoW to ensure that the measured constructs had the correct observed relationships.

The strategy for addressing reliability within the study was to use internal consistency by calculating Cronbach's alpha for each subscale and each total scale. Cronbach's alpha is useful for testing internal consistency in scales used in previous

research studies and is used to determine if constructs are right measurements (Pallent, 2013). Cronbach's alpha is also a prevalent method of addressing reliability in research studies that involve attitudes and perceptions (Fabio Sprada De Menezes & Antonio Augusto de Paula Xavier, 2018).

Data Collection

For this study, I used an online survey process via SurveyMonkey to obtain ordinal data from a sample population to test the hypotheses regarding independent variables of employee engagement, and employee self-efficacy and the dependent variable productivity. According to Keusch (2015), the use of self-administered questionnaires can help improve our understanding of the influence of different societal-level factors, characteristics of the sample, and the survey design attributes. Self-administered questionnaires are cheaper and quicker to administer, convenient, and reduce interviewer effects (Bryman, 2016). SurveyMonkey's use provides researchers with an effective online survey medium that minimizes cost (Phillips, 2015). Using a self-administered online survey via SurveyMonkey, it was appropriate to obtain ordinal data from a sample population to test a hypothesis regarding the relationship between the study's identified variables.

For the survey to be useful, the process must be well-planned and carefully executed. I collaborated with the Slack group administrators to send out a group posting. The posting also contained a link to a SurveyMonkey URL where each participant accessed the survey from their work computer. The group posting provided information about the study and stress that participation was voluntary and confidential. The

participants read and acknowledged that they understood the study conditions before clicking on the survey. Participants that did not take part in the survey disregarded the group posting on the Slack group platform. SurveyMonkey is an Internet facilitation and hosting site that enables a person to develop a survey for use over the Internet (Ramanathan & Faulkner, 2015). The site also allows for data integration into SSPS for analysis and question randomization. I collected the data from the Likert-Scales and downloaded them into SSPSTM for analysis.

The use of an online survey can provide several advantages. The use of self-administered online surveys, when compared to other data collection techniques, can provide easy access to new populations, greater generalization, a broader range of age and gender participants, short collection time, reduced cost, and increased anonymity (Rice, Winter, Doherty, & Milner, 2017). Additionally, online surveys can allow researchers to download information into statistical software such as SPSSTM (Phillips, 2015). The use of self-administered online surveys has advantages; however, disadvantages exist. According to Rice et al. (2017), online surveys sometimes have low response rates and non-representative samples. To help with low response rates, researchers can increase the time-frame for participation (Smith, Witte, Rocha, & Basner, 2019). The initial period of 30 days was sufficient to exceed the minimum number of 68 participants' responses.

Only public data was part of the data set. The protection and privacy of participants for this study were of paramount importance. Federal regulations require research records retained for at least three years after completing research (Protections of

Human Subjects, 2009). I will store all data for five years from completing the study on an encrypted, verified network provider (VPN) and a two-factor password-protected computer. Additionally, after the required five-year elapses, I will use the Department of Defense deletion software to delete the data.

Data Analysis

The research question for this study is: *does a linear combination of employee engagement and employee self-efficacy predict employee productivity?*

H_o: The linear combination of employee engagement and employee self-efficacy will not significantly predict employee productivity.

H_a: The linear combination of employee engagement and employee self-efficacy will significantly predict employee productivity

To answer the central research question for this study, I used a correlational design to conduct multiple linear regression analysis to determine if the linear combination of employee engagement and employee self-efficacy predicted employee productivity. I treated the ordinal data from Likert-type survey questions as interval and continuous data to analyze the predictor variables of employee engagement and employee self-efficacy with correlational analysis. To analyze non-parametric statistical analysis, researchers can use a five-point scale to measure ordinal data. (Viljoen, 2015). However, six and more scale steps represent an interval scale with parametric statistics. Moreover, according to Pallant (2013), parametric statistics are more powerful and robust than non-parametric statistics. Additionally, the use of correlational analysis is applicable for studies that integrate Pearsons' r to determine

variable associations, relationships between two or more variables, and to analyze the relationship of more than one predictor variable and a continuous dependent variable (Bannon, 2013; Pallant, 2013).

Correlation analysis was appropriate for use within the study to determine variable relationships because the statistical analysis technique aligns with Zhang (2014), who examined the relationship between job involvement and the five dimensions of organizational citizenship behaviors. Justyna and Kinga (2016) also used correlation analysis to examine numerous relationships between personality traits and emotional labor, work engagement, and job satisfaction among service workers. The regression analysis conducted by Justyna and Kinga (2016) showed that only some personality traits were related to individual aspects of functioning at work.

Alternative statistical analysis methods that were not appropriate for this study include t-tests, a one-way analysis of variance ANOVA, multivariate analysis of variance MANOVA, and logistic regression. According to Pallant (2013), t-tests, ANOVA, and MANOVA determine a statistically significant difference between several groups. Researchers use t-tests to compare the mean score of a continuous variable between two groups or two sets of data (Pallant, 2013). For example, Sharma, Goel, Sengupta (2017) used t-tests and ANOVA to show how work engagement significantly differed with age, education level, and experience. MANOVA is an extension on the ANOVA and is appropriate when examining for differences in multiple continuous level variables between groups. For example, Watson (2018) used MANOVA to determine whether teachers' job embeddedness is related to turnover

across diverse group employees. T-tests, ANOVA, MANOVA, were not appropriate for the study because the aim was to determine relationships within groups and not differences between groups.

The alternate statistical analysis technique of logistic regression was also not appropriate for this study. According to Pallant (2013), logistic regression is a statistical tool to test models and predict categorical outcomes with two or more categories. Krasnopolskaya, Roza, and Meijs (2016) used logistic regression to compare employees in 37 Russian companies who participated in corporate volunteering and those who did not. Logistic regression was not appropriate for my study to examine relationships between employee engagement, employee self-efficacy, and productivity. The intent is to measure the relationship strength of surveyed data on a single dependent variable.

Data analysis was performed using the IBM SPSSTM Statistics Grad Pack 23 PREMIUM software. The SPSSTM software package is a tool to conduct statistical analysis capable of producing various statistical tests, outputs, graphs, and charts. Before data analysis, a check of data integrity needs to be conducted (Bannon, 2013). The integrity check should include data cleaning, coding, and appropriateness of the data for analysis, notably parametric testing assumptions. Data cleaning is reviewing data to detect, correct, remove inconsistent or inaccurate values (Rowley, 2014). Bannon (2013) postulated three steps to clean data. The steps include referencing survey hard copies, examining the variables, and looking for violations in logic. I examined the data to remove incorrect and inconsistent values.

In terms of missing data, multiple imputation was not necessary because no substantial amount of missing data (> 5%) existed in the data set. Bannon (2013) believed that as the field of quantitative research evolves, it is less and less acceptable to ignore missing data in statistical analysis. Bannon (2013) explained that accounting for missing data values using traditional methods, such as mean substitution, is flawed. Multiple imputation can be performed using SPSS and is the most sophisticated method to account for missing data.

The study's assumptions about the statistical analyses included homoscedasticity, multicollinearity, linearity, and normal distribution. Researchers test homoscedasticity or equal variances across groups by examining residuals' scatterplot (Jeong & Jung, 2016). The assumption of equal variance is randomly scattered residuals around the horizontal line's zero point. Klein, Gerhard, Büchner, Diestel, and Schermelleh-Engel (2016) noted that a violation of homoscedasticity is heteroscedasticity. Heteroscedasticity is the misspecification of an overlooked nonlinear predictor term distorting statistical findings. Bannon (2013) suggested three steps to get a better approximation of homoscedastic distribution. The steps include log transformation, square root transformation, and reciprocal transformation. I used Bannon three-step process to address any problems associated with homoscedasticity.

Multicollinearity is the presence of a high correlation between two or more predictor variables in a regression model (Bannon, 2013). According to Pallant (2013), multicollinearity exists when the independent variables are highly correlated where r=.9 and above. To estimate multicollinearity, I used the variance inflation factor

(VIF). According to Bannon (2013), VIF indicates if a predictor has a strong correlation with other predictors in the actual regression model. Niemelä-Nyrhinen, and Leskinen (2014) noted that violation of multicollinearity might lead to fallacious path coefficient estimates or even bring about statistical non-significance estimates. Bannon (2013) suggested using a process of centering or increasing the sample size to reduce multicollinearity levels. I used steps to reduce multicollinearity, as introduced by Bannon (2013). Linearity refers to the occurrence where two variables show a linear relationship (Bannon, 2013). Jeong and Jung (2016) explained that to meet the criteria for linearity, the plot of standardized residuals to standardized estimates of the dependent variable should present a random pattern. However, randomly dispersed points on a plot are nonlinear and violate linearity (Bannon, 2013). Bannon (2013) suggested using data transformation techniques such as logarithmic, square root, or inverse to address this problem. I did not use the data transformation steps because no nonlinear pattern was populated. Normality is the theoretical distribution of values that makes an asymmetrical bell curve (Bannon, 2013). The normality test is by graphical methods, such as a normal P–P plot or a statistical test, such as the Kolmogorov–Smirnov test. If the plot points remain close to the diagonal line, normality is met (Jeong & Jung, 2016). Bannon (2013) recommended assessing the impact of outlier scores and data transformation steps. I did not use the data transformation tool in SPSS as no non-normal distribution existed. According to St. Pierre, Shikon, and Schneider (2018), data transformation is one solution researchers can use to circumvent non-normal error distributions.

Regressions and correlations are analyses of linear relationships between quantitative variables that demonstrate the strength, direction, and significance of the variables' linear relationship (Pallent, 2013). Multiple regression is a method to get the Correlation Coefficient: Pearson's 'r' Statistic, a statistic that demonstrates the strength, direction, and significance of the linear relationship between variables (Bannon, 2013). I interpreted the results using Pearson's product-moment correlation coefficients. Pearsons' product-moment correlation coefficient is a measure of the strength of a linear association between two variables and denoted by r (Dorestani & Aliabadi, 2017). The Pearson correlation coefficient, r, can take a range of values from +1 to -1 (Dorestani & Aliabadi, 2017). Pallent (2013) explained that a value of 0 indicates no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the other variable's value. A value less than 0 indicates a negative association; that is, as the value of one variable increases, the other variable's value decreases. Pearson's product-moment correlation coefficient results, using an alpha level of .05, are interpreted as small r =.10 to .29, medium r = .30 to .49, and large r = .50 to 1. (Prion & Haerling, 2014). I interpreted the correlation analysis results using Pearson's product-moment correlation coefficients and interpreted effect sizes as negligible, weak, moderate, strong, or very strong. After an analysis to identify which predictor variables relate to the dependent variable at a statistically significant level ($p<.05$), I used multiple regression to identify the effect size. Researchers can choose several options within the multiple regression model to identify the effect size between the predictor and dependent variables. One option is the standardized beta, which

researchers can use to determine the strongest predictor within the regression model. Another choice to identify the effect size is the R2 and adjusted R2. Furthermore, the adjusted R2 estimates how much variance in the dependent variable would be explained by the predictor variable(s) based on the population the sample was derived (Bannon, 2013). I used Cohen (1992) guideline of .01 small effect, .06 moderate effect, and .14 large effect to interpret the R2 values.

Study Validity

Validity refers to the degree to which scores on a measure reports the phenomenon it purports to measure (Chander, 2018). This section of the study will I focused on two types of validity, external and conclusion. External validity refers to others' ability to generalize and transfer study findings to other populations (Findley, Laney, Nielson, & Sharman, 2017). Newman, Joseph, and Feitosa (2015) noted that external validity threats could include time, population, and environment validity. Time validity is the extent to which the results of a particular study can be generalized to other periods at a point in time. Environmental validity is the generalization of results across settings. Population validity is the inferences drawn from a study of a given population (Nascimento, 2018). Possible threats to external validity in this study are population bias, the environment, and the use of a convenience sample. I addressed the threats to external validity by sampling participants within the population and using tested and reliable survey instruments. According to Gisela et al. (2017), a diverse sample can help strengthen external validity. Murad, Katabi, Benkhadra, and Montori (2017) noted that increasing the size of the sample and diversity of the population can

enhance external validity. Newman et al. (2015) argued that including participants from different age groups, sexes, races, and socioeconomic or education statuses can increase the sample's representativeness and generalization of findings. Alpha levels > .60 minimize external validity threats and strengthen the predictability within study populations (Cho & Kim, 2015). The high survey instrument reliability of the UWES, OCCEFF, and the SmartWoW and a large and diverse potential sample population can minimize threats to external validity. The concern with environmental validity in this study is whether the study findings can be generalized outside the population area. I minimized this threat because this study focuses on employee engagement and self-efficacy impact productivity in the virtual setting. The target population does their work virtually, and their responses to the survey are not limited to specific state experiences.

Statistical conclusion validity (SCV) is when a research study's conclusions are founded on an adequate analysis of the data, generally meaning that adequate statistical methods provided an answer to the research question (Bradley & Brand, 2016). Before undertaking data analyses, I determined how assumptions for the statistical test and the selection of appropriate tests affected the results' interpretations. Low statistical power and violations of assumptions can also threaten statistical conclusion validity (Lachmann, Trapp, & Trapp, 2017). For this study, I emphasized low statistical power and violation of assumptions. Low statistical power could result in Type I and Type II errors explained by small sample sizes or extraneous variation (Taylor & Spurlock, 2018; Oakes, 2017). Both error types can seriously reduce

research quality. However, Taylor and Spurlock (2018) explained that one procedure to improve statistical power is to perform a priori power analysis to estimate sample-size requirements before conducting a research study. Cohen (1992) recommended that researchers should plan for power of at least 0.80. I conducted a power analysis with G*Power to ensure an adequate sample size, as suggested by Cohen (1992).

Violating the data assumptions of homoscedasticity, linearity, and normal distribution can threaten statistical conclusion validity (Bradley & Brand, 2016). Violation of the homoscedasticity assumption implies unequal variability of error terms, which creates a heterogeneity problem in estimation (Adeboye & Agunbiade, 2017). Schmidt and Finan (2017) explored how violating the assumptions of linearity and normal distribution within correlation analysis leads to misleading and biased forecasts and confidence intervals. I tested for the assumption of violations by examining the normal probability plot (P-P) of the regression standardized residuals, scatterplots of the standardized residuals, and by examining skewness and kurtosis coefficient ranges. Bootstrapping is a valid data analysis method within regression and correlation analysis to counteract and deal with issues data violations (Chang, Sickles, & Song, 2015). I did not utilize the bootstrapping feature with SPSS in this study.

Transition and Summary

The material I presented in Section 1 included an overview of the background of the study problem, a review of the business problem, and the purpose of the study. In addition, in Section 1 I presented the nature of the study with the research question and hypothesis, the theoretical framework, study definitions, assumptions, limitations, and

delimitations. An analysis and synthesis of the literature sources and a critical review of the literature related to employee engagement, employee self-efficacy, and productivity is provided in Section 1. The material and data I presented in Section 2 included an overview of the project, the purpose statement, the role of the researcher, the participants, and included an outline of the research method and design. Also, the material I included in Section 2 detailed the population and sampling method, ethical research, the survey instruments, data collection techniques, analysis methods, and study validity. The data in the study overview, study findings, application to professional practice, implications for social change, recommendations for action and future research, reflections, a summary, and study conclusions are provided in Section 3.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to examine the relationship between virtual employee engagement, self-efficacy, and productivity. The independent variables were employee engagement and employee self-efficacy. The dependent variable was employee productivity. I collected data from a convenience sample of 81 participants from a professional virtual group and compared the survey results to determine whether significant relationships existed. The aim of this study was to add to the body of knowledge and effect social change related to virtual employee engagement, self-efficacy, and productivity.

In fulfillment of the stated purpose, I used a correlational design and multiple regression methods to determine whether significant relationships existed between virtual employee engagement, self-efficacy, and productivity. Based on the regression results, I rejected the null hypothesis stating the linear combination of employee engagement and employee self-efficacy do not significantly predict employee productivity. I accepted the alternative hypothesis stating that the linear combination of employee engagement and employee self-efficacy significantly predict employee productivity.

Presentation of the Findings

In this section, I discuss the testing of assumptions, present descriptive statistics and inferential results, provide a theoretical discussion about the findings, and conclude with a summary. I selected a correlational design to examine the relationship between virtual employee engagement, self-efficacy, and productivity. The following research

question and hypotheses served to guide the statistical analysis I used to investigate the relationship between the variables: What is the relationship between virtual employee engagement, self-efficacy, and productivity?

H_o: The linear combination of employee engagement and employee self-efficacy does not significantly predict employee productivity.

H_a: The linear combination of employee engagement and employee self-efficacy significantly predicts employee productivity.

I conducted multiple linear regression to determine whether the linear combination of virtual employee engagement and self-efficacy predicted productivity. Statistical significance was determined using an alpha value of .05. The predictor variables in the regression were virtual employee engagement and self-efficacy. The dependent variable in the regression was productivity. Before analysis, I assessed the assumptions of multicollinearity, normality, linearity, homoscedasticity, and independence of residuals.

Test Assumptions

Violation of statistical analysis assumptions may lead to biased, inconsistent, and inefficient estimates, and *p* values can be systematically too small or too large (Ernst & Albers, 2017). Plausible assumptions imply that estimated effects and statistical test results can be treated as accurate, whereas significant violations of these assumptions suggest that statistical results are not trustworthy (Abulela & Harwell, 2020). In the current study, I evaluated the assumptions of multicollinearity, normality, linearity, homoscedasticity, and independence of residuals to identify violations.

Multicollinearity. Multicollinearity occurs when predictor variables have strong interrelationships causing the misrepresentation of a regression model (Bannon, 2013). According to Pallent (2013), no violation of the assumption of multicollinearity exists when the VIF is less than 10. When I conducted the VIF test (see Table 2), the VIF value between the independent variables was 1.40. As an added measure, I also used the tolerance statistic level (see Table 2) to estimate multicollinearity. Bannon (2013) noted that a tolerance statistic below .20 is cause for concern. The tolerance statistic was .71. I assumed that the predictor variables were independent of each other based on the VIF and tolerance statistic cutoff points.

Normality, linearity homoscedasticity, and independence of residuals. Threats to a distribution of scores being approximately normal include problems regarding skewness, kurtosis, and outlier scores (Pallant, 2013). Bannon (2013) recommended calculating the ratio of skewness and kurtosis to the standard error with a cutoff point of two or less to determine normality. I used the ratio of skewness and kurtosis to the standard error calculations to evaluate normality among the three variables (see Table 2). I also examined regression assumptions by visually inspecting the normal probability plot (P-P) of the regression standardized residuals (see Figure 2) and the scatter plot of the standardized residuals (see Figure 3). I concluded that the ratio of skewness and kurtosis to the standard error calculations was below two, indicating approximately normal distribution.

Table 2

Coefficient Values for Skewness and Kurtosis

	Skewness	*SE Skewness*	*Ratio*	*Kurtosis*	*SE kurtosis*	*Ratio*
EE	-0.44	.267	1.64	-.934	.529	1.76
ESE	-.327	.267	1.22	-.220	.529	.41
EP	-.250	.267	.93	-.326	.529	.61

Note. EE= employee engagement; ESE=employee self-efficacy; EP= employee productivity.

The visual examination of the normal probability plot (see Figure 2) and the scatterplot of the standardized residuals (see Figure 3) supported my conclusion that no violation of normality, linearity, homoscedasticity, or independence of residuals existed. Visual inspection of the residual scatterplot and the normality probability plot of the regression is a method of identifying normality, linearity, homoscedasticity, and independence of residuals (Pallant 2013). The regression model is adequate when the normal probability plots of the residuals form a reasonably straight line, and no discernible pattern exists among the plots of the regression standardized residuals (Ernst & Albers, 2017). I observed neither a significant deviation from the straight line in the normal probability plot (see Figure 2) nor a systematic pattern in the scatterplot of the standardized residual values (see Figure 3), which indicated that no serious assumption violations existed.

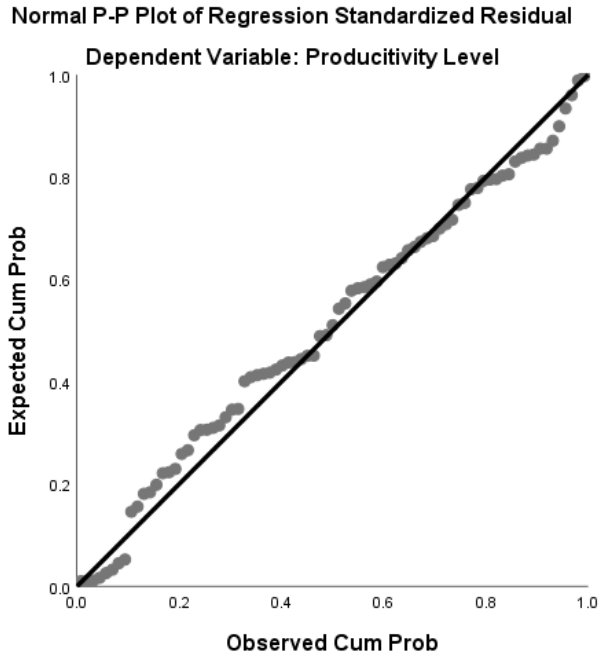

Figure 2. Normal probability plot (P-P) of the regression standardized residual.

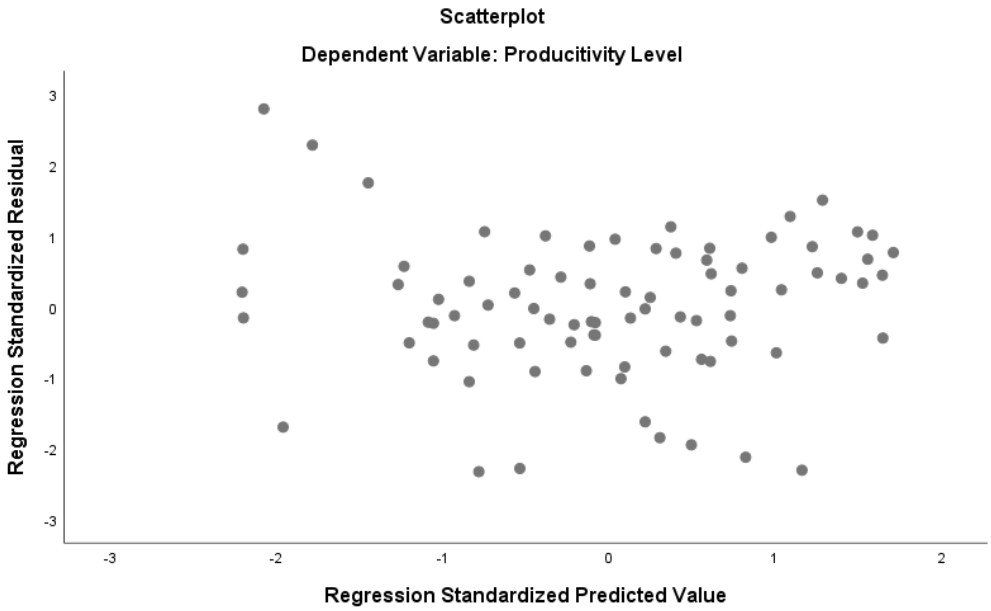

Figure 3. Scatterplot of the standardized residuals.

Descriptive Statistics

The descriptive statistics (see Table 3) provide a summary of the mean (*M*), standard deviations (*SD*), and Cronbach's alpha of each variable in the data set. The number of participants contributing to each correlation was 81 ($N = 81$). Employee engagement scores ranged from 3.11 to 5.78, with $M = 4.33$. Employee self-efficacy scores ranged from 2.88 to 5.11, with $M = 4.22$. Employee productivity scores ranged from 3.08 to 5.22, with $M = 4.26$. I conducted a measure of internal reliability for each composite score. According to Bannon (2013), Cronbach's alpha can range from 0.00 to 1, with scores closer to 1 indicating higher internal consistency. I used Cronbach's alpha to compare Bannon's guideline of acceptable alpha values ranging from 0.70 to 0.95. All three composite scores had acceptable reliability (alpha > .80). The descriptive statistics on the three composite scores are shown in Table 3.

Table 3

*Descriptive Statistics on Composite Scores (*N = *81)*

	Min	*Max*	*M*	*SD*	Cronbach's alpha	No. of items
EE	3.11	5.78	4.33	0.48	0.90	9
ESE	2.88	5.11	4.22	0.74	0.92	8
EP	3.08	5.22	4.26	0.53	0.89	12

Note. EE= employee engagement; ESE=employee self-efficacy; EP= employee productivity.

Inferential Results

To evaluate the significance, direction, and strength between the variables, I used multiple regression analysis. A standard multiple linear regression was appropriate because the focus of the study was the variance between predictor and criterion variables at the interval level (see Pallent, 2013). The null hypothesis was that the linear combination of employee engagement and employee self-efficacy do not significantly predict productivity. The alternate hypothesis was that the linear combination of employee engagement and employee self-efficacy significantly predict productivity. In Tables 4, 5, and 6, the results of the multiple regression are presented. Table 4 is the model summary, Table 5 is the ANOVA summary, and Table 6 is the regression coefficients summary. The regression model as a whole was able to significantly predict productivity, $R^2 = .22$, $R^2_{adj} = .20$, $F(2, 78) = 11.78$, and $p < .001$. The regression model in Table 4 accounted for 23% of the variance in productivity, as the adjusted value equaled 21% of the variance. In Table 5, I present the ANOVA analysis results, which demonstrate the linearity of the model. The *F* test was significant at $p < .05$, suggesting a

linear relationship between employee engagement, employee self-efficacy, and productivity was a good model fit with the data. Table 6 shows the coefficient results. According to Bannon (2013), the coefficient data provides researchers with information on the relationship between each predictor variable and the dependent variable. If values are below .05 ($p < .05$), the predictor values have a unique statistically significant relationship with the dependent variable (Pallant, 2013). For a value greater than .05 ($p > .05$), researchers can conclude that that variable is not making a statistically significant contribution to the prediction of the dependent variable (Pallant, 2013). I assessed each predictor variable's standardized coefficients Beta (β) to identify which variable was the strongest predictor at a statistically significant level. Employee self-efficacy was statistically significant with productivity ($\beta = .42$, $p < .05$). Employee engagement ($\beta = .09$, $p > .05$) did not provide any significant variation in productivity. To identify the effect size between variables, I used the partial Eta squared (PES) statistic. According to Bannon (2013), Eta squared effect sizes range from small = .01 to medium = .06 to large = .14. Within the context of the full regression model, the strongest predictor of the independent variable productivity was covariate variable employee self-efficacy. This result was evident as the covariate predictor employee self-efficacy had the strongest standardized beta within the model $\beta = .42$, as well as the largest effect size (PES = .16).

Table 4

*Regression Model Summary (*N = *81)*

Model	*R*	R^2	Adjusted R^2	Std. error of estimate
	.47[a]	.22	.20	.43

[a] Predictors: (Constant), Self-Efficacy, Engagement.
[b] Dependent Variable: Productivity.

Table 5

*ANOVA[a] (*N = *81)*

Model	Sum of squares	*df*	Mean square	*F*	*Sig*
Regression	4.32	2	2.16	11.4	.00[b]
Residual	14.70	78	.18		
Total	19.02	80			

[a] Dependent Variable: Productivity.
[b] Predictors (Constant), Self-Efficacy, Engagement

Table 6

*Coefficients Summary[a] (*N = *81)*

Model	β	*t*	*Sig*	Partial Eta Squared
EE	.09	.88	.37	.01
ESE	.42	3.89	.00	.16

[a] Dependent Variable: Productivity.
Note. EE= employee engagement; ESE=employee self-efficacy.

Analysis summary. The purpose of this study was to examine the relationship between employee engagement, employee self-efficacy, and productivity. I used standard multiple linear regression to determine whether the linear combination of employee engagement and employee self-efficacy significantly predicted productivity. I used correlations in the assessment of each predictor variable to assess its contribution to the regression model. I also used partial correlations to examine the strength and direction of relationships between the independent variable constructs and the dependent variable. I assessed the assumptions of standard multiple linear regression and noted no violations. The regression model as a whole was able to significantly predict productivity, $R^2 = .22$, $R^2_{adj} = .20$, $F(2, 78) = 11.78$, and $p < .001$. The regression model accounted for 23% of the variance in productivity. In the final regression model, employee self-efficacy was statistically significant with productivity ($\beta = .42$, $p < .05$). Employee engagement ($\beta = .09$, $p > .05$), did not provide any significant variation in productivity. The conclusion from this analysis was that only the independent variable of employee self-efficacy was a significant predictor of productivity.

Theoretical discussion of findings.

In this study, employee self-efficacy (personal factor) impacted productivity (behavior factor) within the virtual workspace. One of the central driving concepts in SCT is how cognitive concepts are associated with an employee's behavior (Bandura, 1986). SCT's theoretical framework includes the premise that individuals with high self-efficacy have more confidence in their ability to accomplish tasks and are more productive (Bandura, 1997). In the current study, a unique, statistically significant

relationship existed between employee self-efficacy and productivity. My research study results confirm the findings of Yaakobi and Weisberg (2018), who examined high-tech industries mangers' self-efficacy and productivity. The researchers found employees' self-efficacy accounted for most of the explained variance for all productivity observations. The results of my study also expand on Black et al. (2019) team performance study. Black et al. (2019) noted that self-efficacy has a positive influence on team cohesion and emotional intelligence resulting in improved team performance and participation. My study findings support Staples, Hulland, and Higgins (1999) on how self-efficacy positively correlates with remote work and management outcomes in the virtual workspace. In a more recent study, Tran, Oh, and Choi (2016) noted in the virtual setting; an employee self-efficacy can increase cooperation and improve the performance compared to conventional face-to-face teams. Wood and Bandura (1989) also indicated that self-efficacy could increase virtual workers' productivity in an autonomous environment.

Previous researchers have shown a direct impact of self-efficacy on productivity (Stajkovic & Luthans, 1998). According to Bandura (1997), self-efficacy is a fundamental construct within SCT where individuals believe in their capability to increase motivation, cognitive resources, and courses of action. (Bandura, 1986) noted that employees engage in activities by collecting and analyzing information from their leaders to determine their decisions and actions. Moreover, if employees' general beliefs in their capacity to exercise control over their environment are high, performance

increases (Bandura 2001). Gist and Mitchell (1992) also noted that self-efficacy was a potential antecedent of productivity.

In my study, employee engagement (environmental factor) did not have a unique statistical variation with productivity (behavior factor). My study results were partially contradictory to Lee et al. (2017), who examined how employee engagement and self-efficacy predicted employee productivity. However, my study did align with Lee et al. (2017) to the extent that self-efficacy was a much stronger determinant of productivity than employee engagement. The result of employee engagement not having a unique statistical variation with productivity may have been the systematic error contributed by subject bias and instrument bias. Subject bias is the distortion of the measurement by the study subject (Hulley, Cummings, Browner, Grady, & Newman, 2011). The study was open to a comprehensive geographical location, and sociocultural factors may have influenced the understanding of employee engagement. Culture varies from organization to organization and industry to industry (Daugherty, Paine, Murakami, Herzke, & Weaver, 2016); therefore, subject bias may have directly influenced responses. Additionally, according to Bandura (1989), reciprocal interaction does not necessarily mean the constructs of person, behavior, and environment are of equal strength. The constructs' influence is sometimes more substantial than others, and they do not coincide (Bandura, 1989). The bi-directional nature between the three factors will differ based on the individual, the particular behavior, and the environment in which the behavior occurs (Bandura, 1989). Instrument bias is a structural limitation in a survey device or process (Hulley et al., 2011). Employee engagement and productivity include subjective

elements, and both have various parameters and dimensions. It was not possible to consider all the parameters as my study used the shortened version of the UWES scale. According to Kulikowski (2017), UWES factorial validity results are ambiguous and may lack validity for the UWES as a measurement tool.

The application of SCT in this study may have significant potential for influencing efficiency business organizations. The bi-directional nature of the three critical categories of environment, cognitive focus, and behavioral intents is an essential framework that could help facilitate competitive advantages for virtual teams and organizations. My research is also an indicative guide for business leaders in organizations to focus on engaging employees and employees with high self-efficacy. Both of these constructs can provide a roadmap for leaders to manage effectively. According to Consiglio et al. (2016), increasing employee engagement and training programs focused on developing self-efficacy beliefs at work may aid employees' work outcomes.

Applications to Professional Practice

The current research results of this study apply to organizations, leaders, and virtual employees. Leaders of virtual teams or organizations can use the knowledge gained from the SCT framework to develop strategies to increase employee self-efficacy, engagement, and productivity. Organizations that fail to invest in proper training and coaching of employees to boost confidence may not meet business productivity goals (Adewale & Ghavifekr, 2019; Hidayah et al., 2019). Leaders will need to learn, understand, and test the constructs' interactions to be better equipped to meet

organizational profitability goals. Gibson (2004) noted that SCT is a practical research guideline that leaders can use in management processes to increase employee motivation and organizational outcomes. SCT also includes valuable information leaders can use to provide programs or innovative strategies to motivate employees and gain a competitive advantage.

The findings of my study might contribute to the improvement of management strategies of virtual employees. Global competition and advances in technology have increased the need to manage virtual teams better to execute business strategies (Maduka et al., 2019). The issue confronting virtual managers is the lack of trust, disengagement, high retention costs, and low productivity (Fathima & Makhecha, 2019). Disengaged, unmotivated, and low-efficacy employees can lead to turnover (Nelson, 2017). Organizations that implement management strategies to increase systemwide changes can reap benefits like higher retention, employee engagement, and company performance (Burnett & Lisk, 2019). In my study, a relationship exists between employee self-efficacy and productivity. Therefore, if leaders focus on management strategies tied to SCT, it is possible to positively change employee behavior as part of business practices, and organizational profitability could increase.

In this study, employee self-efficacy was a significant predictor of productivity. Business leaders can use my research findings to understand strategies to train, develop, and hire employees with high self-efficacy. Bandura (1997) noted an individual could either portray high or low self-efficacy. Individuals with high self-efficacy set challenging goals, are committed, dedicated, positive, and persevere in challenging work

environments. On the other hand, an individual with low self-efficacy refuse difficult tasks, display low aspirations, fail on work challenges, complain, and is not committed to organizational goals. To increase self-efficacy and productivity, leaders should provide training and development, hire employees with high self-efficacy, set reasonable goals, and provide leadership mentoring. According to Zaki, Ali, Bakar, and Sarwar (2019), training is a valuable investment by the managers to enhance the organization's productivity. Also, the correlation coefficient between training content developed through sources of self-efficacy and the individual's efficacy beliefs was positively significant. Hiring individuals with high self-efficacy should also be a best practice for management. Chiesa and Mariani (2016) used a personnel selection self-efficacy scale to monitor the personal self-confidence in coping with procedures. The authors noted the results were positive. Zwillinger (2017) explored the process of using behavioral interviews to determine past behavior to predict future behavior. Business leaders and human resource managers should implement pre and post self-efficacy tests to gauge how future and present employees to help determine future outcomes. The study findings also supplement the need for realistic goal setting by leaders. Hirsch, Nitzl, and Reemts (2018) supported the idea that more specific goals lead to an increase in self-efficacy, which leads to higher individual performance. Leaders should try to apply different managerial strategies like being more flexible or implementing specific, measurable, attainable, realistic, and timely (SMART) goals. Leadership and mentoring are also valuable tools to increase employee self-efficacy (Ganesh, Ángeles, & Vázquez-Rodríguez, 2019). The practice of providing consistent feedback and high-quality

communication to build trust are two strategies leaders can use in the mentorship process. The concept of self-efficacy is dynamic and related to performance (Bandura, 1989). Researching and implementing the underlying mechanisms between self-efficacy and work-related performance can be part of business practices.

An additional application of my study to business practice is for virtual employees leaders to manage engagement practices effectively. Antony (2018) noted that successfully managing employees is prevalent in organizations where goals are clear, mangers are empowered, and the organization's vision is performance-focused. Not managing employee engagement effectively, disengagement increases, leading to diminished employee morale and lower productivity (Rastogi, Pati, Dixit, & Kumar 2018). Higher levels of employee engagement are required in the virtual setting because manager-employee exchanges may be difficult to provide effectively due to minimal or no contact (Chekwa, 2018). Business leaders should ensure effective communication dissemination for feedback, performance metrics, and goal setting. According to Chekwa (2018), communication tools are essential in facilitating work engagement, as it is through technology information sharing, clarifications, and overall communication support takes place. The critical application to business practice is that when organizations improve communication tools and processes between employees and managers in the virtual setting, organizational commitment and engagement, and productivity could improve.

Implications for Social Change

This study's results might impact social change through effective leadership strategies to manage employee self-efficacy and employee engagement. Positive social change includes practices that encourage knowledge transfer in the global system in which individuals live, work, and think critically about sustainability (Schirmer, Lockman, & Schirmer, 2016). The knowledge transfer in this study aims to understand the factors that engage employees and increase self-efficacy to trigger productivity and positive work environment changes. By applying the concepts associated with the research findings, organizational leaders could increase employee engagement, self-efficacy, and productivity, resulting in increased organizational profits. If the organization is profitable, then the primary stakeholders, the customers, employees, shareholders, and secondary stakeholders, the community, environment, government, and society, in general, can all benefit.

The trend of allowing workers to work from home has increased since 2015 (Bureau of Labor Statistics, 2018). Implementing models and strategic plans to increase employee self-efficacy and employee engagement could increase productivity, business long term goals, and help secondary stakeholders. When business organizations are profitable, leaders have more resources. Employees have better work arrangements and benefits, and local businesses can reap from employee spending and investing within the local community. Companies need to pursue a more robust organization to employee relationships to help maintain an environment of positive social change. Policies such as health and well-being programs and other supportive services increase engagement

(Weideman & Hofmeyr, 2020). Family-friendly employee benefits programs such as dependent care support, flexible work arrangements (working from home), leave programs and time off, and work-family stress management support, increase organizational commitment and employee self-efficacy (Mulvaney, 2014). Successful deployment of these self-efficacy and engagement programs could help enable employees to balance work with lifestyle and family commitments.

Recommendations for Action

Understanding this current study results might benefit organizations with virtual employees through targeted strategies to increase employee engagement and employee self-efficacy. This study could help leaders identify, assess, and implement policies to elevate attitudes, beliefs, and behaviors that increase employee engagement and self-efficacy. Although the participants in this study worked in various fields, the following recommendations could apply broadly in virtual work environments. Based on the results, I have two recommendations for action, more emphasis on self-efficacy enhancers and reinforcing manager-employee engagement strategies and training.

Emphasis on Self-Efficacy Enhancers

The first recommendation is leaders in virtual organizations could benefit from focusing more self-efficacy enhancers such as goal setting and performance, selection and promotion decisions, and training and development methods. Leaders should set realistic goals to increase job performance and productivity. Human resources should also consider pre and post-self-efficacy tests for future and present employees. Employees with high self-efficacy have proven to be more productive. Additionally, organizations

should direct resources to high-efficacy employees in the form of training and development. In the virtual work environment, innovation and change are dynamic; as a result, virtual leaders must continuously develop strategies that encourage high-self efficacy behaviors.

Reinforcing Manager-Employee Engagement Strategies and Training

The second recommendation is reinforcing manager-employee engagement strategies and training. The application of effective employee engagement strategies may assist business leaders in successfully reducing disengagement and increasing productivity. In the virtual work environment, clear and consistent communication is essential. Training of managers is necessary to ensure communication mediums are available and accessible to employees at all times. Employees need to feel comfortable and knowledgeable to connect online, with little or no video conferencing inhibitions. As constant updates and innovation of programs change, quick and accessible technical support is also critical for employees. Managers should also be well coordinated and connected to employees to help show presence and commitment to goals. According to Panteli, Yalabik, and Rapti (2019), virtual employees' communication tools are essential in maintaining frequent and quality communication with managers for effective performance. Training of managers on how to provide performance feedback promptly for better results in employee engagement is necessary. Moon (2019) found that performance appraisal feedback, manager trust, and feedback specificity positively influence feedback acceptance for employee performance appraisal feedback.

I will share my study findings in business publications and scholarly journals. I will present my results in seminars, video tutorials, and online-classes on virtual employee engagement and self-efficacy strategies. Additionally, I will send a copy of the study findings and recommendations to participants via social media platforms.

Recommendations for Further Research

My study results serve the need to expand further knowledge associated with other motivational factors of virtual employees that impede or increase organizational profitability. Elements could include manager training, education, commutation and leadership styles, emotional intelligence score, years of experience, and cultural background. By examining other managers' and employees' motivational factors, it may provide human resources clarity for developing specialized programs to produce higher employee performance levels. Researchers can build on the present research to explore if employee engagement is a partial mediator of the relationship between employees' self-efficacy and productivity levels. The research of Dlamani, Zhou, and Kwamboka (2018) and Natrajan, Sanjeev, and Singh (2019) concluded that employee engagement was a mediator between other work conditions and work performance outcomes. I recommend more quantitative or mixed-method studies to examine employee engagement and other employee behavior and employer constructs in the virtual setting. Further research on productivity measurement also needs to be developed and investigated. According to Palvalin (2017), defining and measuring productivity in the office context is highly problematic. However, future researchers can help support productivity related to self-efficacy and engagement in terms of work productivity. The issue of perceived

productivity or self-defined productivity misalignment with actual productivity is also questionable. An exploration into building a comprehensive productivity measurement tool could help managers and researchers understand self-defined and actual productivity levels needed by organizations.

In this study, an underlying assumption was that participants would answer the survey questions accurately and comprehend the virtual workspace. I found no issue for this assumption because of the higher than expected survey responses. However, a recommendation for future research is to provide multiple venues for potential populations to participate that include both via email and paper format. Another assumption in this study was the survey participants were diverse enough to draw an adequate sample. This study did not include demographic information. Future studies could build upon this study but incorporate demographic information. Age, cultural background, and gender could provide useful information to explore how employee behavior and outcomes vary among the demographics.

A limitation of the study was the use of a convenience sample nonprobability techniques. Further research in employee self-efficacy, employee engagement, and productivity should include a probability sampling to mitigate bias further and produce generalizable results. A delimitation of the study was the sample population of current business leaders who work virtually within the United States' geographical boundaries. Future studies should include multinational or trans-national corporations as part of the sample population. A more extensive and diverse sample could help managers develop

global competencies and knowledge on enhancing employee self-efficacy and employee engagement across multinational teams.

Reflections

The doctoral study experience and the Doctorate of Business Administration (DBA) degree at Walden University was challenging but impactful in my professional and personal life. I had many hurdles, but when the knowledge transfer, training, and feedback was able to bring the study together, it was fulfilling. The research process also allowed me to think deeper about social change opportunities to help my interactions and relationships. Moreover, the research process allowed me to expand my thinking about using my study to transform cultural and social institutions. This study challenged me to be more thought-provoking, interactive in courses and accepting feedback from my chair and committee members.

As an outcome-driven professional who works virtually, I was always interested in why and how certain behaviors impact goals. From the beginning of my study, I had the preconceived view a relationship existed between employee engagement, employee self-efficacy, and productivity in the virtual workspace. Employee engagement was a phrase used widely in my professional groups, by my work colleagues, and on social media platforms. Virtual employees and flexible work arrangements were also gaining coverage in the business environment. I used preexisting survey instruments that were both valid and reliable. The main reason to use preexisting instruments was to limit personal bias or preconceived beliefs. Throughout my study process, I aimed to restrict any potential influence on research participants by avoiding bias during the data

collection process. I limited contact with participants and adhered to ethical guidelines. Although the completion of this research study was challenging, I have been able to form meaningful relationships with leaders with similar research aspirations to build on research and the generalizability of results.

Conclusion

The purpose of the quantitative correlational study was to determine if a linear combination of virtual employee engagement and employee self-efficacy significantly predicted productivity. Using multiple linear regression analysis, I concluded that virtual employee self-efficacy was a significant predictor of productivity ($p < .001$). Employee engagement did not significantly contribute to the regression model. I rejected the null and accepted the alternative hypothesis adding to the body of knowledge amongst the variables.

My study's findings expanded on research knowledge that virtual employee self-efficacy could impact productivity and possibly organizational profits. Business leaders, human resource management, and direct managers could use my study findings to assess an apply innovative strategies for employee self-efficacy improvement. Additionally, in this study, virtual employee engagement did not have a unique statistical variance with productivity; however, managers should still embark on effective engagement strategies to increase productivity. More importantly, as the virtual workplace continues to evolve and grow, organizations will need to ensure leadership, technology, training, and incentives all develop at the same pace to meet organizational goals. In conclusion, positive social change can add significant business value. Business professionals will

need to understand and reward behaviors that increase positive social change through a more engaged and productive workforce. Strategies that improve the organizational climate can also enhance the quality of life in the external work environment. Suppose leaders can change behaviors and develop meaningful relationships that fuel engagement and self-efficacy in their workforce. In that case, organizations and business leaders may improve the viability and sustainability of their organizations' positive social change in society.

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Appendix A: Work & Well-Being Survey

English version

Work & Well-being Survey (UWES) ©

The following 17 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the '0' (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 6) that best describes how frequently you feel that way.

	Almost never	Rarely	Sometimes	Often	Very often	Always
0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

1. _____ At my work, I feel bursting with energy* *(VI1)*
2. _____ I find the work that I do full of meaning and purpose *(DE1)*
3. _____ Time flies when I'm working *(AB1)*
4. _____ At my job, I feel strong and vigorous *(VI2)**
5. _____ I am enthusiastic about my job *(DE2)**
6. _____ When I am working, I forget everything else around me *(AB2)*
7. _____ My job inspires me *(DE3)**
8. _____ When I get up in the morning, I feel like going to work *(VI3)**
9. _____ I feel happy when I am working intensely *(AB3)**
10. _____ I am proud on the work that I do *(DE4)**
11. _____ I am immersed in my work *(AB4)**
12. _____ I can continue working for very long periods at a time *(VI4)*
13. _____ To me, my job is challenging *(DE5)*
14. _____ I get carried away when I'm working *(AB5)**
15. _____ At my job, I am very resilient, mentally *(VI5)*
16. _____ It is difficult to detach myself from my job *(AB6)*
17. _____ At my work I always persevere, even when things do not go well *(VI6)*

* Shortened version (UWES-9); VI= vigor; DE = dedication; AB = absorption

Appendix B: Occupational Self-Efficacy Scale

APPENDIX
The items of the OCCSEFF scale (retranslated from German)

1	When I make plans concerning my occupational future, I can make them work.
2*	One of my problems is that I cannot get down to work when I should. (R)
3	When I set goals for myself in my job I rarely achieve them. (R)
4	When unexpected problems occur in my work, I don't handle them very well. (R)
5	I avoid trying to learn new things in my job when they look too difficult for me. (R)
6	When something doesn't work in my job immediately, I just try harder.
7	I feel insecure about my professional abilities. (R)
8	As far as my job is concerned I am a rather self-reliant person.
9	When something doesn't work well in my job, I give up easily. (R)
10	I do not seem capable of dealing with most problems that come up in my job. (R)
11	I can always manage to solve difficult problems in my job if I try hard enough.
12 (S)	Thanks to my resourcefulness, I know how to handle unforeseen situations in my job.
13 (S)	If I am in trouble at my work, I can usually think of something to do.
14 (S)	I can remain calm when facing difficulties in my job because I can rely on my abilities.
15 (S)	When I am confronted with a problem in my job, I can usually find several solutions.
16	I am confident that I could deal efficiently with unexpected events in my job.
17 (S)	No matter what comes my way in my job, I'm usually able to handle it.
18 (S)	My past experiences in my job have prepared me well for my occupational future.
19 (S)	I meet the goals that I set for myself in my job.
20 (S)	I feel prepared to meet most of the demands in my job.

Response categories: 1 = completely true, 6 = not at all true.
(R) reverse scoring item, (S) short form, *item to be removed.
Items 1–10 adapted from Sherer et al. (1982),
11–17 from Schwarzer and Jerusalem (1995) and Schwarzer (1998),
18–19 from Snyder et al. (1991), and
20 from Stäudel (1988).

Appendix C: SmartWOW Questionnaire

Virtual workplace

(1) The most important information systems are easy to use
(2) Workers have an access to information regardless of my location
(3) Workers have opportunity to see each other's calendar
(4) Workers have possibility to communicate with each other using instant messaging (e.g. Lync, Skype)
(5) Our workplace has equipment that enables having video conferences
(6) Group work software is used in our workplace

Social workplace

(7) Workers have the possibility to work in the most suitable ways and when it is the most convenient
(8) Telework is a generally accepted practice at our workplace
(9) Operations in our workplace are transparent
(10) Knowledge flows adequately between the key persons at our workplace.
(11) Meeting practices are efficient
(12) Our workplace has clear policy how to use IT and communication tools
(13) I have clear personal goals for my work
(14) I am being evaluated according to the results I achieve, not, for example, according to the working hours
(15) New ways of working are actively explored and experimented at our workplace

Personal work practices

(16) I exploit video conferences to minimize the need for unnecessary traveling
(17) I use mobile services for working in situations where I have idle time (e.g. working in trains by using smart phones or laptops)
(18) I am able to prioritize my tasks in order to manage my workload
(19) I often telework for carrying out tasks that require uninterrupted concentration
(20) I prepare for meetings
(21) I stretch my muscles during the brakes
(22) I follow the organization communication channels
(23) I shut down email and other communication tool to concentrate important work task
(24) I plan my day beforehand
(25) I actively seek for the most suitable work practices and tools

Productivity

(26) I achieve satisfactory results in relation to my goals
(27) I am usually able to carry out my work tasks efficiently (smoothly, without problems)
(28) I am able to use the majority of my working time for conducting relevant tasks related to my goals
(29) My job mainly includes tasks in which I am able to exploit my knowledge and skills efficiently
(30) I am able to meet customers' expectations
(31) The quality of my work outputs is high
(32) The work group I work in works efficiently as a whole

Appendix D: Approval to Use SmartWOW

SmartWoW – constructing a tool for knowledge work performance analysis.

CS Centelle Staimee
Tue 5/23/2017, 9:29 PM
Miikka Palvalin <miikka.palvalin@tut.fi>

Reply all

Sent Items

Greetings Miikka

Perfect! Thanks so much for responding to email. It would be a pleasure to work with you in the future and I will definitely send a final copy of the doctoral study paper.

My Best
Centelle St.Aimee

MP Miikka Palvalin <miikka.palvalin@tut.fi>
Tue 5/23/2017, 4:06 PM

Dear Centelle,

It is wonderful to hear that you find SmartWoW interesting. You can use it for your research study, hope you find it useful! Please make sure you use the latest version which can be found from this paper: http://www.emeraldinsight.com/doi/abs/10.1108/MBE-05-2016-0025 . You may also want to add background variables from the original paper constructing the tool: http://www.emeraldinsight.com/doi/full/10.1108/IJPPM-06-2013-0122 .

We are also interested to hear about the results of your study. I am finalizing my PhD studies as well and it would be nice to explore collaboration opportunities. Maybe in the future we could do some kind of joint paper comparing the results between the countries or something?

Br.
Miikka

Appendix E: Approval to Use Occupational Self-Efficacy Scale

SB SCHYNS, BIRGIT <birgit.schyns@durham.ac.uk>

Mon 4/16, 2:28 PM

Centelle Staimee

Reply all

Inbox

Dear Centelle
Apologies for the delayed reply. I moved to France and I am not using this email a lot nowadays. Yes of course you can use the instrument!
All the best Birgit

Get Outlook for iOS

From: Centelle Staimee <centelle.staimee@waldenu.edu>
Sent: Friday, April 13, 2018 2:11:57 PM
To: SCHYNS, BIRGIT
Subject: Re: Use of Short form tool

Hello Good Morning Professor Brigit

Hope all is well.

I am just doing a follow-up email in regards to using your self-administered questionnaire.

Best
Centelle St.Aimee
