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SOSYAL BİLİMLER ENSTİTÜSÜ

İŞLETME ANABİLİM DALI

YÖNETİM VE ORGANİZASYON (İNG.) BİLİM DALI

THE RELATIONSHIP BETWEEN PERCEIVED STRESS AND WORK ENGAGEMENT: AN EMPIRICAL STUDY

Yüksek Lisans Tezi

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DANIŞMAN: Prof.Dr. HANDE SİNEM ERGUN

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SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜ

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İŞLETME (İNGİLİZCE) Anabilim Dalı YÖNETİM VE ORGANİZASYON (İNGİLİZCE) Bilim Dalı TEZLİ YÜKSEK LİSANS öğrencisi AMER MARAQA'nın THE RELATIONSHIP BETWEEN PERCEIVED STRESS AND WORK ENGAGEMENT: AN EMPIRICAL STUDY adlı tez çalışması, Enstitümüz Yönetim Kurulunun 15.05.2017 tarih ve 2017-11/23 sayılı kararıyla oluşturulan jüri tarafından oy birliği / ~~oy çokluğu~~ ile Yüksek Lisans Tezi olarak kabul edilmiştir.

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ABSTRACT

Modern work conditions are putting big pressure on the labor force. While employers seek to keep their labor engaged in their job roles, employees who cannot cope with work stress are subjected to face burnout and disengagement. The relationship between Perceived stress and work engagement has frequently been mentioned in management literature. To study levels of engagement, several variables like self-efficacy and perceived stress contribute to the total level of engagement. Organizations use bottom-up or top-down approaches to maintain engagement levels high. In their bottom-up approach, organizations instill skills like self-regulation, self-control, goal setting, feedback loops, and behavior modification for their employees. This study suggests that organizations can implement skills to keep high levels of engagement, namely; by perceiving negative stress correctly and minimizing its dangers, and by utilizing self-efficacy empowerment for its employees.

Results of the empirical research show that stress levels and self-efficacy directly influence work engagement in organizations. Stress influences the relationship with work engagement directly and negatively, and while stress occurs outside human control, the perception of stress occurs within human control. Applying cognitive modification on the perception of stress can particularly help people to cope with stress. Different from unconscious engagement, it requires a cognitive will and an intentional decision from an employee to be engaged. Some employees believe that this decision exists within their power and some believe it is forced from the outside. However, overall, it can be controlled.

Finally, within the framework of social cognitive theory, this study found that self-efficacy has a positive influence on work engagement. Self-efficacy is developed through different means, namely; enactive mastery, modeling, verbal persuasion (e.g. training), individual's perceptions of one’s physiological state. Those tools can be utilized to increase self-efficacy levels and accordingly to maintain high levels of role engagement.

Keywords:
Work engagement; perceived stress; Self-efficacy; social cognitive theory

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ÖZET

Modern çalışma koşulları işgücü üzerinde yoğun bir baskı oluşturmaktadır. İşveren, işçilerin rollerine bağlı kalmalarının yollarını ararken, yoğun stres ile başa çıkamayan işçiler ise tükeniş ve kopma noktasına gelmektedir. Yönetim literatüründe, işle bütünleşme ve algılanan stres arasındaki ilişkiye yer verilmiştir. işle bütünleşme seviyeleri incelendiğinde, öz-yetkinlik, algılanan stres gibi değişkenlerin toplam işle bütünleşme seviyesini etkilediği görülmektedir. Kurumlar, üst alt ya da alt-üst yaklaşımlarını kullanarak bütünleşme seviyelerini sürdürürler. Kurumlar, alt üst yaklaşımında, öz-düzenleme, irade, hedef belirleme, geribesleme döngüsü, iç güdümlü menfaat pekiştirimi, davranış değiştirme gibi yetenekleri aşılarlar. Bu çalışma, stress ile baş etme ve rollere göre işle bütünleşme aşılama hususunda, alt üst yaklaşımın kullanılabileceğini ileri sürer.

Sosyal-bilişsel kuram çerçevesinde, özyetkinliğin gelişmesi için, etkin idare, modelleme, sözlü ikna (örn: eğitim), kişinin kendi psikolojik durumu ile alakalı algısının, rol bağlılığının sürdürülmesinde gerekli araçlar olduğu belirtilmektedir. Ek olarak, stress ile başa çıkma yöntemlerinin kalıtımsal yollarla kazanılması dışında da açıklar. Örnek olarak, diğer çalışanlar tarafından taklit edilebilecek seçilmiş bir rol modeli kullanarak, rol modeli taklidinin kurumsal yapıdaki iş bağlılığı seviyesinin nasıl artırılabileceğini belirtir.

Son olarak, literatür incelemelerinden alınan sonuçlar, stres seviyeleri kurumlardaki işle bütünleşme olumsuz etkilediğini göstermektedir. Öbür tarafa ise, öz-yetkinliğin işle bütünleşme

doğrudan olumlu etkilediğini göstermektedir. Stres kaynağı insan kontrolü dışındayken, stres algısı kontrol edilebilir. Özellikle algısal değişiklik uygulaması bireyin stres algısını ve buna bağlı olarak işle bütünleşme seviyesini etkiler. Bilinçsiz bağlılıktan farklı olarak, çalışan bağlılığını sağlanması için, bilişsel bir irade ve kasti karar gerekmektedir. Çalışanların bir bölümü, bu kararın kendi iradeleri dahilinde olduğunu düşünürken diğerleri, bunun dışarıdan bir dayatma olarak görmektedir. Ne var ki, bunların tümü kontrol edilebilir.

Anahtar Kelimeler:
İşle Bütünleşme; algılanan stres; öz-yetkinlik; sosyal bilişsel kuram

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To people who believed in me in the dark times,

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ABBREVIATIONS

UWES Utrecht Work Engagement Scale

1 Introduction

Organizations are unique entities in society. The idea of organizations as a unique social entity is present in the work of many social scientists. It Included sociologists (Miles, Snow, Meyer, 1978, p. 546-562 & Coleman, 1978, 1990, p.546-562; Perrow, 2000, p. 469-476), economists (Galbraith, 1947, p. 28-36; Zoghi, Mohr & Meyer, 2006, p.622-639; Baldwin, 2016, p. 95-115), Political scientists (Dessein & Santos, 2006, p. 956-995). The social entity of an organization is shaped by a cooperative behavior between individuals within a social structure to achieve communal goals (Coase, 1937, p. 386–405). Organization delegates different roles for individuals to achieve its aims (Kahn, 1990, p. 692-724). Those job roles are not necessarily similar to roles that individuals pursue in their actual social life. However, in a contract of employment, an individual agrees to pursue a certain role delegated to him/her according to organization's goals in return for certain compensation; salary, commission, hierarchical governance (Eisenhardt, 1989, p.57-74). The degree to which an employee engages with a job role determines the success of this relationship (Kahn, 1990, p. 692-724). Moreover, Heck (2016, p.197-200) argues that active engagement are can be a predictor of happiness. In the modern era of business, members of organizations are subjected to many factors that might affect their engagement with a job role. For example, professional pressures, deadlines, the financial and social pressure inside and outside an organization. All of those are examples of stressors that may result in role disengagement. Since this research aims to study role engagement for employees, it is equally important to study concepts that contribute to role engagement levels both negatively or positively. Keywords such as stress (Lazarus, 1963, p. 192-213; Selye, 1965, p. 97-99; Elangovan & Xie, 1999, p. 359-373; Maslach, 2003, p. 189-192; Mishra, 2003, p.318-

334); burnout (Maslach & Leither, 1997, p.1-34); uncertainty (Schuler, 1982, p. 5-19); distraction (Bakker & Schaufeli, 2008, p. 147-154) are frequently mentioned in literature as variables that contributes to levels of engagement. Specifically, Stress is correlated with low levels of engagement in an organization. In its more developed stages, stress turns into burnout, distraction, and disengagement.

Articles in management literature suggest that work engagement is closely correlated with low levels of burnout. Such as (Kahn, 1990, p. 692-724), (Bakker & Schaufeli, 2008, p. 147-154), (Maslach and Leither, 1997, p. 1-34), (Mishra, 2003, p.318-334), (Lazarus, 1963 ,p. 192-213), (Elangovan & Xie, 1999, p. 359-373), (Schuler, 1982, p. 5-19). On the other hand, low levels of burnout are closely correlated with successful stress coping strategies (Cooper and Marshall, 1976, pp. 22-23 as cited in Schuler, 1982, p. 5-19), (Selye, 1956, p. 144-144). To be engaged, employees have to cope with stress successfully (Kahn, 1990, p. 692-724). In management and organization literature, scientists like (Matheny, Curlette, Aycock, Pugh, and Taylor, 1987; as cited in Luria & Torjman, 2009, p. 685-707) have offered lists of coping resources. Their research includes physical resources such as; physical health and fitness, personality resources such as; acceptance, self-motivation, confidence. Finally, cognitive resources; which are abilities of a person to monitor and cognitively control stress. Engagement, in general, can be a conscious and unconscious activity. For example, a person might be engaged in an activity but not being aware of being engaged; it is referred to as unconscious engagement. Consciously engaged individuals take role engagement as a conscious decision with one's cognitive abilities. It involves the ability of one's recognition of one's self to engage.

This study follows an empirical quantitative approach; for each one of the previous variables, an academically approved scale from literature was adopted. For perceived stress, the PSS scale of Cohen, Kamarck, & Mermelstein, (1983, p. 385-396) was chosen with 14 items. To measure work engagement UWES - Utrecht Work Engagement global scale was adopted. This scale is developed by Schaufeli & Bakker (2003, p.1) with 17 items and three dimensions. Finally, to measure the relevance of this research to social cognitive theory, self-efficacy's scale that was developed by Schwarzer & Jerusalem, (1995, p. 35-37) is used. All of the mentioned scales were gathered at one homogenous questionnaire.

1.1 Practical relevance

The current global working conditions put workers in organizations around the world under huge pressure of stress (ILO, 2016, p.1). Recent studies in different industries show that a rise of stress in work environment increased exponentially in the last ten years. To influence work engagement positively, organizations adopt policies that reduce external stress, such as training employees to cope with stress and stay away from burnout levels (Kahn, 1990, p. 692-724; Bakker & Schaufeli, 2008, p. 147-154; Lazarus, 1963, p. 192-213; Selye, 1965, p. 97-99; Maslach and Leither, 1997, p. 1-34; LeDoux, 2010, Kindle Location 7608).Therefore, applying stress coping strategies means for companies to prosper or simply to stay in business. If employees of a company are continuously under stress threat, it will significantly reduce the performance of them (Maslach, 1981, p. 99-113) increase their levels of burnout (Schuler, 1982, p. 5-19) and increase sickness absenteeism among them (Schaufeli, Bakker & Rhenen, 2009, p. 893-917).

Studies on stress coping and work engagement have taken place in several industries. For example, Air traffic controllers (Mishra, 2003, p.318-334), military executives (Reichel & Neumann, 1993, p.75-96), Public contact workers (Maslach & Jackson, 1984, p.189-212), Family business managers (Rothbard, 2001, p. 655-684), Firefighters (Lepine & Crawford, 2010, p. 617-635), Telecom managers (Schaufeli, Bakker & Rhenen, 2009, p. 893-917) and many more.

1.2 Academic relevance

According to researchers; knowledge of theories of emotion will benefit suggesting modifications in recruitment, training, and job design (Maslach & Jackson, 1981, p. 99-113). Many Scientists emphasized that work engagement has not been yet adequately studied and that it needs further studying. For example, Reichel & Neumann (1993, p.75-96) suggested that Comparative studies of stress, burnout, and organizational outcomes are recommended. Other studies recommended examining work and family dynamics using engagement variables (Rothbard, 2001, p. 655-684).It will be interesting to pursue additional investigations of the burnout syndrome in different societies and organizations for a better understanding of its causes and effects (Reichel & Neumann, 1993, p. 75-96). Next to many studies previously, this diagram shows four important examples of researches conducted on this topic:

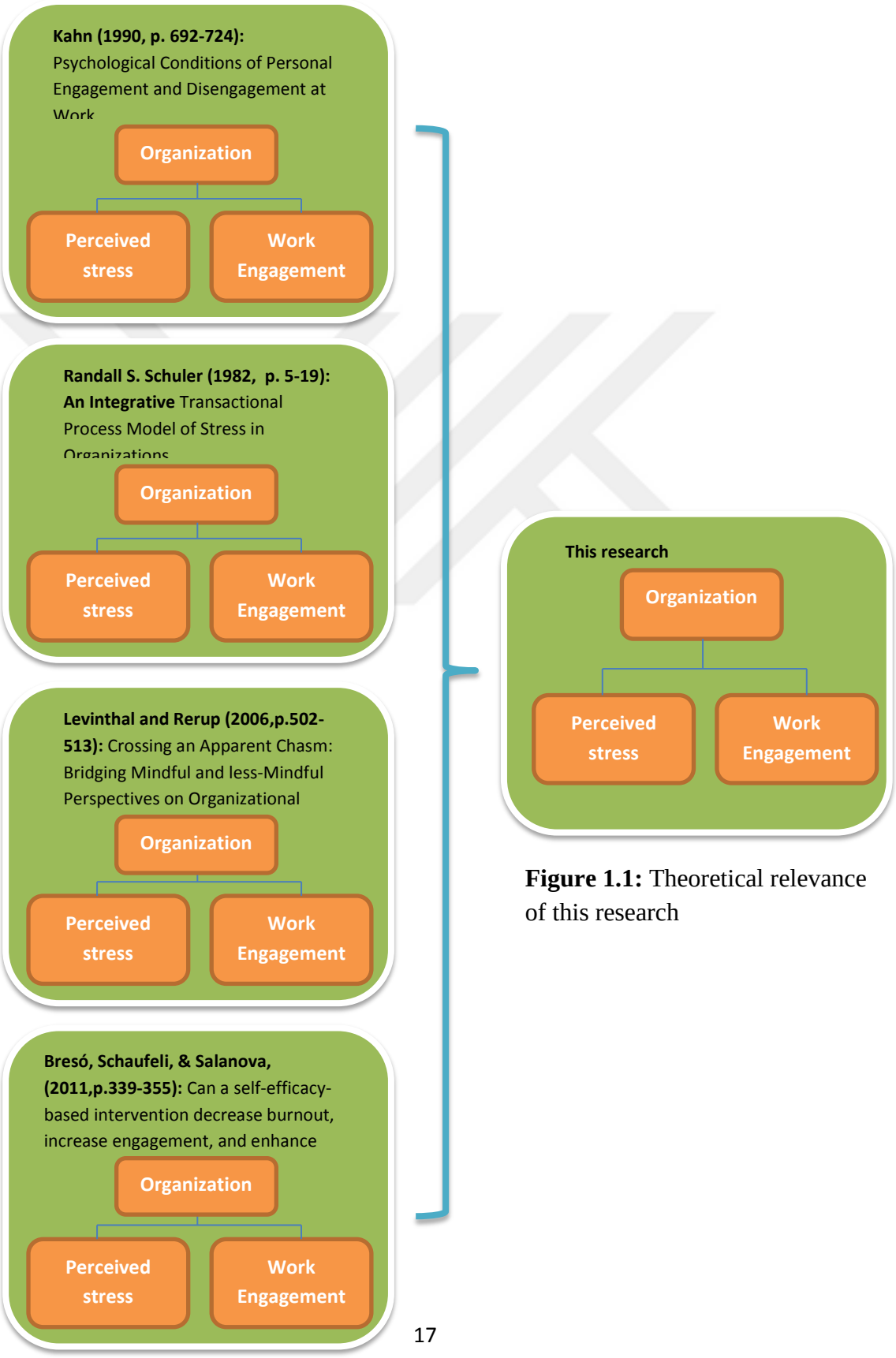

Figure 1.1: Theoretical relevance of this research

1.3 Research question

How is it possible to improve work engagement levels for employees in organizations? To answer this research question, different elements in the work engagement process must be analyzed. For example,

- How does *perceived stress* of employees affect their *work engagement* in an organization?
- How does the *self-efficacy* of an employee influence *perceived stress* or work *engagement* of an employee?

The aim of this research is to understand and explain variables rather than only find casual patterns and regularities, therefore this research categorized as theory-building, explanatory research (Esienhardt, 1989, p. 57-74).

2 Literature review

More than ever before, Managers would agree that organizations make a critical difference when working conditions inspire employees to be innovative, committed and engaged (Bakker & Schaufeli, 2008, p. 147-154).

2.1 Work Engagement

Instead of traditional organizational structure that relies on management control and economic efficiency such as cost reduction and increasing cash flow for human capital. Currently, managers are expecting their employees to be initiative, proactive and engaged with their roles at organizations. Kahn (1990, p. 692-724) mentioned in his research on personal engagement and disengagement that people occupy different roles at work. Those roles are

provided by the organization they are working for. They can be role sending, role receiving, role taking and role socialization (Katz & Kahn, 1978; Van Maanen, 1976; Merton, 1957; as cited in Kahn, 1990, p. 692-724). Different from other researchers, Kahn gave more attention to how people are psychologically fully present during of role performance. In his terms, people can use varying degrees of their physical, cognitive and emotional involvement in the roles they perform (Kahn, 1990, p. 692-724). In the business arena, employees use varying degrees to maintain their integrity of who are they really and the job role they occupy. On the other hand, Organizations' are interested with employees who are energetic, dedicated to their role and who have better with their work. Therefore, organizations need engaged workers (Bakker & Schaufeli, 2008, p, 147-154).

The question here is; nowadays, can organizations find their criteria in employees? Are employees satisfied with their organizations? Does stressful work demand allow employees to be engaged in their job? If No, how can employees deal with business and customers stressful demands yet remain engaged and absorbed by the job the occupy?

In their study, *the truth about burnout* Maslach and Leither (1997, p. 1-34) expanded their work and defined engagement as a lack of burnout. Burnout for them has three main dimensions which are exhaustion, cynicism, and lack of professional efficacy. The direct opposite of this is engagement which is characterized by energy, involvement, and efficacy. Burnout according to Maslach (2003, p. 189-192) is a prolonged response to chronic emotional and interpersonal stressors on the job. Her work examined the individual stress experience within a social and organizational context of people's response to their work, and it has yielded new insight into the sources of stress. Stress is frequently mentioned as a psychological

syndrome. It has a broad range of concepts, types, and explanation. Selye (1965, p. 97-99) was among the firsts who wrote on stress. In essence, he writes: "the stress concept postulates that the body responds to stress of any kind with a unified defense mechanisms characterized by specific structural and chemical changes." He later defined stress as "the nonspecific response of the body to any demand made upon it" Selye (1974, p. 97-99). Those reactions are raised in the body as a resistance to a stressful agent and as protection to the body against disease. Other researchers like Schuler (1982, p. 5-19) defined stress as "a perceived dynamic state involving uncertainty about something important." This dynamic state as he suggests can be associated with opportunities, constraints or demands. Lazarus (1963, p. 192-213) highlighted a theoretical distinction between physiological and psychological stress. Moreover, he developed a research on the psychological concept of threat and the mediating process of *cognitive appraisal* as well. Therefore, Lazarus was one of the earliest scientists who gave attention to the *perception* of stress and pursuing a laboratory research dealing with this concept.

2.2 Perceived stress

Workers in the modern era are subjected to demanding working environments that prioritize production over the psychological health. Therefore, the average employees nowadays are under a serious threat of stress. For example, next to many other professions, Air traffic controllers (ATCs) job is regarded as one of the most stressful in the world (Mishra, 2003, p.318-334). However, until now in 2016, airport corporations are still suffering from stressed air traffic controllers. Neither academic literature nor practical knowledge provided an effective solution for negative stress in those institutions. Similarly, job stress has become a key concept for

academic research and management (Elangovan & Xie, 1999, p.359-373). Therefore, it is hypothesized that stress in work environment is an area of science that still needs more scientific input. Stress, as many scientists agree upon is not only a negative phenomenon, but it is a useful phenomenon when used in the right place and for the right purpose. Human and other species live with stress since birth; it is a phenomenon that they grow with it. Selye (1965, p. 97-99) wrote "*Stress cannot and should not be avoided. The art is to learn how to live a full life with a minimum of wear and tear*". Thus, individuals shall try not to live less intensely but more intelligently. It is up to the individual to know how to intelligently deal with stress and strategically cope with it and use it as a power of growth rather than an obstacle.

2.2.1 Stress characteristics

Theoretically speaking, Schuler (1982, p. 5-19) has categorized different aspects of stress; *the first aspect* is positivity and negativity. Stress can be perceived as a positive stress. For example, if an employee thinks that the promotion at the job will lead to valued outcomes yet is unsure whether he or she can succeed or not then this is perceived as a positive stress. On the other hand, Schuler continues; stress can be negative (constraint or demand) as well. For example, when an employee perceives that he or she has a meaningless job and he wants to change but is not sure how. Stress on *the second aspect* can be associated with the (human – environment) relation. i.e. transaction or interaction of environment or human can present a dynamic condition (a potential stressor) which can be perceived as opportunities, constraints or demands. Those changes have perceived levels of uncertainty of resolution (Schuler, 1982, p. 5-19). However, since each person has different needs and values, what is important to one person

might not be important to another.Therefore a change in environment or human can cause stress to some people and not to others. On *the third aspect*, Stress also can be physical (such as a heat of a room) or a socio-psychological such as loneliness. *The fourth aspect*, Stress concept relates to time and frequency. This means that it presents across different situations and accumulates over time, for example, the more events in the organization perceived as stressful, the more stress is experienced over time and situations (Schuler, 1982, p. 5-19). *The fifth aspect,* Stress is caused by disruption of homeostasis of a person, that is, either physiological or psychological. Demands from the environment that disrupts physiological homeostasis — like facing a threat — orders the body involuntarily to seek to restore homeostasis through fight or flight response (cannon 1979 as cited in schuler, 1982, p. 5-19), this restoration is achieved by increasing blood sugar, adrenaline, steroid hormones then the body is restored to homeostasis state either by escape (running) or victory (fight back). The same mechanism applies to dealing with socio-psychological reactions where body responds involuntarily to psychological stress (i.e. exams) by increasing blood sugar or adrenaline to 'fight or flight' the psychological demand. In this case, however, it is possible but less likely that physiological change will restore this socio-psychological disequilibrium caused by the demand, and a person here need a psychological method to restore equilibrium.

2.2.2 Nature of stress

Stress by its nature is a perceived dynamic state of *uncertainty* that can be positive or negative for an individual (Schuler, 1982, p. 5-19). However, many individuals are frustrated with the *uncertainty* that stress causes. This uncertainty can leave unequipped individuals lost in

general life activities i.e. decision making, learning, and strategic planning. A person with awareness of stress in their life has better chances to deal with stressors both physiologically and psychologically. However, it is not enough for a person to be aware of stress in one's life, to implement an effective strategy to cope with the constraint or demand stress (Schuler, 1982, p. 5-19) is a must as well.

How employees perceive stress? Can employees cope with stress and stay engaged? If yes, then what are the coping resources? How can managers influence stress coping resources to their employees? How is stress related to burnout? How can we keep employees' away from burnout and closer to engagement?

2.2.3 Coping with stress

To keep a state of equilibrium, a person needs to cope with stress. Scientists like (Matheny, Aycock, Pugh, Curlette, & Cannella, 1986; Matheny et al., 1987; as cited in Luria & Torjman, 2009, p. 685-707) offered a comprehensive list of stress coping resources, such as; *personality resources* (self-motivation, confidence, acceptance, and social ease), *physical resources* (physical health and fitness), *cognitive resources* (structure and management of resources, problem-solving, and cognitive restructuring); *social resources* (social support); and others such as *financial resources*. Those coping resources give a person the needed resources to monitor and control stress. In other words, those resources, when present in an individual will give better chances for an individual to use them in their coping strategies. Say, for example, a physically healthy and fit person will have better chances to cope with and overcome a stressor comparing to a sick individual. Similarly, when a person is socially supported this will give him/her better chances to deal with a stressor in daily life more than a person with no social

support, family or friends. Coping resources can be used effectively by persons who have abilities to utilize them using coping strategies. Lazarus (1963, p. 192-213) and his colleague's categorized coping strategies as; information-seeking, direct action, inhibition of action and intra-psychic processes. For example, direct action can include aware exercising to keep the body fit. This way a person is practicing control over a stressor. However, if the individual is not equipped with coping resources, then he or she will start to develop his/her strategies based on trial and error, with or without awareness to survive. Stress coping strategies are utilized by people who are better able to adapt or meet environment challenges (Cooper and Marshall, 1976, pp. 22-23 as cited in Schuler, 1982, p. 5-19). Thus, any action one does, except aware sound judgment may fall within the rubric of emotional reaction rather than aware response. It is less likely that stress will be utilized through any physical exertion to restore the socio-psychological disequilibrium caused by stress. On the contrary, if strategies for dealing with stress are not utilized, long run wear and tear will continue to appear as the body it trying to restore its equilibrium (Selye, 1956, p. 144-144). Therefore, individuals shall prepare themselves with effective strategies to deal with stress using the right resources rather than unaware response. Usually, individuals learn coping strategies by inheriting. If parents were not aware of coping strategies, they would bring up unequipped people who will fall prey to life stress. In other words, they will fall prey to *uncertainty* in their life caused by their inability to deal with stress. However, the point of significance here, that the ability to cope with stress is not only inherited, rather, but it can also be learned and developed during one's live period (Lazarus, 1963, p. 192-213). Finally, coping categories can be divided into three specific categories according to body image (Bailey, 2016, p.81-90): avoidance (by attempting to elude threats to one's body by

disengaging from a certain body image), appearance fixing (which are the efforts to change one's outer appearance in order to be flawed), or positive rational acceptance (which are mental activities that emphasize the positive self care and positive self-talk).

What if this state of uncertainty continued over an extended period? Can accumulating uncertainty cause burnout and disengage individuals from their activities?

If this stress is not coped with by effective strategies, a state of *burnout* shall evolve slowly as the body fights uncertainty to restore its physiological disequilibrium. Burnout, as Maslach and Jackson (1984, p.189-212) defined it is: "A form of job stress and as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who do "people work" of some kind." Cordes & Dougherty (1993, p.621-656) define burnout as "a unique type of stress syndrome, characterized by emotional exhaustion, depersonalization, and diminished personal accomplishment." On the contrary of burnout, engagement is a positive mental state that is characterized by vigor, dedication, and absorption (Schaufeli & Bakker, 2003, p.1). It is assumed to be the positive antipode of burnout. Maslach and Leiter (1997, p. 1-34) explain dimensions of engagement as "Energy, involvement, and efficacy" these are the direct opposites of the three dimensions of burnout "exhaustion, cynicism, burnout." By this they reported that "Energy dimension turns into exhaustion, involvement turns into cynicism, and efficacy turns into burnout" (p. 24). Finally, Schaufeli & Bakker (2004, p. 293-315) says "burnout is an erosion of engagement." In sum, the literature clearly demonstrates a relationship between perceived stress and Job engagement via the inverse relationship between

Job engagement and burnout. In this research, role engagement is hypothesized to be a dependent variable while perceived stress is hypothesized as a depended variable.

2.3 Self-efficacy

In relevance to burnout, Maslach and Leiter (1997, p. 1-34) explain the three dimensions of burnout as "exhaustion, cynicism, burnout (inefficacy)." Leiter (1992, p. 107-115) has considered burnout as an 'efficacy crisis,' on the contrary, engagement is considered the increase in motivated behavior which derives from high levels of self-efficacy (Schaufeli & Salanova, 2011, p. 339-355). Directly correlated with Bandura's social cognitive theory, self-efficacy refers to "one's belief in one's capability to perform a specific task" (Bandura, 1988a, p.5). People appear to evaluate and weigh information about their abilities; then they regulate their efforts and choices accordingly. Therefore, self-efficacy is an independent variable. Stress is exposed on people from external influencers while work engagement is experienced as a result of the internal reaction of one's self. Self-efficacy is one cognitive influence that evaluates and weighs information of one's own capabilities and compares them with a perceived demand. If one belief in one's capabilities meets the perceived outside demands, then it is most likely that one will be able to overcome or cope with stress. However, if the mindful perception of an exterior stress revealed a higher level of exterior demands than one's beliefs being capable of, then one might expose oneself to the risk of disequilibrium of homeostasis level. As a matter of fact, the risk of burnout occurs when one does not practice sound judgment about an exterior

stress vis–à–vis the self-capabilities. Accordingly, disequilibrium state will continue to grow until it reaches burnout. On the contrary, if self-efficacy of one is high then an external stressor can be handled effectively using mindful observation and conscious decisions.

2.3.1 Theoretical background

Self-efficacy is frequently mentioned in the literature next to variables like locus of control, mindful attentive awareness. People who are mindful but with an internal locus of control will most likely observe the reality of situations to be ultimately within the power of oneself. However, people who are mindful but with an external locus of control will most likely observe events mindfully but as outside their control, or better, as something they cannot influence but rather have to adapt with. Researchers have shown that persons with high self-efficacy combined with an internal locus of control contribute to the best results of stress coping activity. Chambliss and Murray (1979, p. 349-353) confirmed that smokers with high self-efficacy and internal locus of control achieved highest results in smoking reduction. However, Gist (1987, p.472-485) suggested that whereas locus of control is a generalized construct covering a variety of situations, self-efficacy is task specific, Bandura (1977a, p. 19) pointed out that individuals can show strong internal locus of control in general while having low self-efficacy in a given area.

Albert Bandura (1988a, p.5) in his social cognitive theory argues that persons with high self-efficacy have better capabilities to mobilize their cognitive resources and courses of actions to exercise control over events in their life. He states that it being skillful only is not enough for a person to be successful in life. To be successful, one must have a resilient self-

belief in one's capabilities to exercise control over events to accomplish the desired goal or cope with an undesired stress. People with similar skill but with low self-efficacy may perform poorly depending on whether their self-beliefs of efficacy impair or support their solving efforts (Wood & Bandura, 1989, p. 361-384). Misleading judgments about self can cause burnout. Bandura (1986, p.1) pointed out that self-referent misgivings are central to the stress experience. Cherniss (1993, p. 135-149) assumed that lack of confidence is a crucial factor in burnout development. Jackson et al. (1987, p. 339-349) emphasized that Feelings of withdrawal and disengagement can also result from self-reporting factors that suggest that one is not qualified or not able. Luria & Torjman, (2009, p. 685-707) considered locus of control and self-efficacy together as 'a central personality resource' to resist work stress. While Thomas, Sorensen, & Eby (2006, p. 1057-1087) included self-efficacy next to the locus of control as variables that reflect one's job motivation. High levels of self-efficacy are reported to have elevated levels of job motivation, and low levels of self-efficacy are reported to have relation with increased levels of burnout. Therefore, the important question here is that how can we use the previous information to derive useful implications for workers and managers?

The theory of self-efficacy lies at the center of Bandura's social cognitive theory. It is central core argues that sociopsychological skills, individual's actions and reactions, including social behaviors and cognitive processes in almost every situation, are not conditionally an inherited ability, rather, people learn by them by observation of others. Furthermore, Bandura argues that people may develop their levels of certain skills, say self-efficacy depending on their external experiences and self-perception. Finally, Bandura pointed out that people with high self-efficacy—those who believe they can perform well—are more likely to view challenging tasks

as something to be mastered rather than something to be avoided. Wood & Bandura, (1989, p. 361-384) —later confirmed by Gist (1987, p.472-485)— have identified four cues that influence the development of self-efficacy. Descendingly from most to least influential as following; enactive mastery (self-mastery of skill), vicarious experience (role modeling), verbal persuasion (social support), and emotional arousal (self-awareness or individual's perceptions of his or her physiological and psychological state). One can increase one's self-efficacy by successfully experience a skill by oneself, or by imitating a successful model, or by being encouraged by society to be successful, or by being physically and psychologically aware to mobilize physical and social resources to be successful. Therefore, different from stressors which are outside one's control, self-efficacy can be developed and influence role engagement. Schaufeli & Salanova (2011, p. 339-355) studied 77 stressed university students and divided them into two groups. They applied cognitive intervention on one group and left the other team to deal with university stress on its own. They concluded that certain cognitive-behavioral interventions i.e. training, role-mastering have increased self-efficacy for the intervened group and have increased levels of engagement as well. Bandura (1982, p. 75) indicated that self-efficacy influence one's choice of settings, skill acquisition, and activities spent in coping efforts in the face of obstacles. People with moderate to high self-efficacy tend to persist longer in task-related activity; this leads to more mastery experiences by which it enhances one's self-efficacy. On the other hand, people with low self-efficacy tend to engage in few coping efforts, which lead them to give up more easily and evidence less mastery, which reinforces low self-efficacy again. Similarly, those who persist in an activity tend to gain the corrective experience which enhances their self-efficacy. Oppositely, those who cease prematurely tend to maintain low levels of self-efficacy.

2.3.2 Self-efficacy and motivation

In extreme cases of burnout, individuals are subjected to a severe drain of energy. Researchers reported that in such situations, motivating the self to change the status-quo becomes a very hard. Due to uncertainty stress imposes; one might find oneself impaired in the face of change. However, with a mindful understanding of the situation and of one's self-efficacy and a systematic planning of one's coping strategies, via setting goals, combined with feedback loops and behavioral modifications. That can provide a better chance to recharge oneself with motivation again. Several studies have found self-efficacy to better predicts the subsequent performances than the past behaviors, only if, a person is given a chance to observe one's performance and is given honest feedback. Motivation and self-efficacy firstly are emphasized via goal setting. Authors like Locke (1968, p. 157-189) and Locke, Saari, Shaw, and Latham (1981, p. 125) have highlighted the importance of goal setting in employee motivation. Groups with specific and challenging goals have shown elevated levels of performance than groups with no goals, easy goals or "do your best" goals (Locke et al., 1981, p. 125; White, Mitchell, & Bell, 1977 as cited in Gist, 1987, p.472-485). Locke et al. (1984, p. 241-251) found a strong correlation between self-efficacy, goal level, and performance. The study found that strength of self-efficacy levels affected goals chosen. Next to goal setting, feedback is discovered to interact directly with self-efficacy and goal setting to enhance performance motivation (Bandura & Cervone, 1983, p. 1017-1028). Especially, Self-generated feedback can be significantly helpful in building self-efficacy. Ivancevich & McMahon (1982, p. 359- 372) have performed an experience on a group of engineers reporting style; they pointed out that engineers who reported to their managers performed better than the ones who had only received feedback from their

supervisors without self-monitoring process. It appears that self-monitoring process to have been equivalent guided enactive mastery (Gist, 1987, p.472-485). As self-efficacy is practiced independently, Bandura and Cervone (1984, p.1) found out that unfavorable feedback tended to yield negative self-evaluation, this combined with high levels of self-efficacy led to increased motivation for the subsequent performance of the same task. When both self-efficacy and self-dissatisfaction were high based on negative feedback, individuals, tend to perform with an extraordinary intensification of effort. However, when people had low levels of self-efficacy, they became less motivated and selected lower goals, some demoralized and showed resignation attitudes even. On another interesting finding, Bandura and Schunk (1981, p. 586-598) found that personal efficacy to relate positively to intrinsic interest. They suggested that interest is induced for repetitive tasks, but intrinsical for problem-solving tasks. For example, in their test for mathematical tasks. Authors found that among three self-learning groups involving; short-terms goals, long-terms goals, or no goals at all, the group with short term sub-goals via feedback loops has made a rapid progress and performed better in a subsequent task, showing increased levels of self-efficacy over other groups. It is possible then that, sharpening self-efficacy (via mastery or modeling) combined with short-term goals can empower interest development.

2.3.3 Social Impact of self-efficacy

Social cognitive theory can provide the theoretical framework of this research as following:

1 Stress-coping is not necessarily inherited (adopted during childhood from parents) and

can be achieved during one's live.

2 Engaged employees can influence other disengaged ones under the principle of observation of social cognitive theory and can further provide role models to spread engagement socially in an organization.

Organizations will have better chances to influence employees toward high engagement levels when they understand the social dimension of self-efficacy. According to Bandura and Wood (1989) casual structures, behaviors, cognitive and other personal factors, operates as interacting determinants that influence each other bidirectionally. Therefore, the application of a treatment on a single entity or individual in an organization might influence other entities in the same organization.

2.4 Theoretical framework

The principle for organization – employee relationship is determined through organizational roles (Kahn, 1990, p. 692-724). Employees agree to do certain roles that organizations delegate to them to achieve the organization's goal. Therefore, the more employees are engaged in their role then the more this relationship is successful between an employee and organization. As mentioned above, Maslach and Leiter (1997, p. 1-34) explain the three dimensions of burnout "exhaustion, cynicism, burnout (inefficacy)." Leiter (1992, p. 107-115) has considered burnout as an 'efficacy crisis,' on the contrary, engagement is considered the increase in motivated behavior which derives from high levels of self-efficacy (Schaufeli & Salanova, 2011, p. 339-355). Albert Bandura (1988, p. 27-59) in his social cognitive theory argues that persons with high self-efficacy have better capabilities to mobilize their cognitive

resources and courses of actions to exercise control over events in their life. He states that it being skillful only is not enough for a person to be successful in life. To be successful, one must have a resilient self-belief in one's capabilities to exercise control over events to accomplish the desired goal or cope with an undesired goal. People with the same skills but with low self-efficacy may perform poorly depending on whether their self-beliefs of efficacy impair or support their solving efforts (Wood & Bandura, 1989, p. 361-384).

The interesting fact about social cognitive theory, that it is not an inherited ability. People can increase or decrease their levels of self-efficacy according to their experiences. Wood & Bandura (1989, p. 361-384) pointed about that peoples' beliefs about their self-efficacy can be strengthened in four main ways; *mastery experience, modeling, social persuasion, enhancing physical status*. One can increase one's self-efficacy by successfully having self-experience of skill, or by imitating a successful model, or by being encouraged by society, or by being physically able to do certain activities. Therefore, self-efficacy can be developed and can affect role engagement. In their research about burnout levels, Schaufeli & Salanova (2011, p. 339-355) studied 77 stressed university students divided into two groups and had concluded that certain cognitive-behavioral interventions i.e. training, cognitive training. Have increased self-efficacy and have increased levels of engagement as well. In another study, Pintrich and De Groot (1990, p.33-40) have suggested that self-efficacy plays a role in cognitive engagement as well. Cordes & Dougherty (1993, p.621-656), Schaufeli & Salanova (2011, p. 339-355) have argued that self-efficacy-enhancing interventions increase performance and engagement and decrease burnout.

Social cognitive theory can provide the theoretical framework of this research as following:

1- It can provide a framework where stress coping is not necessarily inherited and can be achieved by learning.
2- It can explain that engaged employees can influence other disengaged ones under the principle of observation of social cognitive theory

Since individuals learn by observation and imitation according to (Bandura, 1988a, p.5), then the hypothetically social cognitive theory can provide a useful framework to improve institutions. First, self-efficacy training, workshops, and self-regulation exercises can be effective to cope with stress. Secondly, intentional change on influential employees, i.e. to hire newly engaged employees or train current employees might shape a role model and can be imitated by other staff in the organization. Next to work engagement, the social cognitive theory has many applications on making decisions, achieving goals, influencing levels of motivations, self-cognitive regulation. However, for the sake of this research, its impact on perceived stress and work engagement shall be intensified.

3 Methodology and Research Design

This research takes an empirical quantitative approach to test selected hypothesis. From the literature review, three main variables were chosen to be tested in this model; Perceived stress, work engagement, and self-efficacy. To measure each variable, an academically approved scale is adopted from literature; each scale contains several dimensions to measure each concept.

To measure work engagement; UTRECHT work Engagement Scale (UWES) (Schaufeli & Bakker, 2003, p.1) was adopted. It has been proved by academicians since 2003 by several articles. Secondly, Perceived stress scale (PSS) (Cohen & Mermelstein, 1983, p. 385-396) was selected to measure the stress of individuals of an organization. Finally, to measure the relevance of this research to social cognitive theory, this research measures the effect of self-efficacy between perceived stress and work engagement. To do this, self-efficacy scale developed by Schwarzer & Jerusalem, (1995, p. 35-37) is used. Later on, all selected scales are combined into a single questionnaire and are to be spread over an engineering firm in Jordan to test the hypothesis. All the previous scales resulted in one questionnaire which is to be spread in Jordan.

3.1 Initiation of the research

The researcher created an online questionnaire form and spread it for one engineering firms in Jordan. The aim was to collect 130 quality responses. The engineering firm in Jordan has 500 employees who are to be questioned. To maintain answers' quality, we asked help from one design manager in the engineering firm for support. After the data collection completes, questionnaires shall be analyzed using SPSS software.

3.2 Research model

The research assumes that there are relationships between the three variables; perceived stress (independent) and work engagement (Dependent), the second, between self-efficacy (Independent) and work engagement (Dependent). To understand those relationships further regression and multi-regression analysis is conducted first between variable then between factors on a detailed level.

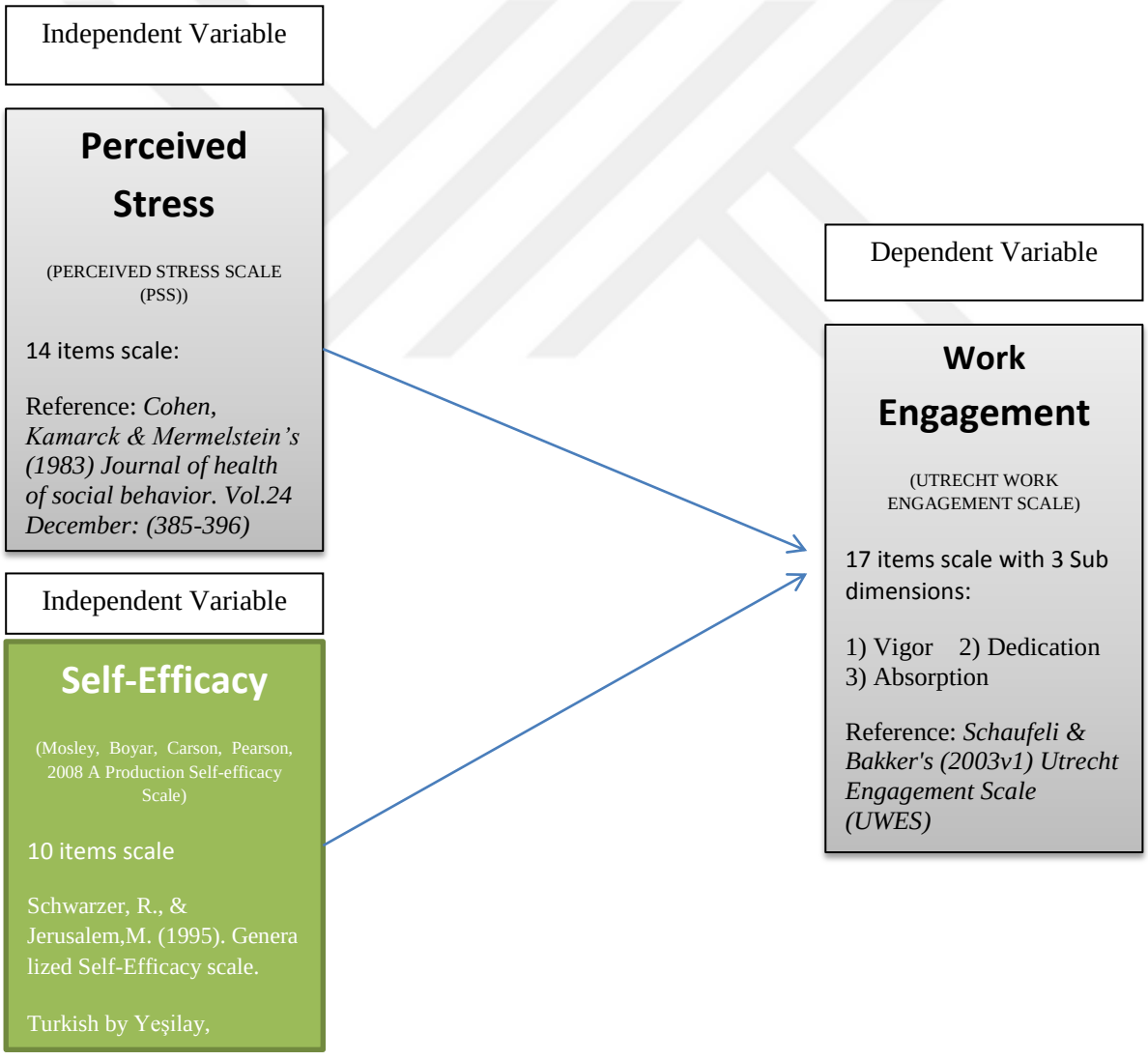

Figure 3.1: Research suggested model

3.3 Theoretical background:

Theoretically speaking this sub-model is trying to test the relationship between self-efficacy and work engagement. According to Bandura (1988, p. 27-59) perceived self-efficacy concerns with peoples' beliefs in their capabilities to mobilize cognitive resources and action to exercise control over events in their lives. In a situation of stress, for example, employees with high self-efficacy are expected to use their cognitive effort to maintain their work engagement levels. In this sense, an additional self-efficacy variable is added. This research aims to test its moderating effect between perceived stress and work engagement.

Why is Self-efficacy essential to this research? As Wood & Bandura, (1989, p. 361-384) state; the variable of self-efficacy is not inherited but is learned and can be strengthened in four principal ways; mastery experience, modeling, social persuasion, enhancement of physical status. Therefore, if we discover in data analysis that self-efficacy has a direct effect on work engagement. Then low levels of engagement can be improved by practicing strategies to instill self-efficacy. Overall, using a social cognitive theoretical framework will help to analyze previous variables in relevance to social science literature, and it will contribute to give more precise recommendations at the end of the research.

3.4 Hypothesis and Measurements

There are different hypothesis

H1: There is a direct relationship between perceived stress and work engagement

H2: There is a direct relationship between self-efficacy and work engagement

3.5 Variables and Scales

To measure the selected model, three different academic scales have been adopted as the following:

3.5.1 Perceived Stress Scale

Perceived stress scale is developed by Cohen and Mermelstein (1983, p. 385-396), and it has 14 different items; those items measure how often an individual is perceived in a stressful situation. The questions are asking about stressful events happened in the last 30 days, and the respondent is requested to fill the degree of how often he or she agree with the statement on a 1-6 Likert scale starting from (1) Almost often, into (6) which is Almost Never.

Table 3.1: Perceived stress scale table

Perceived stress scale						
	(1) Almost Always	(2) Very Frequently	(3) Somewhat Frequently	(4) Somewhat Infrequently	(5) Very Infrequently	(6) Almost Never
1. In the last month, how often have you been upset because of something that happened unexpectedly? (PS1)						
2. In the last month, how often have you felt that you were unable to control the important things in your life? (PS2)						
3. In the last month, how often have you felt nervous and "stressed"? (PS3)						
4. In the last month, how often have you felt confident about your						

ability to handle your personal problems? (PS4)						
5. In the last month, how often you felt that you were effectively coping with important changes that were occurring in your life? (PS5)						
6. In the last month, how often have you found that you could not cope with all the things that you had to do? (PS6)						
7. In the last month, how often have you felt that things were going your way? (PS7)						
8. In the last month, how often have you found that you couldn't cope with all the things that you had to do? (PS8)						
9. In the last month, how often have you been able to control irritations in your life? (PS9)						
10. In the last month, how often have you felt that you were on top of things? (PS10)						
11. In the last month, how often have you been angered because of things that were outside of your control? (PS11)						
12. In the last month, how often have you found yourself thinking about things that you have to accomplish? (PS12)						
13a. In the last month, how often have you been able to control the way you spend your time? (PS13)						
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? (PS14)						

a: Scored in the reverse direction; Ps = Perceived Stress.

Source: Cohen & Mermelstein, 1983

3.5.2 Work Engagement Scale

Work engagement according to UWES scale has 17 items, but it has three sub-dimensions. According to Schaufeli & Bakker, (2003, p.1) work engagement is "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption." Rather than a momentary state engagement refers to a more persistent state that is not focused on any event, behavior or individual. Vigor in their scale is characterized by high levels of resilience and willingness to work even in the face of difficulties. Dedication, on the other hand, refers to the degree of involvement of one's work. That is, to experience a sense of significance, pride or

excitement. Absorption, furthermore, is characterized by being fully and timelessly engrossed in one's work whereby a person find difficult to detach from oneself work (Schaufeli & Bakker, 2003, p.1).

The three different dimensions are expressed as following; Vigor: 6 items, dedication: 5 items and Absorption: 6 items.

Table 3.2: Vigor factor table

Vigor
1. At my work, I feel bursting with energy. *(VI1)
2. At my job, I feel strong and vigorous. *(VI2)
3. When I get up in the morning, I feel like going to work. *(VI3)
4. I can continue working for very long periods at a time. (VI4)
5. At my job, I am very resilient, mentally. (VI5)
6. At my work, I always persevere, even when things do not go well. (VI6)

Source: Schaufeli & Bakker, 2003

Table 3.3: Dedication factor table

Dedication
1. I find the work that I do full of meaning and purpose. (DE1)
2. I am enthusiastic about my job. *(DE2)
3. My job inspires me. *(DE3)
4. I am proud of the work that I do. *(DE4)
5. To me, my job is challenging. (DE5)

Source: Schaufeli & Bakker, 2003

Table 3.4: Absorption factor table

Absorption
1. Time flies when I am working. (AB1)
2. When I am working, I forget everything else around me. (AB2)
3. I feel happy when I am working intensely. *(AB3)
4. I am immersed in my work. *(AB4)
5. I get carried away when I am working. *(AB5)
6. It is difficult to detach myself from my job. (AB6)

Source: Schaufeli & Bakker, 2003

Each of the previous tables represents a dimension of UWES scale to measure work engagement. For example, at vigor dimension, an item like *"At my work, I feel bursting with energy"* reflect the resilient willingness to work of the individual. While another item *"I find the work that I do full of meaning and purpose"* reflects the sense of meaning and purpose expressed in dedication dimension. Finally, items like *"Time flies when I am working"* confirm the timeless characteristic for absorption dimension.

Respondents are demanded to answer previous items on a 1-6 Likert scale expressing how often they agree with each statement starting from (1) Almost always agree, into (6) which is Almost Never agree.

Table 3.5: Work engagement scale

UTRECHT work Engagement Scale (UWES) (Schaufeli & Bakker, 2003, p.1)	(1) Almost Always	(2) Very Frequently	(3) Somewhat Frequently	(4) Somewhat Infrequently	(5) Very Infrequently	(6) Almost Never
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 am 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 of 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 am 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

Source: Schaufeli & Bakker, 2003

3.5.3 Self-efficacy

Schwarzer & Jerusalem, (1995, p. 35-37) have developed ten items' scale to measure generalized self-efficacy in a person. According to Bandura (1988a, p.5) individuals which high self-efficacy report to be able to mobilize their cognitive abilities to exercise control over events

in their life. Thus, a person with high self-efficacy is expected to cope better with stress and maintain high levels of work engagement.

The scale here, propose ten items to the respondent. True and false answers are demanded on a 1-4 Likert scale as the following; (1) exactly true, (2) moderately true, (3) moderately false, (4) exactly false. Respondents are ordered to ask in honest manners and about issues related to their professional career.

Table 3.6: Self-efficacy variable scale

	(√) True		(X) False	
	Exactly true	Moderately True	Moderately False	Exactly False
1. I can always manage to solve difficult problems if I try hard enough. (SE1)				
2. If someone opposes me, I can find the means and ways to get what I want. (SE2)				
3. It is easy for me to stick to my aims and accomplish my goals. (SE3)				
4. I am confident that I could deal efficiently with unexpected events. (SE4)				
5. Thanks to my resourcefulness, I know how to handle unforeseen situations. (SE5)				
6. I can solve most problems if I invest the necessary effort. (SE6)				
7. I can remain calm when facing difficulties because I can rely on my coping abilities. (SE7)				
8. When I am confronted with a problem, I can usually find several solutions. (SE8)				
9. If I am in trouble, I can usually think of a solution. (SE9)				
10. I can usually handle whatever comes my way. (SE10)				

Generalized Self-Efficacy scale; SE= Self-Efficacy.

Source: Schwarzer & Jerusalem, (1995, p. 35-37).

4 Analysis and Discussion

4.1 Introduction

In this section, SPSS quantitative analysis was conducted to measure the relationships between self-efficacy, perceived stress, and work engagement for professional architects who are actively working in Jordan. We examine the hypothesized relationships separately with bivariate analysis. Sequentially we perform regression and multi-regression analysis to see if the initial results hold true when we include all variables into a regression model.

4.2 Data sampling and data collection

The sample was selected from architects in engineering consultation firms in Jordan, the total number of architects registered officially in Jordanian engineers association is 10134 architects, some of those architects work in site engineering and some practice contracting works, the remaining part of the total sample of architects work in consultation firms and design. The total number of consultation firms in Jordan is 1245 only 784 firms of them have architects employed, the rest of the firms are non-architectural firms such as infrastructure engineering or chemical engineering. The sample is varied in size; each firm is expected to employ at least one architect, however, significant consultation firms can employ up to 20-30 architects. We used snowball sampling technique and targeted the previous 784 firms. The questionnaire was sent to the personal emails of 250 architects actively working in those firms; those architects were asked to answer the questions honestly regarding their professional careers, then they were asked to share the questionnaire with their colleagues in the same office. From 250 architects 149 responded in high-quality order. However, nine of the respondents sent the same answer twice

due to a technical problem. Therefore, we emitted nine responses and decided the sample number to be N= 140. It represents a response rate of 56% which is very high among questionnaires distributed over the internet.

The questionnaire was divided into three sections; it started with work engagement, perceived stress, and self-efficacy. Finally, the demographic information was requested from respondents.

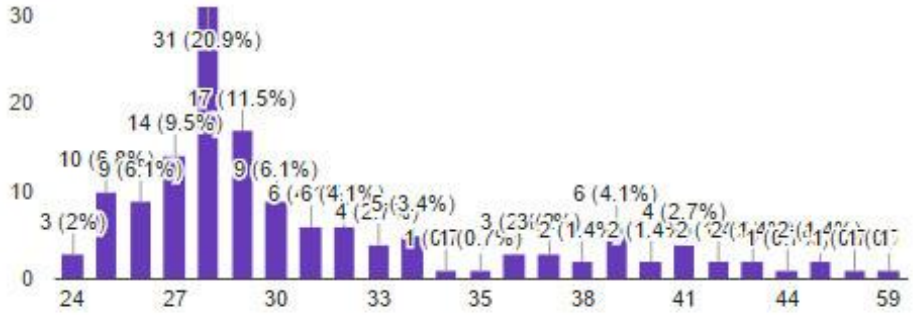

Figure 4.1: Demographics – age of sample

This age of the respondents was ranged between recent graduates 21 years until 59 years old, the highest percentage of respondents was 31 years old with 20.9% of the whole sample.

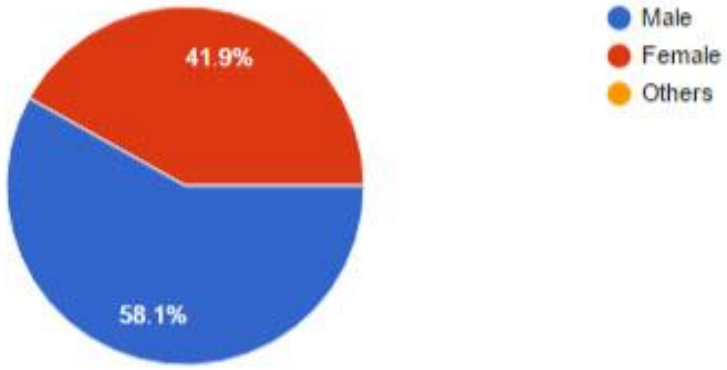

Figure 4.2: Gender ratio

The ratio is 41.9% for females and 58.1% males who are actively working as architects in consultation firms. Those percentages show normal distributions between females and males in our sample and in the sector at the same time.

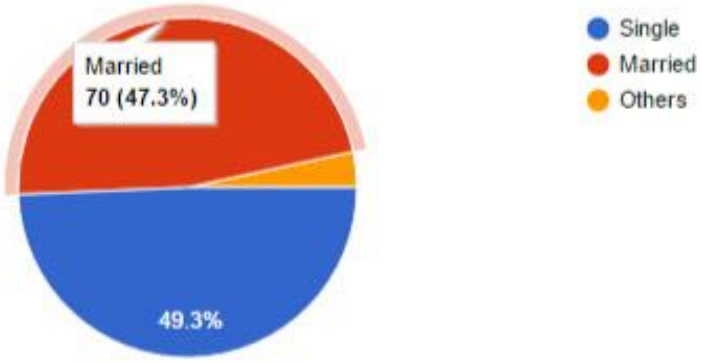

Figure 4.3: Marital status

The ratio of married and single people was very close, 47.3% of the sample reported to be married while 49.3% of the sample reported being single. Finally, 3.6% were reported to be others as widowed or divorced.

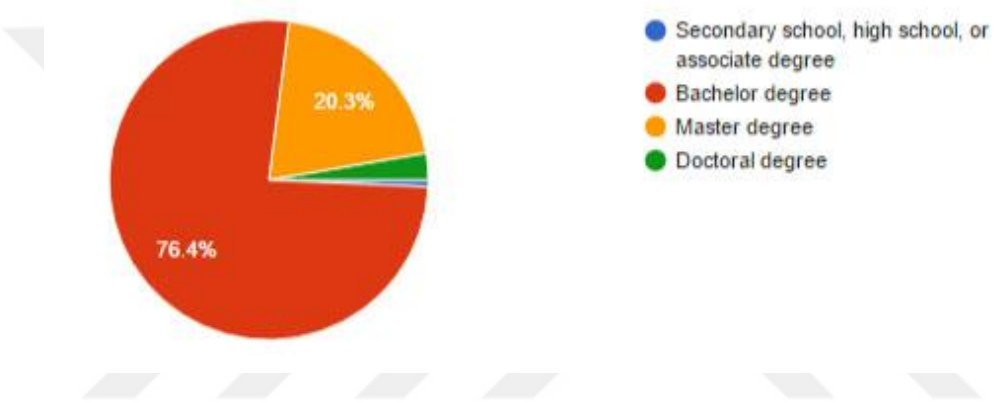

Figure 4.4: Level of education

The minimum level of education in the sample is Bachelor degree since all of the samples are graduate architects, the percentage of bachelor holders were 76.4% while master holders were 20.3% and Ph.D. holder were the remaining 4.3% of the whole sample.



Figure 4.5: Number of years of experience in an engineering firm

The sample contained a broad range of years of experience in engineering firms in Jordan. The minimum years of experiences were two years while the maximum was 44 years of experience for Chief architects or managers. The highest number of architects in the sample was the one with five years of experience, and it was 25% of the total number.

4.3 Data Entry

To find the meaning in the data collected, it was entered into SPSS program to be analyzed. First, all the answers were converted into numerical figures, Likert scale from 1 to 6 was converted into ordinal variables, and demographics data were converted into either nominal or scale variables i.e. gender, marital status and degree of education are nominal, work experience and age are scale variables.

After declaring the variables status, a detailed investigation of the question relation to work engagement was initiated. A positive relationship with work engagement was determined for all items. Items that reflects a negative relation with work engagement was reversed in SPSS program. Those items are number 4,5,6,7,9,10,13 from the perceived stress scale. After completing data entry process, normality tests were initiated.

4.4 Reliability Tests

For the reliability tests, this paper intends first to test each scale independently to be sure of the scales reliability for our data. After that, the scales are tested combined to figure out the reliability of the questionnaire.

Table 4.1: Number of cases

Case Processing Summary

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

The number of sample N=140 of quality answers, 100% of the sample responded to the questionnaire completely in a proper manner. After that, we initiated a reliability test for each scale on an individual basis, the Cronbach's Alpha values were as the following; work engagement=.927; Perceived stress PSS= .714; Self-efficacy=.798 which all shows reliability for regression analysis (See Appendix A for tables). Then we combined all of the variables to test the reliability of the questionnaire, the Cronbach's Alpha value for the scales combined was = .789 which is reliable for item numbers of 56 (please see figure 4.2).

Table 4.2: Reliability test for scales

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.789	.769	56

4.5 Normally Distribution Tests

To be academically valid, the sample has to be normally distributed between males and females, age groups, and then scales have to be reliable to the hypothesis. Therefore, first, this interpretation will start with the normality test for the four scales Work engagement, Perceived stress scale PSS, and Self-efficacy. Then it will be followed by the reliability test for the questionnaire. The sample has been tested using SPSS for Gender normality:

Table 4.3: Normality tests

Tests of Normality

Variable	Gender	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Work engagement	Male	.099	81	.047	.956	81	.007
	Female	.086	59	.200*	.959	59	.046
Perceived stress	Male	.064	81	.200*	.990	81	.763
	Female	.099	59	.200*	.975	59	.278
Self-efficacy	Male	.096	81	.064	.971	81	.061
	Female	.090	59	.200*	.971	59	.174

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

From the table below it is noticed that the Skewness and Kurtosis values for all variables are between -1.96 and +1.96 which is a sign of normal distribution for data. See the table 4.4

Table 4.4: Skewness and Kurtosis values for all variables

Descriptives

	Sex		Statistic	Std. Error
Work	Male	Mean	43.3827	1.62651

engagement		Skewness	.701	.267
		Kurtosis	.111	.529
	Female	Mean	44.7119	1.85806
		Skewness	.260	.311
		Kurtosis	-.855	.613
Percieved stress	Male	Mean	49.5062	.73538
		Skewness	.055	.267
		Kurtosis	-.184	.529
	Female	Mean	50.4915	.86674
		Skewness	-.045	.311
		Kurtosis	.390	.613
Self-efficacy	Male	Mean	21.2840	.55590
		Skewness	.368	.267
		Kurtosis	-.419	.529
	Female	Mean	20.9322	.76023
		Skewness	.586	.311
		Kurtosis	.341	.613

From the normality test in SPSS the results show that data is normally distributed for the four variables. However, it shows a little of skewness in data based on skewness and kurtosis values in the normality. Overall, the histograms for the four variables are balanced, and data is normally distributed. See figures below.

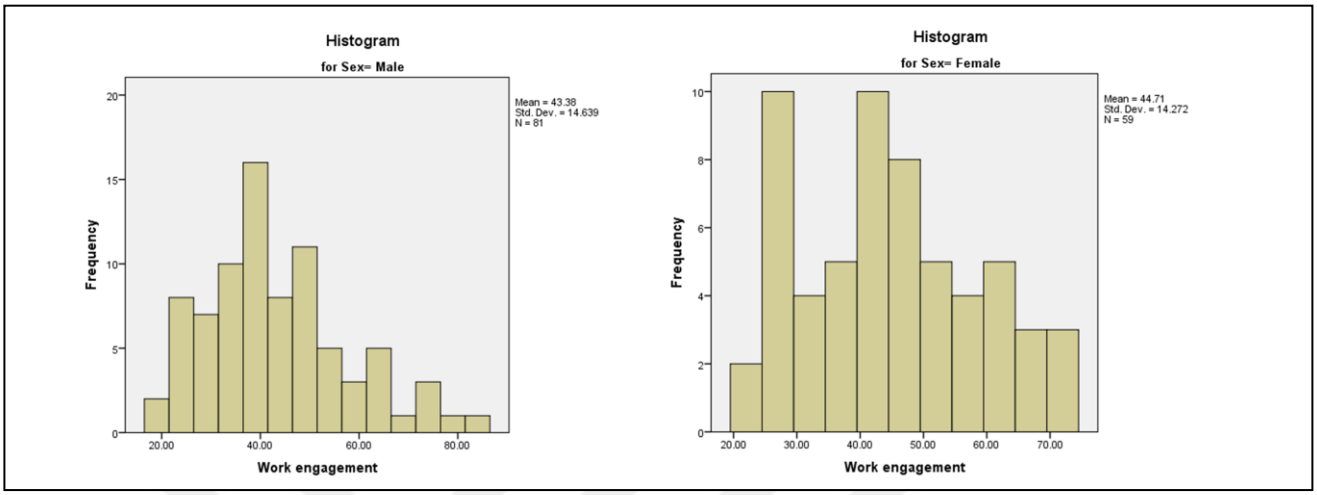

Figure 4.6: Normality histogram for work engagement verses gender

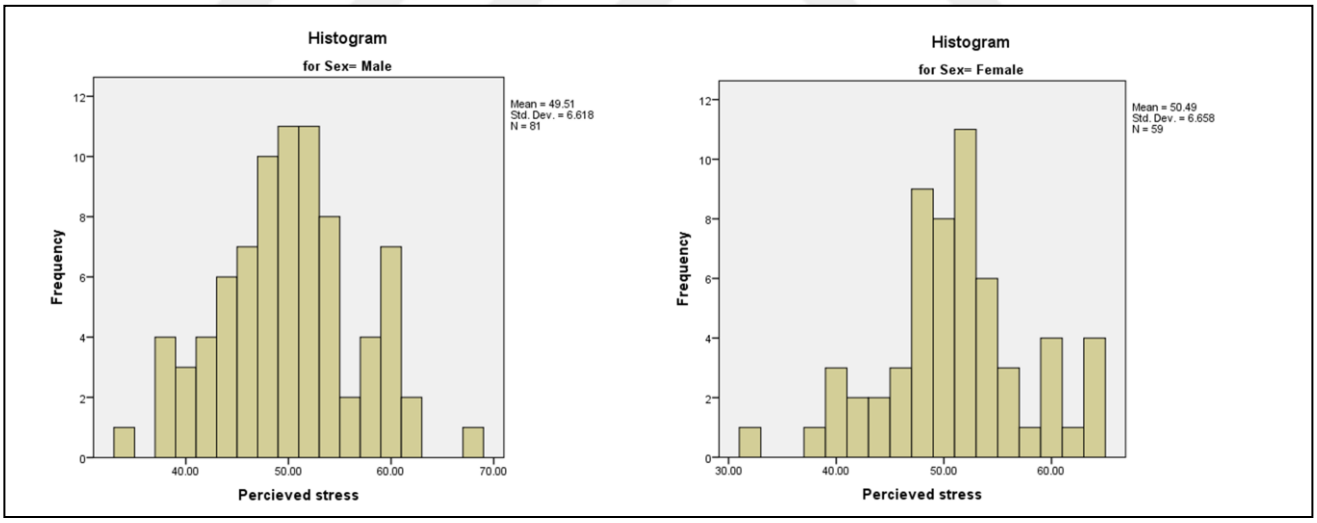

Figure 4.7: Normality histogram for perceived stress verses gender

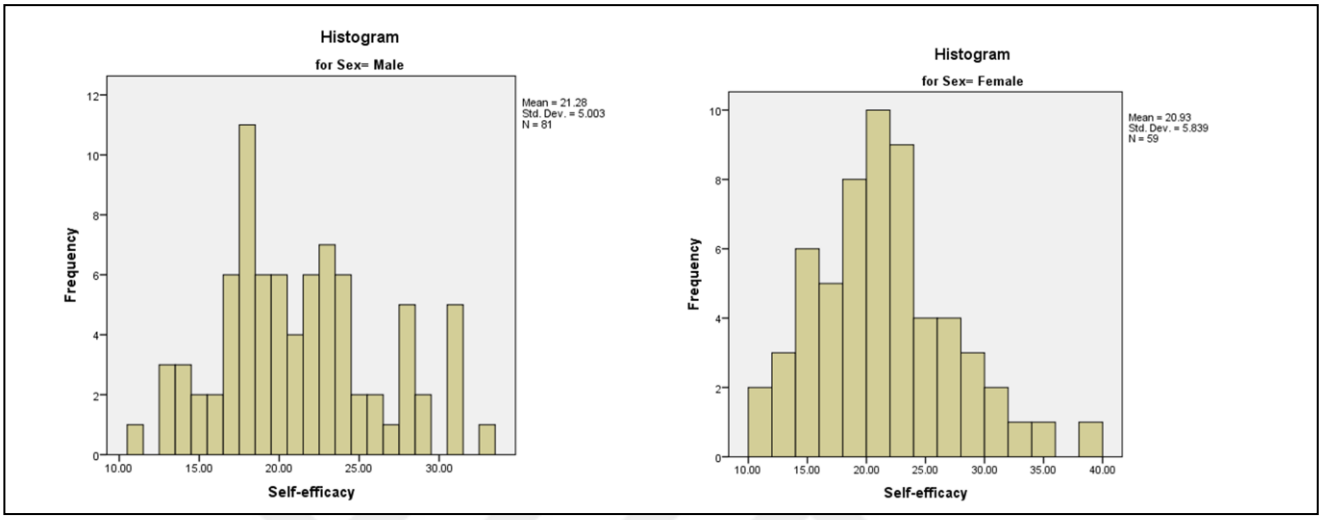

Figure 4.8: Normality histogram for self-efficacy verses gender

4.6 Multicollinearity testing

The previous section has proved that the variables are normally distributed, the next step will be to test if variables have any levels of multicollinearity. To do the testing in SPSS multiple rounds of linear regression analysis are applied to independent variables.

The first round includes perceived stress variable and self-efficacy see tables bellow

Table 4.5: Multicollinearity test self-efficacy

Coefficients

Model		Collinearity Statistics	
		Tolerance	VIF
1	Self-Efficacy	1.000	1.000

a. Dependent Variable: Perceived Stress

The VIF value is 1.000 which is less than the threshold which is 3.000, which means that there is no multicollinearity.

The second round is by testing perceived stress as independent and self-efficacy as the dependent variable, it is noticed from the table bellow that the VIF value remains 1.000 which is less than the threshold.

Table 4.6: Multicollinearity test perceived stress

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Perceived Stress	1.000	1.000

a. Dependent Variable: Self-Efficacy

The third round includes the three variables next to each other; work engagement as dependent and perceived stress and self-efficacy as dependent variables.

Table 4.7: Multicollinearity test model

Coefficients

Model		Collinearity Statistics	
		Tolerance	VIF
1	Perceived Stress	.866	1.154
	Self-Efficacy	.866	1.154

a. Dependent Variable: Work engagement

The VIF value for the model all together is 1.154 which shows that there is not multicollinearity between variables.

4.7 Factor analysis

To measure levels of work engagement, perceived stress, and self-efficacy, factor analysis is conducted. It aims to identify the relevant factors of the variables that influence the participants in their work engagement. To examine the correlation between the variables, Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Barlett's test are conducted. KMO level has to be a minimum value of 0,50 and Barlett's Test values shall be lower than 0,05. Principle components analysis and Varimax rotation are applied as well to figure out the relevant items. After finding out the relevant factors of the variables, reliability analysis is conducted by Cronbach's Alpha model for testing the consistency between the items of a factor. To have reliability, a factor's items should be higher than 0,5.

4.7.1 Work engagement

To test correlations between variables, Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Barlett's test are conducted, as well. The KMO has to be 0,50 of minimum and Barlett's Test should be meaningful through values lower than 0,05 to demonstrate the acceptability of the variables for factor analysis. Principle components analysis and Varimax rotation are applied as well to figure out the relevant items. After finding out the relevant factors of the variables, reliability analysis is conducted by Cronbach's Alpha model for testing the consistency between items of a factor. To have reliability, a factor's items should be higher than 0.5.

UTRECHT work Engagement Scale (UWES) (Schaufeli & Bakker, 2003, p.1) has three factors and 17 items on a 1-6 Likert scale as the following; (1) Almost Always, (2) Very Frequently, (3) Somewhat Frequently, (4) Somewhat Infrequently, (5) Very Infrequently, (6) Almost Never. Factors are defined as; vigor with items number 1,4,8,12,15,17, dedication with items number 2,5,7,10,13 and absorption 3,6,9,11,14,16. The total KMO value for the scale is .920 and Cronbach's Alpha value is 0.927 which is very high comparing to 0.5. Moreover, the value of Barlett's Test is 0.000 which is highly significant and lower than 0.05. It can be stated from those numbers that there is a significant correlation between items in the scale and that the variable is suitable for factor analysis.

Table 4.8: Multicollinearity test model

Reliability Statistics (Work Engagement)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.927	.926	17

The analysis is continued with varimax rotations. Through the analysis, factor loadings less than 0,5 are selected to be extracted since it is assumed that above 0,5 is the significant factor loading. After analyzing the data for total variance value, all items proved to be above 0.5.

Therefore, no items were extracted. First, the reliability test is conducted; it shows Cronbach α value of .927 which is highly reliable. Reliability analysis is followed by factor analysis, the result Kaiser-Meyer-Olkin Measure of Sampling KMO value is 0.920 > 0.50, and Bartlett's Test of Sphericity value is .000 < 0,05 which is highly significant.

Table 4.9: Multicollinearity test total model

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.920
Bartlett's Test of Sphericity	Approx. Chi-Square	1242.306
	df	136
	Sig.	.000

From the values above, it is concluded that there are three factors which their items are connected to each other very significantly. Dedication factor, with items number 12,13,15,10,11,7,9,3 secondly vigor factor, with items number 2,5,4,8,1 finally absorption factor with items number 17,14,6,16 The reliability of each one of the factors is analyzed separately using factor analyses and varimax rotation, no item was extracted. Dedication and Vigor showed a 0.911 and 0.799 which is higher than 0.5 however; absorption has resulted in Cronbach α value of 0.642 which is lower than our assumption. Therefore, absorption factor is extracted, and only two factors proved high reliability to be tested for the regression analysis with final Cronbach α value as .913, and KMO value as 0.917 > 0.50, and Bartlett's Test of Sphericity value as .000 < 0,05 Total variance value is 64.304%.

Table 4.10: Work engagement factor loading table

		Factor Loading	% Variance Explained	Cronbach α
Item number	**Factor 1: Dedication**		**26.184%**	**0.890**
12	12. I can continue working for very long periods at a time.	.768		
13	13. To me, my job is challenging.	.748		
15	15. At my job, I am very resilient, mentally.	.718		
10	10. I am proud of the work that I do.	.668		
11	11. I am immersed in my work.	.633		
7	7. My job inspires me.	.602		
9	9. I feel happy when I am working intensely.	.599		
3	3. Time flies when I am working.	.511		
	Factor 2: Vigor		**20.381%**	**0.859**
2	2. I find the work that I do full of meaning and purpose.	.848		
5	5. I am enthusiastic about my job.	.843		
4	4. At my job, I feel strong and vigorous.	.812		
8	8. When I get up in the morning, I feel like going to work.	.810		
1	1. At my work, I feel bursting with energy.	.699		
	Factor 3: Absorption		**13.846**	**0.687**
17	17. At my work, I always persevere, even when things do not go well.	.749		
14	14. I get carried away when I am working.	.735		
6	6. When I am working, I forget everything else around me.	.709		
16	16. It is difficult to detach myself from my job.	.698		

The final result of work engagement is a variable with three factors, the Cronbach α values for each factor is above 0.5 which is reliable. Variance values are explained in the table, and the total variance value of the variable is 60,411%.

4.7.2 Perceived stress

Table 4.11: Perceived stress reliability test table

Reliability Statistics (Perceived stress PSS)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.714	.717	14

Table 4.12: Perceived stress descriptive statistic

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Perceived Stress 1	2.69	.988	140
Perceived Stress 2	3.10	1.213	140
Perceived Stress 3	2.54	1.121	140
Perceived Stress 4	4.64	.960	140
Perceived Stress 5	4.51	.835	140
Perceived Stress 6	4.66	.896	140
Perceived Stress 7	4.01	.989	140
Perceived Stress 8	3.38	1.076	140
Perceived Stress 9	4.04	1.010	140
Perceived Stress 10	4.27	.896	140
Perceived Stress 11	2.83	1.045	140
Perceived Stress 12	1.94	.867	140
Perceived Stress 13	4.00	1.211	140
Perceived Stress 14	3.31	1.181	140

Perceived stress scale PSS has been first developed by (Cohen & Mermelstein, 1983, p. 385-396) it consists of 14 items on a 1-6 Likert scale as the following; (1) Almost Always, (2)Very Frequently, (3) Somewhat Frequently, (4) Somewhat Infrequently, (5) Very Infrequently, (6) Almost Never. To put perceived stress in coherence with work engagement, the stress scale

items were inversed to reflect higher levels of engagement, for example, number 1(almost always) means almost always engaged, accordingly almost always with less stress. Furthermore, number 6 (almost never) means almost never engaged, therefore, almost always with high stress. Moreover, It should be noticed that items number 4,5,6,7,9,10,13 reflect a negative verbal message to the respondent (Cohen & Mermelstein, 1983, p. 385-396) therefore those items were inversed in SPSS to be coherent with the rest of the questionnaire. The result overall is a scale from 1-6 where one is almost always engaged (never stressed), and six is almost always stressed (never engaged). First reliability test is conducted, Cronbach α value is 0.714 which is above 0.5 and reliable for analysis. The KMO value is 0.773 which is a high number, and Bartlett's test value of significance is .000 which is highly significant. Accordingly, this scale is ready to be tested in factor analysis.

Table 4.13: Perceived stress KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.773
Bartlett's Test of Sphericity	Approx. Chi-Square	491.240
	df	91
	Sig.	.000

Table 4.14: Perceived stress rotated component matrix

Rotated Component Matrix

	Component			
	1	2	3	4
Perceived Stress 1	.752	-.088	-.037	.202
Perceived Stress 3	.712	.095	.208	.340
Perceived Stress 14	.698	.106	-.222	.080
Perceived Stress 2	.696	.184	.221	.044
Perceived Stress 8	.683	-.013	-.121	-.316
Perceived Stress 6	.049	.848	-.034	.001
Perceived Stress 4	.117	.805	.077	-.125

Perceived Stress 5	.165	.648	.218	-.167
Perceived Stress 10	-.022	.577	.473	.097
Perceived Stress 9	-.257	.569	.139	.383
Perceived Stress 13	-.014	.048	.737	-.305
Perceived Stress 7	.015	.219	.723	.159
Perceived Stress 12	.141	-.065	-.112	.709
Perceived Stress 11	.508	-.081	.065	.542

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

After analysis items are divided into four factors; factor one with five items, factor two with five items, and factor three and four with two items for each of them. After conducting the first-factor analysis, no of the items factor loading was less than 0.5, therefore, factors we took into the second round. In the second series of factor analysis each factor is analyzed independently to define the factor loading values, variance explained, and Cronbach α are according to the following table.

Table 4.15: Perceived stress factor loading table

		Factor Loading	**% Variance Explained**	**Cronbach α**
Item number	**Factor 1: Stress Symptoms**		**26.835%**	**.772**
3	3. In the last month, how often have you felt nervous and "stressed"? (PS3)	.780		
1	1. In the last month, how often have you been upset because of something that happened unexpectedly? (PS1)	.758		
2	2. In the last month, how often have you felt that you were unable to control the important things in your life? (PS2)	.742		
14	14. In the last month, how often have you	.732		

	felt difficulties were piling up so high that you could not overcome them? (PS14)			
8	8. In the last month, how often have you felt that you were on top of things? (PS8)	.603		
	Factor 2: Perceived Struggle		**26.622%**	**.761**
6	6. In the last month, how often have you found that you could not cope with all the things that you had to do? (PS6)	.809		
4	4. In the last month, how often have you felt confident about your ability to handle your personal problems? (PS4)	.787		
10	10. How often have you felt that you were on top of things?	.703		
5	5. How often you felt that you were effectively coping with important changes that were occurring in your life?	.700		
9	9. How often have you been able to control irritations in your life?	.580		

The final result of perceived stress is a variable with two factors, the total Cronbach α value as 0.733> 0.5 which is highly reliable, the KMO value as 0.743 > 0.50, and Bartlett's Test of Sphericity value as .000 < 0,05 factor 3 and 4 were extracted because they had Cronbach α value less than 0.5 which is not reliable for testing. Total variance value of the variable is 53.457%.

4.7.3 Self-efficacy

Schwarzer & Jerusalem, (1995, p. 35-37) have developed ten items' scale to measure generalized self-efficacy in a person. According to Bandura (1988a, p.5) individuals which high self-efficacy report to be able to mobilize their cognitive abilities to exercise control over events in their life. Thus, a person with high self-efficacy is expected to cope better with stress and maintain high levels of work engagement. The scale proposes ten items to the respondent. True and false answers are demanded on a 1-6 Likert scale as the following; (1) Exactly true, (2)Moderately True, (3) Somewhat True, (4) Somewhat False, (5) Moderately False, (6) Exactly

False. Respondents were ordered to ask in honest manners and issues related to their professional career.

To start with the analysis process, first a reliability analysis was conducted, Cronbach α initial value as 0.798> 0.5 which is reliable, then the second step of factor analysis followed by varimax rotation was initiated; KMO value was 0.832 > 0.50, and Bartlett's Test of Sphericity value as .000 < 0,05.

Table 4.16: Self-efficacy reliability statistics

Reliability Statistics (Self-efficacy)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.798	.804	10

Table 4.17: Self-efficacy KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.823
Bartlett's Test of Sphericity	Approx. Chi-Square	323.697
	df	45
	Sig.	.000

Table 4.18: Self-efficacy rotated component matrix

Rotated Component Matrix[a]

	Component	
	1	2
Self-Efficacy 8	.775	.227
Self-Efficacy 7	.733	-.023
Self-Efficacy 9	.658	.230
Self-Efficacy 4	.577	.414
Self-Efficacy 5	.531	.501
Self-Efficacy 1	.032	.758

Self-Efficacy 3	.101	.677
Self-Efficacy 6	.272	.524
Self-Efficacy 10	.397	.467
Self-Efficacy 2	.179	.458

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

In the first-factor analysis item number 10, two were lower than 0.5. Therefore, they were extracted. Before conducting the second round of factor analysis, first reliability analysis has to be tested for the different factors. The Cronbach α values for the two factors were 0.750, 0.523. Since all the factors' α values are above 0.5, therefore, they factor analysis is continued on factor level.

Table 4.19: Self-efficacy factor loading table

	Self-efficacy	**Factor Loading**	**% Variance Explained**	**Cronbach α**
Item number	**Factor 1 Facing difficulties**		**28.568%**	**.750**
8	8. When I am confronted with a problem, I can usually find several solutions.	.811		
4	4. I am confident that I could deal efficiently with unexpected events.	.737		
5	5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	.734		
9	9. If I am in trouble, I can usually think of a solution.	.674		
7	7. I can remain calm when facing difficulties because I can rely on my coping abilities.	.621		

	Factor 2 solving problems		24.753%	0.523
1	1. I can always manage to solve difficult problems if I try hard enough.	.826		
6	6. I can solve most problems if I invest the necessary effort.	.706		
3	3. It is easy for me to stick to my aims and accomplish my goals.	.640		

The final result of Self-efficacy is variable with two factors, the total Cronbach α value as 0.733> 0.5 which is highly reliable, the KMO value as 0.743 > 0.50, and Bartlett's Test of Sphericity value as .000 < 0,05 Item 10,2 were extracted because they had factor loading value less than 0.5 which is not reliable for testing. Total variance value of the variable is 53.321%.

To understand the relationship between models first a correlation analysis is conducted to compare the correlation between the three variables against work engagement (see Table 4.21).

4.8 Correlation analysis

Table 4.20: Descriptive statistics for all variables**Descriptive Statistics**

	Mean	Std. Deviation	N
WE Dedication	21.7357	8.03733	140
WE Vigor	14.3357	5.27327	140
WE Absorption	10.3714	3.37008	140
Stress Symptoms	15.0214	4.04377	140
Perceived Struggle	22.1214	3.29261	140
SE Facing Difficulties	11.1000	3.36999	140
SE Solving Problems	11.2571	2.78839	140

Table 4.21: Correlation table N=140

Correlations

		WE Dedication	WE Vigor	WE Absorption	Stress Symptoms	Perceived Struggle	SE Facing Difficulties	SE Solving Problems
WE Dedication	Pearson Correlation	1						
	Sig. (2-tailed)							
WE Vigor	Pearson Correlation	.760**	1					
	Sig. (2-tailed)	.000						
WE Absorption	Pearson Correlation	.672**	.605**	1				
	Sig. (2-tailed)	.000	.000					
Stress Symptoms	Pearson Correlation	-.072	-.064	.069	1			
	Sig. (2-tailed)	.401	.454	.417				
Perceived Struggle	Pearson Correlation	-.428**	-.456**	-.330**	.097	1		
	Sig. (2-tailed)	.000	.000	.000	.254			
SE Facing Difficulties	Pearson Correlation	.284**	.210*	.180*	-.223**	-.304**	1	
	Sig. (2-tailed)	.001	.013	.034	.008	.000		
SE Solving Problems	Pearson Correlation	.000	-.003	-.104	-.485**	-.086	.116	1
	Sig. (2-tailed)	.995	.968	.223	.000	.314	.173	

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

*. Correlation is significant at the 0.05 level (2-tailed).

From this correlation table, it is noticed that perceived stress and self-efficacy correlates significantly with work engagement.

4.9 Research Model

From the factor analysis it is concluded that there are relationships between the three variables; between perceived stress (independent) and work engagement (Dependent), the second, between self-efficacy (Independent) and work engagement (Dependent). To understand

those relationships further regression and multi-regression analysis is conducted first between variable then between factors on a detailed level.

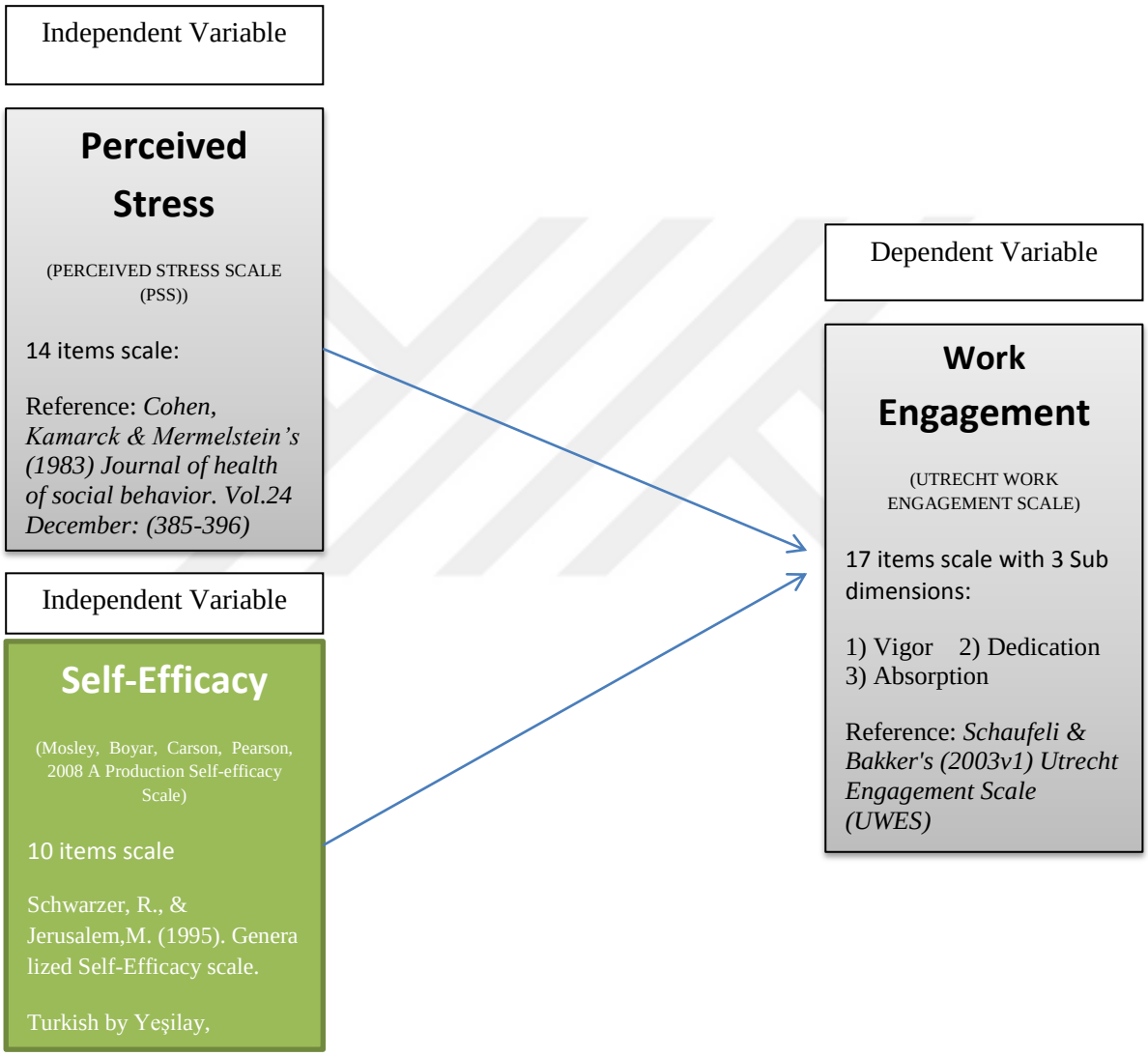

Figure 4.9: Research model after factor analysis

Before regression analysis, a correlation mapping between the different variables within the research model is conducted; the results are in Table 5.1.

Table 4.22: Research model correlation table

Correlations

		WE Dedication	WE Vigor	WE Absorption	Stress Symptoms	Perceived Struggle	SE Facing Difficulties	SE Solving Problems
WE Dedication	Pearson Correlation	1						
	Sig. (2-tailed)							
WE Vigor	Pearson Correlation	.760**	1					
	Sig. (2-tailed)	.000						
WE Absorption	Pearson Correlation	.672**	.605**	1				
	Sig. (2-tailed)	.000	.000					
Stress Symptoms	Pearson Correlation	-.072	-.064	.069	1			
	Sig. (2-tailed)	.401	.454	.417				
Perceived Struggle	**Pearson Correlation**	**-.428****	**-.456****	**-.330****	.097	1		
	Sig. (2-tailed)	.000	.000	.000	.254			
SE Facing Difficulties	**Pearson Correlation**	**.284****	**.210***	.180*	**-.223****	**-.304****	1	
	Sig. (2-tailed)	.001	.013	.034	.008	.000		
SE Solving Problems	Pearson Correlation	.000	-.003	-.104	**-.485****	-.086	.116	1
	Sig. (2-tailed)	.995	.968	.223	.000	.314	.173	

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

*. Correlation is significant at the 0.05 level (2-tailed).

From the table above it is noticed that all the of the variables correlate with work engagement. One factor from each variable correlates significantly with work engagement as the following; the belief of ability to cope with stress (Perceived Struggle) correlates significantly with work engagement's three factors. Furthermore, Self-efficacy's facing difficulties factor correlates significantly and positively with dedication and vigor factor, while it correlates with absorption but with low significance. To prove the previous correlations, the study shall test the hypothesis using regression analysis and multi-regression analysis. First, the study will test

variables against each other, and if they proved significance, then multi-regression analysis is conducted to test factors relations.

4.10 Hypothesis testing

According to the research model, there are two main hypotheses to be tested:

4.10.1 Variable regression analysis.

Table 4.23: Perceived stress and work engagement correlation table

Correlations

		WE Dedication	WE Vigor	WE Absorption	Stress Symptoms	Perceived Struggle
WE Dedication	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	140				
WE Vigor	Pearson Correlation	.760**	1			
	Sig. (2-tailed)	.000				
	N	140	140			
WE Absorption	Pearson Correlation	.672**	.605**	1		
	Sig. (2-tailed)	.000	.000			
	N	140	140	140		
Stress Symptoms	Pearson Correlation	-.072	-.064	.069	1	
	Sig. (2-tailed)	.401	.454	.417		
	N	140	140	140	140	
Perceived Struggle	**Pearson Correlation**	**-.428****	**-.456****	-.330**	.097	1
	Sig. (2-tailed)	.000	.000	.000	.254	
	N	140	140	140	140	140

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

Hypothesis 1

H1a: There is a relationship between perceived stress as an independent variable and work engagement as a dependent variable.

H1b: There is no relationship between perceived stress as an independent variable and work engagement as a dependent variable.

Table 4.24: Perceived stress and work engagement model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.309[a]	.096	.089	13.79052	1.828

a. Predictors: (Constant), Perceived Stress

b. Dependent Variable: Work engagement

Regression analysis

Table 4.25: Perceived stress and work engagement regression analysis

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	74.344	8.046		9.239	.000
	Perceived Stress	-.818	.214	-.309	-3.818	.000

a. Dependent Variable: Work engagement

Since R and R-square have values and P=0.000<0.05 then the hypothesis is valid. It is noticed that the R-square contributes to 9.6% of the variance of work engagement which is significant at p=0, 000 ≤ 0, 05. Then hypothesis H1b is rejected, and H1a is confirmed. This means that perceived stress affects work engagement.

Since the Beta coefficient gives the direction and the strength of the relationship between the dependent and independent variables, Beta value β is less than 0,70 (β = -0,309)

which is between 0< β<1 in the negative direction and P value is less than 0,01 (p < 0,01). This means that there is a statistically significant negative moderate linear correlation between perceived stress and work engagement with Beta coefficient as (β = -0,309).

Hypothesis 2:

H2a: There is a relationship between self-efficacy as an independent variable and work engagement as a dependent variable.

H2b: There is no relationship between self-efficacy as an independent variable and work engagement as a dependent variable.

Table 4.26: Self-efficacy and work engagement model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.314[a]	.099	.092	13.76772	1.862

a. Predictors: (Constant), Self-efficacy

b. Dependent Variable: Work engagement

Table 4.27: Self-efficacy and work engagement regression analysis

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	27.158	4.475		6.069	.000
	Self-efficacy	1.009	.260	.314	3.884	.000

a. Dependent Variable: Work engagement

R square value contributes 9.9% of the variance of work engagement variable which is significant at p=0, 000 ≤ 0, 05 for self-efficacy variable. Therefore H2a is confirmed with β =

0,314 for self-efficacy variable. Overall self-efficacy has a statistically significant positive moderate linear correlation with work engagement variable.

As hypothesis 1 and two are valid, accordingly regression analysis on the factor level is initiated:

4.10.2 Factorial regression analysis.

A) Perceived stress and work engagement factors

Hypothesis 3:

H3a: There is a relationship between Stress symptoms factor and work engagement.

H3b: There is no relationship between Stress symptoms factor and work engagement.

Regression analysis

Table 4.28: Stress symptoms and work engagement regression analysis

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	46.341	4.726		9.806	.000
	Stress symptoms	-.160	.304	-.045	-.525	.600

a. Dependent Variable: Work engagement

The R and R-square have values close to zero and P=0.6>0.05 which is not significant, therefore hypothesis H3a is refused, and H3b is valid. There is no relationship between perceived stress factor and work engagement.

Hypothesis 4:

H4a: There is a relationship between Perceived Struggle factor and work engagement.

H4b: There is no relationship between Perceived Struggle factor and work engagement.

Table 4.29: Perceived struggle and work engagement model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.457[a]	.209	.204	12.89452	1.873

a. Predictors: (Constant), Perceived Struggle

b. Dependent Variable: Work engagement

Regression analysis

Table 4.30: Perceived struggle and work engagement regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	88.349	7.428		11.893	.000
	Perceived Struggle	-2.007	.332	-.457	-6.043	.000

a. Dependent Variable: Work engagement

The R and R-square have values and P=0.000<0.05 then the hypothesis is valid. It is noticed that the R-square contributes to 20.9% of the variance of work engagement which is significant at p=0, 000 ≤ 0, 05. Then hypothesis H4a is confirmed, and H4b is rejected. Beta coefficient β value is (β = -0,457) This means that there is a statistically significant negative moderate linear correlation between Struggle factor and work engagement with Beta coefficient as (β = -0,457).

Hypothesis 5:

H5a: There is a relationship between perceived stress and dedication.

H5b: There is no relationship between perceived stress and dedication.

Table 4.31: Stress symptoms and dedication model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.429[a]	.184	.172	7.31156	1.936

a. Predictors: (Constant), Stress symptoms, Perceived Stress

b. Dependent Variable: WE Dedication

The R and R-square have values and P=0.000<0.05 then the hypothesis is valid. It is noticed that the R-square contributes to 18.4% of the variance of dedication which is significant at ANOVA p=0, 000 ≤ 0, 05.

Table 4.32: Stress symptoms and dedication ANOVA test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1655.341	2	827.671	15.482	.000[b]
	Residual	7323.880	137	53.459		
	Total	8979.221	139			

a. Dependent Variable: WE Dedication

b. Predictors: (Constant), Perceived Struggle, Stress symptoms

Multiple regression analysis

Table 4.33: Stress symptoms and dedication regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	45.609	4.624		9.863	.000
	Stress symptoms	-.060	.154	-.030	-.390	.697
	Perceived Struggle	-1.038	.189	-.425	-5.487	.000

a. Dependent Variable: WE Dedication

Then hypothesis H5a is confirmed with a beta coefficient β value as (β = -0,425) and p=0.000 but not significant for Stress symptoms factor at p=.697. This means that there is a statistically

significant negative moderate linear correlation between perceived stress and dedication factor with Beta coefficient as (β = -0,425).

Hypothesis 6:

H6a: There is a relationship between perceived stress and vigor.

H6b: There is no relationship between perceived stress and vigor.

Table 4.34: Perceived stress and vigor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.456[a]	.208	.197	4.72588	1.812

a. Predictors: (Constant), Perceived Struggle, Stress symptoms

b. Dependent Variable: WE Vigor

Table 4.35: Perceived stress and vigor ANOVA test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	805.470	2	402.735	18.032	.000[b]
	Residual	3059.751	137	22.334		
	Total	3865.221	139			

a. Dependent Variable: WE Vigor

b. Predictors: (Constant), Perceived Struggle, Perceived Stress

Similar to hypothesis 4, hypothesis 5 have positive R and R-square values and 20.8% contribution to the variance of Vigor for R square which is significant at ANOVA p=0, 000 ≤ 0, 05. Therefore H6a is confirmed.

Multiple regression analysis

Table 4.36: Perceived stress and vigor multiple regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	30.812	2.989		10.309	.000
	Stress symptoms	-.026	.100	-.020	-.258	.797
	Perceived Struggle	-.727	.122	-.454	-5.947	.000

a. Dependent Variable: WE Vigor

To measure beta coefficient, a multiple regression analysis is done β = -0,454 for Perceived Struggle factor, and Stress symptoms factor is not significant to measure stress relation with vigor. Overall, perceived stress has statistically significant negative moderate linear correlation vigor.

Hypothesis 7:

H7a: There is a relationship between perceived stress and absorption.

H7b: There is no relationship between perceived stress and absorption.

Table 4.37: Perceived stress and absorption model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.345[a]	.119	.107	3.18555	1.657

a. Predictors: (Constant), Perceived Struggle, Stress Symptoms

b. Dependent Variable: WE Absorption

Table 4.38: Perceived stress and absorption ANOVA test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	188.443	2	94.221	9.285	.000[b]
	Residual	1390.243	137	10.148		
	Total	1578.686	139			

a. Dependent Variable: WE Absorption

b. Predictors: (Constant), Perceived Struggle, Stress Symptoms

R square value is 11.9% contribution to the variance of Vigor for R square which is significant at ANOVA p=0, 000 ≤ 0, 05. Therefore H6a is confirmed with β = -0,340 for Perceived Struggle factor. Stress symptom factor has no significance with absorption factor. Overall, perceived stress has a statistically significant negative moderate linear correlation with absorption factor.

Multiple regression analysis

Table 4.39: Perceived stress and absorption multiple regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.794	2.015		8.336	.000
	Stress Symptoms	.085	.067	.102	1.268	.207
	Perceived Struggle	-.348	.082	-.340	-4.222	.000

a. Dependent Variable: WE Absorption

Hypothesis 8:

H8a: There is a relationship between stress symptoms factor and dedication.

H8b: There is no relationship between stress symptoms factor and dedication.

Table 4.40: Stress symptoms and dedication model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.072[a]	.005	-.002	8.04573	1.954

a. Predictors: (Constant), Stress Symptoms

b. Dependent Variable: WE Dedication

Table 4.41: Stress symptoms and dedication ANOVA test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45.959	1	45.959	.710	.401[b]
	Residual	8933.262	138	64.734		
	Total	8979.221	139			

a. Dependent Variable: WE Dedication

b. Predictors: (Constant), Stress Symptoms

R square value and is .005 which is close to zero, P value = 0.4 > 0.05 which is not significant. Hypothesis H8a is rejected, and H8b is confirmed. There is no correlation between stress symptom factor and dedication.

Hypothesis 9:

H9a: There is a relationship between stress symptoms factor and vigor.

H9b: There is no relationship between stress symptoms factor and vigor.

Table 4.42: Stress symptoms and vigor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.064[a]	.004	-.003	5.28157	1.818

a. Predictors: (Constant), Stress Symptoms

b. Dependent Variable: WE Vigor

Table 4.43: Stress symptoms and vigor ANOVA test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.717	1	15.717	.563	.454[b]
	Residual	3849.504	138	27.895		
	Total	3865.221	139			

a. Dependent Variable: WE Vigor

b. Predictors: (Constant), Stress Symptoms

R square value and is .005 which is close to zero, P value = 0.45 > 0.05 which is not significant. Hypothesis H9a is rejected, and H9b is confirmed. There is no correlation between stress symptom factor and vigor.

Hypothesis 10:

H10a: There is a relationship between stress symptoms factor and absorption.

H10b: There is no relationship between stress symptoms factor and absorption.

Table 4.44: Stress symptoms and absorption multiple regression analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.069[a]	.005	-.002	3.37419	1.658

a. Predictors: (Constant), Stress Symptoms

b. Dependent Variable: WE Absorption

R square value and is .005 which is close to zero, P value = 0.45 > 0.05 which is not significant. Hypothesis H10a is rejected, and H10b is confirmed. There is no correlation between stress symptom factor and absorption.

Hypothesis 11:

H11a: There is a relationship between Struggle factor and dedication.

H11b: There is no relationship between Struggle factor and dedication.

Table 4.45: Perceived struggle and dedication model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson

1	.428[a]	.183	.178	7.28907	1.937

a. Predictors: (Constant), Perceived Struggle

b. Dependent Variable: WE Dedication

Regression analysis

Table 4.46: Perceived struggle and dedication regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	44.864	4.199		10.684	.000
	Perceived Struggle	-1.046	.188	-.428	-5.568	.000

a. Dependent Variable: WE Dedication

R square value contributes to 18.3% of the variance of dedication factor which is significant at p=0, 000 ≤ 0, 05. Therefore H11a is confirmed with β = -0,428 for Perceived Struggle factor. Overall Perceived Struggle factor has a statistically significant negative moderate linear correlation with dedication factor.

Hypothesis 12:

H12a: There is a relationship between Struggle factor and vigor.

H12b: There is no relationship between Struggle factor and vigor.

Table 4.47: Perceived struggle and vigor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.456[a]	.208	.202	4.70987	1.812

a. Predictors: (Constant), Perceived Struggle

b. Dependent Variable: WE Vigor

Regression analysis

Table 4.48: Perceived struggle and vigor regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	30.494	2.713		11.239
	Perceived Struggle	-.730	.121	-.456	-6.020

a. Dependent Variable: WE Vigor

R square value contribute to 20.8% of the variance of vigor factor which is significant at p=0, 000 ≤ 0, 05. Therefore H12a is confirmed with β = -0,456 for Perceived Struggle factor. Overall Perceived Struggle factor has a statistically significant negative moderate linear correlation with vigor factor.

Hypothesis 13:

H13a: There is a relationship between Struggle factor and absorption.

H13b: There is no relationship between Struggle factor and absorption.

Table 4.49: Perceived struggle and absorption model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.330[a]	.109	.103	3.19255	1.668

a. Predictors: (Constant), Perceived Struggle

b. Dependent Variable: WE Absorption

Regression analysis

Table 4.50: Perceived struggle and absorption regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.848	1.839		9.704	.000
	Perceived Struggle	-.338	.082	-.330	-4.110	.000

a. Dependent Variable: WE Absorption

R square value contribute relatively low of the variance of vigor factor with 10.9% which is significant at p=0, 000 ≤ 0, 05. Therefore H13a is confirmed with β = -0,330 for Perceived Struggle factor. Overall Perceived Struggle factor has a statistically significant negative moderate linear correlation with absorption factor.

Hypothesis 14:

H14a: There is a relationship between Perceived stress (two factors) and work engagement.

H14b: There is no relationship between Perceived stress (two factors) and work engagement.

Table 4.51: Perceived stress (two factors) and work engagement model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.457[a]	.209	.198	12.94150	1.873

a. Predictors: (Constant), Stress Symptoms, Perceived Struggle

b. Dependent Variable: Work engagement

Table 4.52: Perceived stress (two factors) and work engagement ANOVA test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6072.456	2	3036.228	18.129	.000[b]
	Residual	22945.087	137	167.482		

Total	29017.543	139			

a. Dependent Variable: Work engagement

b. Predictors: (Constant), Stress Symptoms, Perceived Struggle

Multiple regression analysis

Table 4.53: Perceived stress (two factors) and work engagement multiple regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	88.362	8.185		10.796	.000
	Perceived Struggle	-2.007	.335	-.457	-5.993	.000
	Stress Symptoms	-.001	.273	.000	-.004	.997

a. Dependent Variable: Work engagement

R square value contributes 20.9% of the variance of work engagement variable which is significant at p=0, 000 ≤ 0, 05 for Perceived Struggle factor and not significant for stress symptoms. Therefore H14a is confirmed with β = -0,457 for Perceived Struggle factor. Overall perceived stress has a statistically significant negative moderate linear correlation with work engagement variable.

This proves the first relation in the model between stress and work engagement. To test the second relation in the model between self-efficacy and work engagement, it is necessary to conduct a hypothesis testing.

B) Self-efficacy and work engagement factor hypothesis testing

Hypothesis 15:

H15a: There is a relationship between facing difficulties factor and work engagement.

H15b: There is no relationship between facing difficulties factor and work engagement.

Table 4.54: Facing difficulties factor and work engagement model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.259[a]	.067	.060	14.00488	1.871

a. Predictors: (Constant), SE Facing Difficulties

b. Dependent Variable: Work engagement

Table 4.55: Facing difficulties factor and work engagement regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	31.604	4.088		7.731	.000
	SE Facing Difficulties	1.112	.352	.259	3.154	.002

a. Dependent Variable: Work engagement

R square value contributes 6.7 % of the variance of work engagement variable which is significant at p=0, 002 ≤ 0, 05 for facing difficulties factor. Therefore H15a is confirmed with β = 0,259 for self-efficacy variable. Overall facing difficulties factor has a statistically significant positive moderate linear correlation with work engagement variable.

Hypothesis 16:

H16a: There is a relationship between solving problems factor and work engagement.

H16b: There is no relationship between solving problems factor and work engagement.

Table 4.56: Solving problems factor and work engagement model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.027[a]	.001	-.006	14.49535	1.889

a. Predictors: (Constant), SE Solving Problems

b. Dependent Variable: Work engagement

Table 4.57: Solving problems factor and work engagement regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	45.536	5.113		8.907	.000
	SE Solving Problems	-.142	.441	-.027	-.321	.749

a. Dependent Variable: Work engagement

R square value is .001 which is insignificant with p=0,749> 0, 05 for self-efficacy variable. Therefore H16b is confirmed. Overall solving problems factor has no correlation with work engagement variable.

Hypothesis 17:

H17a: There is a relationship between self-efficacy and dedication factor.

H17b: There is no relationship between self-efficacy and dedication factor.

Table 4.58: self-efficacy and dedication factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.285[a]	.081	.068	7.75893	1.974

a. Predictors: (Constant), SE Solving Problems, SE Facing Difficulties

b. Dependent Variable: WE Dedication

Multiple regression analysis

Table 4.59: self-efficacy and dedication factor multiple regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.193	3.316		4.582	.000
	SE Facing Difficulties	.685	.197	.287	3.486	.001
	SE Solving Problems	-.095	.238	-.033	-.398	.691

a. Dependent Variable: WE Dedication

R square value contributes 8.1 % of the variance of dedication factor variable which is significant at p=0, 001 ≤ 0, 05 for facing difficulties factor and not significant for solving problems. Therefore H17a is confirmed with β = 0,287 for facing difficulties factor and not significant for solving problems factor. Overall self-efficacy has a statistically significant positive moderate linear correlation with dedication factor.

Hypothesis 18:

H18a: There is a relationship between self-efficacy and vigor factor.

H18b: There is no relationship between self-efficacy and vigor factor.

Table 4.60: self-efficacy and vigor factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.212[a]	.045	.031	5.19125	1.821

a. Predictors: (Constant), SE Solving Problems, SE Facing Difficulties

b. Dependent Variable: WE Vigor

Multiple regression analysis

Table 4.61: self-efficacy and vigor factor multiple regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.234	2.218		5.064	.000
	SE Facing Difficulties	.333	.132	.213	2.535	.012
	SE Solving Problems	-.053	.159	-.028	-.335	.738

a. Dependent Variable: WE Vigor

R square value contributes 4.5 % of the variance of vigor factor which is slightly significant at p=0, 012 ≤ 0, 05 for facing difficulties factor and not significant for solving problems. Therefore H18a is confirmed with β = 0,213 for facing difficulties factor and not significant for solving problems factor. Overall self-efficacy has a statistically significant positive moderate linear correlation with vigor factor.

Hypothesis 19:

H19a: There is a relationship between self-efficacy and absorption factor.

H19b: There is no relationship between self-efficacy and absorption factor.

Table 4.62: self-efficacy and absorption factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.219[a]	.048	.034	3.31208	1.715

a. Predictors: (Constant), SE Solving Problems, SE Facing Difficulties

b. Dependent Variable: WE Absorption

Multiple regression analysis

Table 4.63: self-efficacy and absorption factor multiple regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.930	1.415		7.016	.000
	SE Facing Difficulties	.194	.084	.194	2.316	.022
	SE Solving Problems	-.152	.101	-.126	-1.503	.135

a. Dependent Variable: WE Absorption

R square value contributes 4.5 % of the variance of absorption factor which is slightly significant at p=0, 022 ≤ 0, 05 for facing difficulties factor and not significant for solving problems factor. Therefore H19a is confirmed with β = 0,194 for facing difficulties factor and not significant for solving problems factor. Overall self-efficacy has a statistically significant positive moderate linear correlation with absorption factor.

Hypothesis 20:

H20a: There is a relationship between facing difficulties factor and dedication factor.

H20b: There is no relationship between facing difficulties factor and dedication factor.

Table 4.64: facing difficulties factor and dedication factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.284[a]	.080	.074	7.73524	1.962

a. Predictors: (Constant), SE Facing Difficulties

b. Dependent Variable: WE Dedication

Regression analysis

Table 4.65: facing difficulties factor and dedication factor regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.228	2.258		6.302	.000
	SE Facing Difficulties	.676	.195	.284	3.474	.001

a. Dependent Variable: WE Dedication

R square value contributes 8 % of the variance of dedication factor which is slightly significant at p=0, 001 ≤ 0, 05.Therefore H20a is confirmed with β = 0,284. Overall facing difficulties factor has a statistically significant positive moderate linear correlation with dedication factor.

Hypothesis 21:

H21a: There is a relationship between facing difficulties factor and vigor factor.

H21b: There is no relationship between facing difficulties factor and vigor factor.

Table 4.66: facing difficulties factor and vigor factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.210[a]	.044	.037	5.17453	1.809

a. Predictors: (Constant), SE Facing Difficulties

b. Dependent Variable: WE Vigor

Regression analysis

Table 4.67: facing difficulties factor and vigor factor regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.691	1.510		7.079	.000
	SE Facing Difficulties	.328	.130	.210	2.521	.013

a. Dependent Variable: WE Vigor

R square value contributes 4.4 % of the variance of vigor factor which is slightly significant at p=0, 013 ≤ 0, 05.Therefore H21a is confirmed with β = 0,210. Overall facing difficulties factor has a statistically significant positive moderate linear correlation with vigor factor.

Hypothesis 22:

H22a: There is a relationship between facing difficulties factor and absorption factor.

H22b: There is no relationship between facing difficulties factor and absorption factor.

Table 4.68: facing difficulties factor and absorption factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.180[a]	.032	.025	3.32717	1.677

a. Predictors: (Constant), SE Facing Difficulties

b. Dependent Variable: WE Absorption

Regression analysis

Table 4.69: facing difficulties factor and absorption factor regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.376	.971		8.625	.000
	SE Facing Difficulties	.180	.084	.180	2.147	.034

a. Dependent Variable: WE Absorption

R square value contributes 3.2 % of the variance of absorption factor which is slightly significant at p=0, 013 ≤ 0, 05.Therefore H21a is confirmed with β = 0,180. Overall facing difficulties factor has a statistically significant positive moderate linear correlation with absorption factor.

Hypothesis 23:

H23a: There is a relationship between solving problems factor and dedication factor.

H23b: There is no relationship between solving problems factor and dedication factor.

Table 4.70: Solving problems factor and dedication factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.000[a]	.000	-.007	8.06640	1.969

a. Predictors: (Constant), SE Solving Problems

b. Dependent Variable: WE Dedication

R and R-square value are zero. Hypothesis H23a is rejected, and H23b is confirmed. Solving problem factor does not have a relationship with dedication factor

Hypothesis 24:

H24a: There is a relationship between solving problems factor and vigor factor.

H24b: There is no relationship between solving problems factor and vigor factor.

Table 4.71: Solving problems factor and vigor factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.003[a]	.000	-.007	5.29231	1.832

a. Predictors: (Constant), SE Solving Problems

b. Dependent Variable: WE Vigor

R and R-square value are zero. Hypothesis H24a is rejected, and H24b is confirmed. Solving problem factor does not have a relationship with vigor factor

Hypothesis 25:

H25a: There is a relationship between solving problems factor and absorption factor.

H25b: There is no relationship between solving problems factor and absorption factor.

Table 4.72: Solving problems factor and absorption factor model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.104[a]	.011	.004	3.36406	1.688

a. Predictors: (Constant), SE Solving Problems

b. Dependent Variable: WE Absorption

R and R-square value are close to zero. Hypothesis H25a is rejected, and H25b is confirmed. Solving problem factor does not have a relationship with absorption factor

Hypothesis 26:

H26a: There is a relationship between self-efficacy (two factors) and work engagement.

H26b: There is no relationship between self-efficacy (two factors) and work engagement.

Table 4.73: self-efficacy (two factors) and work engagement model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.266[a]	.071	.057	14.03075	1.896

a. Predictors: (Constant), SE Facing Difficulties, SE Solving Problems

b. Dependent Variable: Work engagement

Table 4.74: self-efficacy (two factors) and work engagement ANOVA test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2047.454	2	1023.727	5.200	.007[b]
	Residual	26970.089	137	196.862		
	Total	29017.543	139			

a. Dependent Variable: Work engagement

b. Predictors: (Constant), SE Facing Difficulties, SE Solving Problems

Multiple regression analysis

Table 4.75: self-efficacy (two factors) and work engagement multiple regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	34.675	5.996		5.783	.000
	SE Solving Problems	-.301	.430	-.058	-.701	.484
	SE Facing Difficulties	1.141	.356	.266	3.208	.002

a. Dependent Variable: Work engagement

R square value contributes 7.1 % of the variance of work engagement which is slightly significant at p=0, 002 ≤ 0, 05 for facing difficulties factor, and not significant for solving problem factor. Therefore H26a is confirmed with β = 0,266. Overall self-efficacy has a statistically significant positive moderate linear correlation with work engagement.

4.11 Demographic analysis

4.11.1 Gender

Table 4.76: Gender Statistics Independent T test

Gender Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean		t	P
WE Dedication factor	Male	81	21.3827	8.09872	.89986	Equal variances assumed	1.217	.545
	Female	59	22.2203	7.99583	1.04097			.544
WE Vigor factor	Male	81	14.2840	5.44342	.60482	Equal variances assumed	0.273	.892
	Female	59	14.4068	5.07570	.66080			.891
WE Absorption factor	Male	81	10.1852	3.47531	.38615	Equal variances assumed	1.539	.446
	Female	59	10.6271	3.23184	.42075			.440
Stress Symptoms factor	Male	81	15.1111	3.97492	.44166	Equal variances assumed	0.610	.760
	Female	59	14.8983	4.16759	.54257			.762
Perceived Struggle factor	Male	81	21.9012	3.28102	.36456	Equal variances assumed	1.924	.356
	Female	59	22.4237	3.31248	.43125			.357
SE Facing Difficulties factor	Male	81	11.0123	3.27679	.36409	Equal variances assumed	0.714	.720
	Female	59	11.2203	3.51876	.45810			.723
SE Solving	Male	81	11.6420	2.55592	.28399	Equal	3.814	.055

Problems factor	Female	59	10.7288	3.02193	.39342	variances assumed		.062
Work engagement variable	Male	81	43.3827	14.63862	1.62651	Equal	1.074	.593
	Female	59	44.7119	14.27205	1.85806	variances assumed		.591
Perceived Stress variable	Male	81	37.0123	5.36072	.59564	Equal	0.660	.742
	Female	59	37.3220	5.62764	.73266	variances assumed		.743
Self-efficacy variable	Male	81	16.7284	4.31281	.47920	Equal	0.609	.759
	Female	59	16.4915	4.76472	.62031	variances assumed		.763

4.11.2 Marital status

Table 4.77: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Sex	.731	2	137	.483
WE Dedication	1.761	2	137	.176
WE Vigor	.972	2	137	.381
WE Absorption	.749	2	137	.475
Stress Symptoms	1.403	2	137	.249
Perceived Struggle	1.291	2	137	.278
SE Facing Difficulties	1.424	2	137	.244
SE Solving Problems	.269	2	137	.765
Work engagement	1.369	2	137	.258
Perceived Stress	.251	2	137	.778
Self-efficacy	.661	2	137	.518

Levene's test values for factors and variables are higher than 0.05.This proves that there is no difference of factors or variables regarding marital status.

Table 4.78: Marital status one way ANOVA test

Marital status Statistics

	Marital status	N	Mean	Std. Deviation	t	P
WE Dedication	Married	65	20.95	8.73	1.153	.319
	Single	71	22.25	7.17		
	Other	4	25.25	11.47		
	Total	140	21.74	8.04		
WE Vigor	Married	65	13.82	5.64		
	Single	71	14.63	4.89		
	Other	4	17.50	5.51		
	Total	140	14.34	5.27		
WE Absorption	Married	65	10.29	3.49	.051	.951
	Single	71	10.42	3.35		
	Other	4	10.75	2.06		
	Total	140	10.37	3.37		
Stress Symptoms	Married	65	14.92	4.43	.478	.621
	Single	71	15.21	3.69		
	Other	4	13.25	3.86		
	Total	140	15.02	4.04		
Perceived Struggle	Married	65	22.72	3.48	2.130	.123
	Single	71	21.63	3.09		
	Other	4	21.00	2.16		
	Total	140	22.12	3.29		
SE Facing Difficulties	Married	65	10.66	3.57	3.820	.024
	Single	71	11.27	3.07		
	Other	4	15.25	2.63		
	Total	140	11.10	3.37		
SE Solving Problems	Married	65	11.49	2.86	.511	.601
	Single	71	11.08	2.75		
	Other	4	10.50	2.65		
	Total	140	11.26	2.79		
Work engagement	Married	65	42.66	15.71	.803	.450
	Single	71	44.73	13.20		
	Other	4	50.75	15.04		
	Total	140	43.94	14.45		

Perceived Stress	Married	65	37.65	5.67	.943	.392
	Single	71	36.85	5.23		
	Other	4	34.25	5.91		
	Total	140	37.14	5.46		
Self-efficacy variable	Married	65	16.28	4.73	2.136	.122
	Single	71	16.70	4.22		
	Other	4	21.00	3.83		
	Total	140	16.63	4.49		

4.11.3 Educational degree one way ANOVA test

Table 4.79: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Sex	.607	2	137	.546
WE Dedication	1.536	2	137	.219
WE Vigor	3.532	2	137	.032
WE Absorption	5.251	2	137	.060
Stress Symptoms	.248	2	137	.781
Perceived Struggle	1.303	2	137	.275
SE Facing Difficulties	2.464	2	137	.089
SE Solving Problems	1.100	2	137	.336
Work engagement	2.507	2	137	.085
Perceived Stress	.827	2	137	.440
Self-efficacy variable	2.966	2	137	.055

Since Levene's test values for factors and variables are higher than 0.05, then this proves that there is no difference of factors or variables regarding educational degree.

Table 4.80: Educational degree Statistics Independent T-test

Descriptives one way ANOVA test

		N	Mean	Std. Deviation	t	P
WE Dedication factor	Bachelor	107	21.92	8.34	.129	.879
	Master	29	21.17	7.30		
	Doctorate	4	20.75	5.50		
	Total	140	21.73	8.03		
WE Vigor factor	Bachelor	107	14.68	5.54	1.388	.253
	Master	29	13.51	4.31		
	Doctorate	4	11.00	2.00		
	Total	140	14.33	5.27		
WE Absorption factor	Bachelor	107	10.33	3.58	.077	.926
	Master	29	10.41	2.69		
	Doctorate	4	11.00	1.63		
	Total	140	10.37	3.37		
Stress Symptoms factor	Bachelor	107	14.98	4.03	1.154	.318
	Master	29	14.75	3.86		
	Doctorate	4	18.00	5.41		
	Total	140	15.02	4.04		
Perceived Struggle factor	Bachelor	107	21.81	3.23	2.023	.136
	Master	29	23.10	3.52		
	Doctorate	4	23.25	1.25		
	Total	140	22.12	3.29		
SE Facing Difficulties factor	Bachelor	107	11.05	3.42	.147	.863
	Master	29	11.34	3.43		
	Doctorate	4	10.50	.571		
	Total	140	11.10	3.36		
SE Solving Problems factor	Bachelor	107	11.24	2.63	.957	.387
	Master	29	11.55	3.24		
	Doctorate	4	9.50	3.31		
	Total	140	11.25	2.78		
Work engagement variable	Bachelor	107	44.45	15.22	.330	.720
	Master	29	42.55	12.07		
	Doctorate	4	40.25	8.53		
	Total	140	43.94	14.44		

	Bachelor	107	36.79	5.27	1.617	.202
Perceived Stress variable	Master	29	37.86	6.08		
	Doctorate	4	41.25	4.34		
	Total	140	37.14	5.45		
	Bachelor	107	16.54	4.68	.305	.738
Self-efficacy variable	Master	29	17.10	4.06		
	Doctorate	4	15.50	.571		
	Total	140	16.62	4.49		

4.11.4 Age groups analysis one way ANOVA test

Table 4.81: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
WE Dedication	1.882	3	136	.135
WE Vigor	3.033	3	136	**.032**
WE Absorption	2.737	3	136	**.046**
Stress Symptoms	.564	3	136	.639
Perceived Struggle	.574	3	136	.633
SE Facing Difficulties	3.673	3	136	**.014**
SE Solving Problems	.754	3	136	.522
Work engagement variable	2.284	3	136	.082
Perceived Stress variable	.311	3	136	.817
Self-efficacy variable	2.213	3	136	.089

Since Levene's test values for work engagement vigor and absorption and self-efficacy's factor are less than 0.05, then Welch and Brown-Forsythe test shall be conducted to prove the relation between factors and age group.

Table 4.82: Robust Tests of Equality of Means

		Statistic[a]	df1	df2	Sig.
WE Vigor	Welch	6.695	3	19.937	.003
	Brown-Forsythe	4.845	3	66.460	.004
WE Absorption	Welch	4.478	3	23.886	.012
	Brown-Forsythe	1.676	3	44.367	.186
SE Facing Difficulties	Welch	22.075	3	23.521	.000
	Brown-Forsythe	3.338	3	22.759	.037

a. Asymptotically F distributed.

From Welch and Brown-Forsythe tests, it is noted that absorption factor has a total sum of significant .198 > .05 which is significant there for the factor is affected among different age group, however, for the rest of the factors, numbers show that there is no difference of variables or factors regarding age groups.

Table 4.83: Age groups Statistics one way ANOVA test

Age groups Descriptives statistics

	Age group	N	Mean	Std. Deviation	t	P
WE Dedication factor	20-29	81	23.05	8.02	3.039	.031
	30-39	43	20.88	8.40		
	40-49	10	19.20	4.02		
	Above 50	6	14.33	5.61		
	Total	140	21.74	8.04		
WE Vigor factor	20-29	81	14.85	5.24	3.023	.032
	30-39	43	14.67	5.58		
	40-49	10	11.60	2.72		
	Above 50	6	9.50	3.21		
	Total	140	14.34	5.27		
WE Absorption factor	20-29	81	10.75	3.35	1.223	.304
	30-39	43	10.12	3.57		
	40-49	10	9.40	3.31		
	Above 50	6	8.67	1.03		

	Total	140	10.37	3.37		
Stress Symptoms factor	20-29	81	14.93	4.10	1.340	.264
	30-39	43	14.63	4.01		
	40-49	10	15.70	4.22		
	Above 50	6	18.00	2.37		
	Total	140	15.02	4.04		
Perceived Struggle factor	20-29	81	21.80	3.01	3.428	.019
	30-39	43	22.35	3.51		
	40-49	10	21.40	3.41		
	Above 50	6	26.00	3.35		
	Total	140	22.12	3.29		
SE Facing Difficulties factor	20-29	81	11.42	3.45	3.107	.029
	30-39	43	11.07	2.85		
	40-49	10	11.00	4.50		
	Above 50	6	7.17	0.98		
	Total	140	11.10	3.37		
SE Solving Problems factor	20-29	81	11.06	2.87	.467	.706
	30-39	43	11.56	2.58		
	40-49	10	11.80	3.61		
	Above 50	6	10.83	1.83		
	Total	140	11.26	2.79		
Work engagement variable	20-29	81	46.07	14.36	3.044	.031
	30-39	43	43.21	15.29		
	40-49	10	37.80	7.38		
	Above 50	6	30.67	8.85		
	Total	140	43.94	14.45		
Perceived Stress variable	20-29	81	36.73	5.58	3.507	.017
	30-39	43	36.98	4.56		
	40-49	10	37.10	6.26		
	Above 50	6	44.00	4.98		
	Total	140	37.14	5.46		
Self-efficacy 2 factors variable	20-29	81	16.96	4.76	2.504	.062
	30-39	43	16.91	3.78		
	40-49	10	15.40	4.99		
	Above 50	6	12.17	2.14		
	Total	140	16.63	4.49		

4.11.5 Work experience analysis one way ANOVA test

Table 4.84: Work experience analysis one way ANOVA test

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
WE Dedication	1.245	3	136	.296
WE Vigor	.723	3	136	.540
WE Absorption	1.954	3	136	.124
Stress Symptoms	.367	3	136	.777
Perceived Struggle	.672	3	136	.571
SE Facing Difficulties	1.887	3	136	.135
SE Solving Problems	2.277	3	136	.083
Work engagement	1.186	3	136	.317
Perceived Stress	.740	3	136	.530
Self-efficacy variable	1.477	3	136	.224

Since all values of Levene's test are significant and >.025 then there is no difference of variables or factors regarding work experience.

Table 4.85: Age groups Statistics one way ANOVA test

Work experience Descriptives statistics

	Work experience in years	N	Mean	Std. Deviation	t	P
WE Dedication factor	5-1	79	23.09	8.49	2.270	.083
	10-6	33	21.12	6.73		
	30-11	25	18.76	7.62		
	Above 31	3	17.67	6.51		
	Total	140	21.74	8.04		
WE Vigor	5-1	79	15.14	5.46		

factor	10-6	33	14.33	4.88		
	30-11	25	12.16	4.82	2.427	.068
	Above 31	3	11.33	3.21		
	Total	140	14.34	5.27		
WE Absorption factor	5-1	79	10.87	3.38	2.583	.056
	10-6	33	10.45	3.26		
	30-11	25	8.80	3.29		
	Above 31	3	9.33	0.58		
	Total	140	10.37	3.37		
Stress Symptoms factor	5-1	79	15.03	4.12	.820	.485
	10-6	33	15.70	3.65		
	30-11	25	14.04	4.20		
	Above 31	3	15.67	5.51		
	Total	140	15.02	4.04		
Perceived Struggle factor	5-1	79	21.75	3.16	1.516	.213
	10-6	33	22.09	3.31		
	30-11	25	23.08	3.50		
	Above 31	3	24.33	4.04		
	Total	140	22.12	3.29		
SE Facing Difficulties factor	5-1	79	11.47	3.55	1.110	.347
	10-6	33	10.61	2.82		
	30-11	25	10.88	3.54		
	Above 31	3	8.67	1.15		
	Total	140	11.10	3.37		
SE Solving Problems variable	5-1	79	11.08	2.89	.910	.438
	10-6	33	11.03	2.88		
	30-11	25	12.04	2.44		

	Above 31	3	12.00	0.00		
	Total	140	11.26	2.79		
Work engagement variable	5-1	79	46.46	14.93	2.845	.040
	10-6	33	43.48	12.34		
	30-11	25	37.56	14.24		
	Above 31	3	36.00	9.54		
	Total	140	43.94	14.45		
Perceived Stress variable	5-1	79	36.77	5.70	.544	.653
	10-6	33	37.79	5.10		
	30-11	25	37.12	4.99		
	Above 31	3	40.00	7.81		
	Total	140	37.14	5.46		
Self-efficacy variable	5-1	79	17.06	4.86	.790	.501
	10-6	33	16.39	3.83		
	30-11	25	15.84	4.26		
	Above 31	3	14.33	2.08		
	Total	140	16.63	4.49		

5 Discussions and Findings

Within the theoretical framework of social cognitive theory, the result of this study confirms that self-efficacy has a positive linear relationship with work engagement and that perceived stress has a negative linear relationship with work engagement. See figures below.

5.1 Results of the study

The research reported that peoples' level of engagement is directly influenced by their stress and self-efficacy levels. It confirms Kahn's (1990, p.692-724) results that people bring themselves into or remove themselves from specific task behaviors which Kahn named them as self-in-role. A condition to engage one's self-in-role is psychological availability, which is represented by having the physical, emotional or psychological resources to engage at a particular moment (Kahn, 1990, p.692-724). It is particularly useful when people provide the necessary psychological availability to place their selves fully into role performances to cope with various work demands and stressors. Pearlin, (1983, P.3-32) has often included a measure of self-assessment of one's ability to engage in coping strategies. Starting from that point, Maslach (2003, p. 189-192) has frequently mentioned the negative relationship between stress and engagement. Individual's ability to cope with stress is a key concept to avoid burnout and increase work engagement. Our research has confirmed this negative relationship between stress and work engagement. However, on the factors level analysis, it is revealed that perceived struggle has direct negative relationships with dedication, vigor and absorption dimensions of work engagement. Perceived struggle refers to one's own perception of the disability to cope with a stressor. Therefore, people are mostly affected by stress when they believe that they are disabled to cope with it. That means, stress by itself is not a cause of disengagement, but people belief of not being able to cope with it is what triggers disengaging behavior. However, Stress symptoms—which are phenomenon shows that one is subjected to a stressor e.g. like sweating, confusion— have revealed that it has no significance with engagement levels by itself. This means that the feeling of stress itself does not influence one's engagement levels; however, it highly influences one's engagement if a person feels powerless to cope with stress. In this case, a

person will try to avoid doing the role because of believing that he/she cannot do the job rather the stress symptoms themselves. Therefore, if one believes in one's ability to cope with stress, then a person will be able to cope with stress and engage actively.

In active engagement processes, there are three main dimensions; meaningfulness of a role, safety, and ability (Kahn, 1990, p.692-724). Ability is closely connected to self-efficacy. It represents the individual's assessment of their ability to perform job-related behaviors (Riggs, 1989, p.79-96). Regarding the self-efficacy variable, the result has confirmed the argument of Bandura (1988a, p.5); Gist (1987, p.472-485); Bandura (1982, p. 75) that individual efficacy was positively related to work engagement. However our study revealed another interesting result, that not all self-efficacy dimensions were connected to work engagement, for example, facing difficulties factor has shown a significant and positive relation to work engagement levels, it showed as well positive relation to the dedication, vigor, and absorption factors separately. However, solving problem factor of self-efficacy has shown no significance relationship with work engagement. It can be explained, therefore, that employees' perception of their ability to face difficulties is influential to cope with stress and maintain high levels of engagement, but their perceptions of ability to solve problems can be irrelevant. Accordingly, employees are recommended to enhance their belief of being able to face difficulties and overcome it. It is the main reason for their engagement.

The following sections will describe results of analysis for variables and factors of this research graphically:

5.2 Variables results of perceived stress and work engagement

When perceived stress was compared to a diagram with work engagement, a negative direct linear relationship has evolved see figure bellow

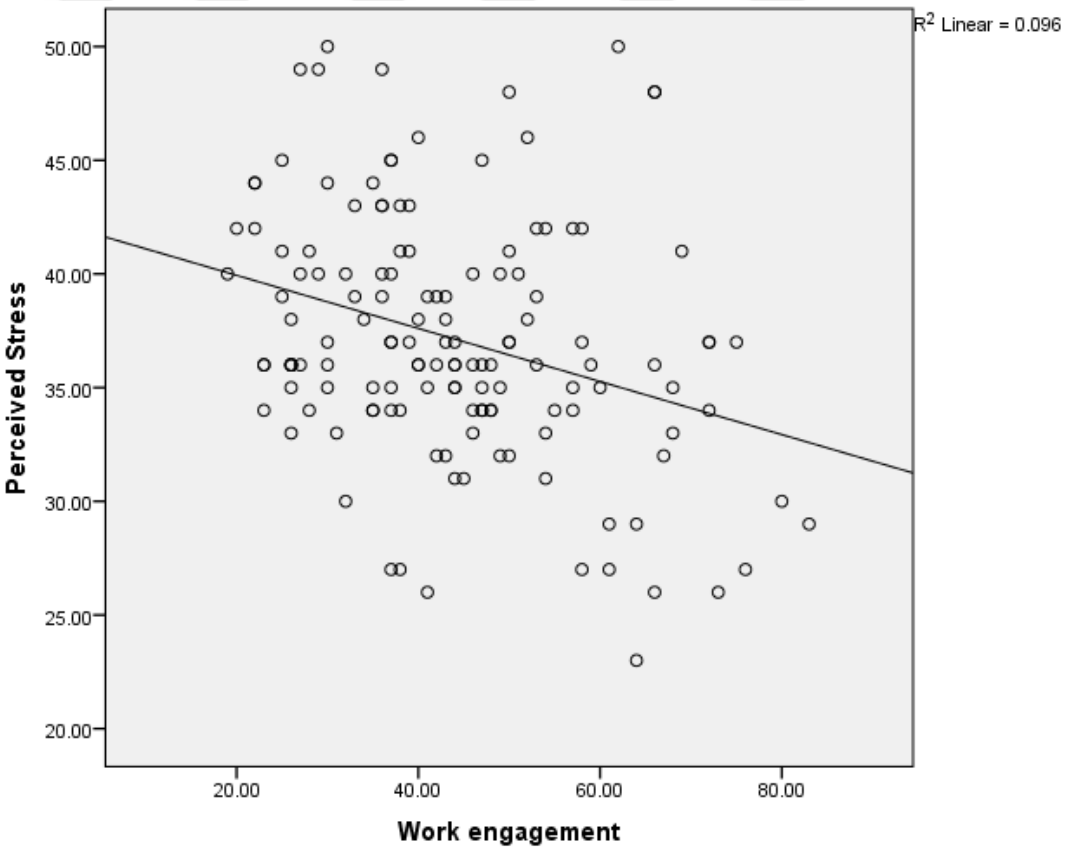

Figure 5.1: Perceived stress and work engagement diagram

However, after analyzing the factors of perceived stress, it was concluded that only Perceived Struggle —or the perception of inability to cope with stress— has contributed mostly

to a negative correlation with work engagement's three factors. See factor analysis figures below.

5.2.1 Factor results of perceived stress and work engagement

A) Dedication factor

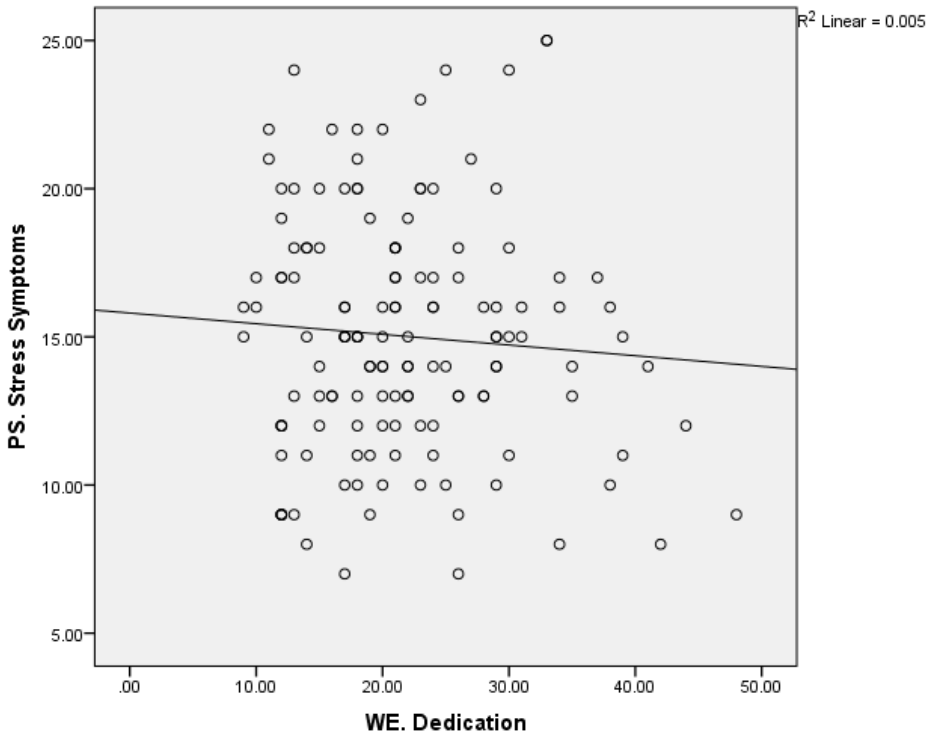

Figure 5.2: PS.Stress symptoms and dedication factor

It is clearly noticed from the diagram up that stress symptoms have a minor significance with dedication factor. Therefore it has no impact on work engagement.

However, when we draw the diagram of perceived struggle vs. dedication, It is noticed very clear that it has a negative impact on dedication factor, and the relationship is linear. See the diagram bellow.

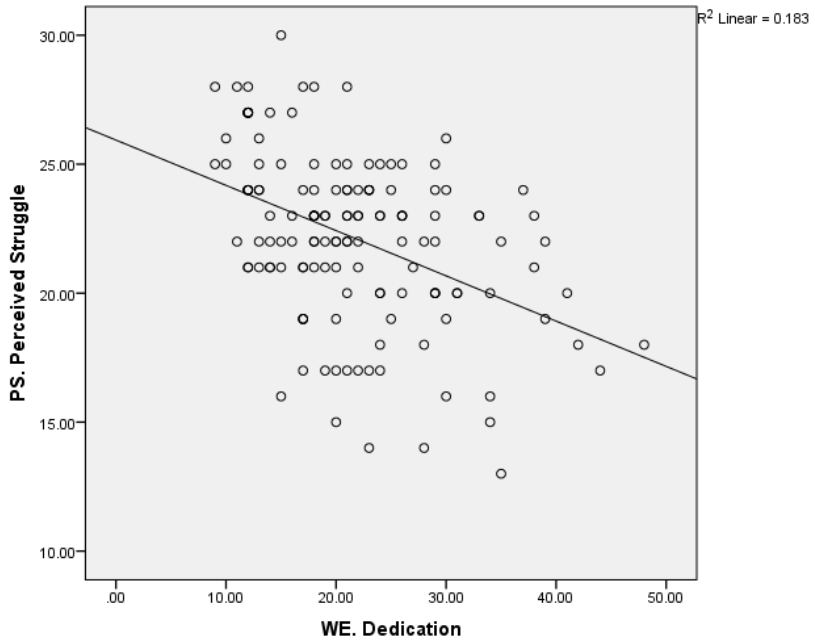

Figure 5.3: PS. Perceived struggle and dedication factor

B) Vigor factor

Regarding vigor factor of work engagement, it had similar behavior to dedication. From the two diagrams bellow, we clearly notice the negative relationship between perceived struggle and vigor factor. However, this relation diminishes when perceived struggle is replaced with stress symptoms. Please see the two diagrams bellow:

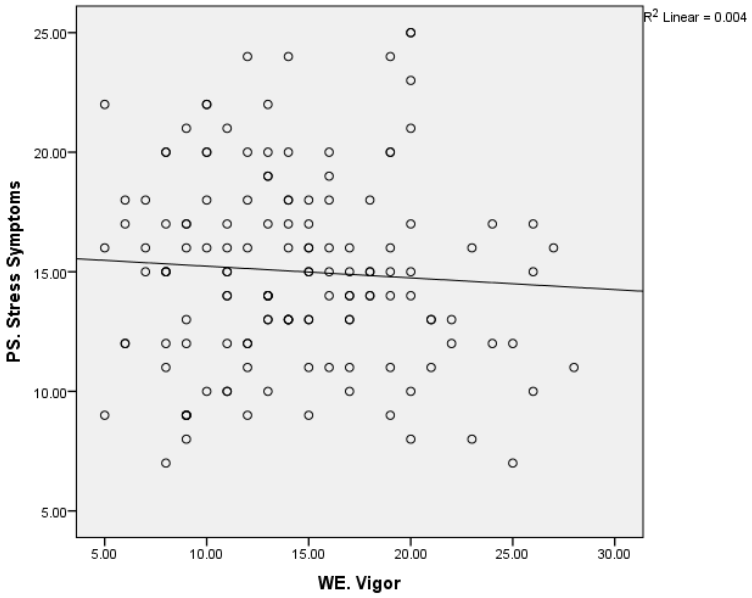

Figure 5.4: PS. Stress symptoms and vigor factor

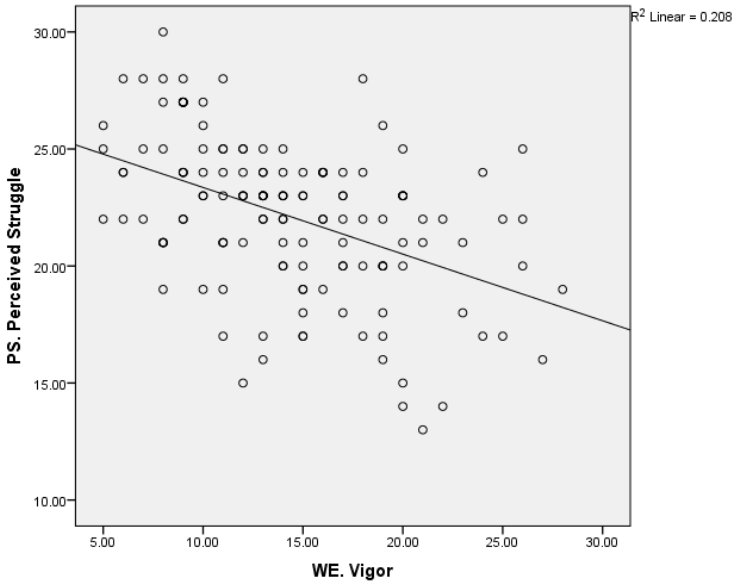

Figure 5.5: PS. Perceived struggle and vigor factor

C) Work engagement absorption factor

Finally, when we analyzed absorption factor of work engagement, similar results to vigor and dedication appeared. Perceived struggle has the major impact on absorption while stress symptoms had not significant relation with absorption factor. Please see the following diagram:

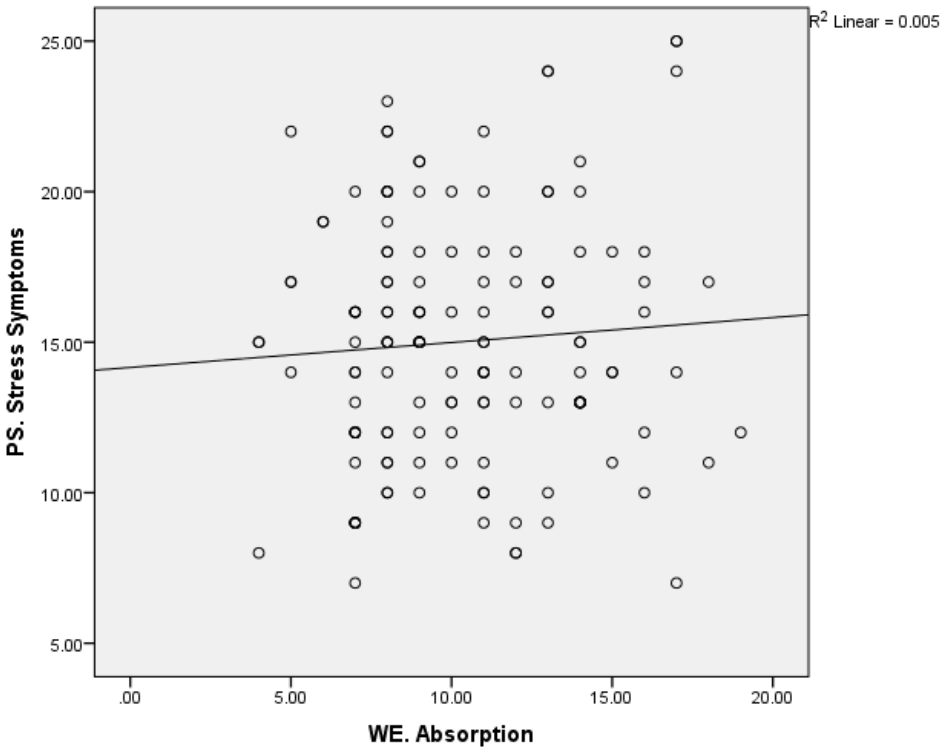

Figure 5.6: PS. Stress symptoms and absorption factor

From the following diagram, it is obvious how absorption factor of work engagement has changed negatively and the perceived struggle increased.

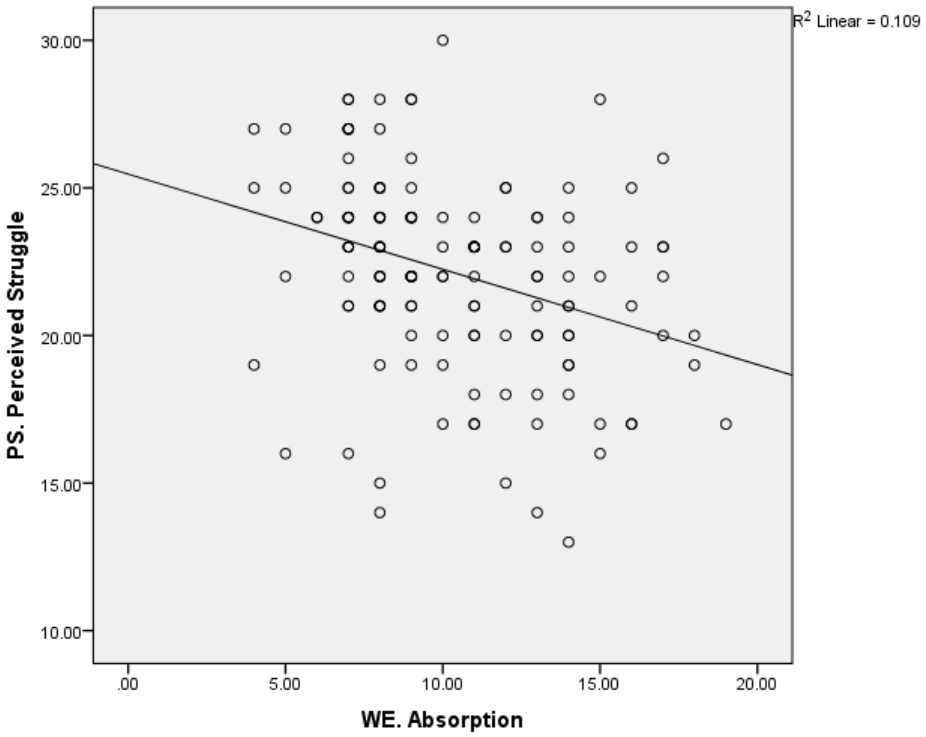

Figure 5.7: PS. Perceived struggle and absorption factor

Those results are logical, engagement in practice is more related to the person's ability to cope with stress rather than the stress symptoms themselves.

5.3 Variables results of self-efficacy and work engagement

Similarly to perceived stress, we analyze the relation between self-efficacy and work engagement in this section.

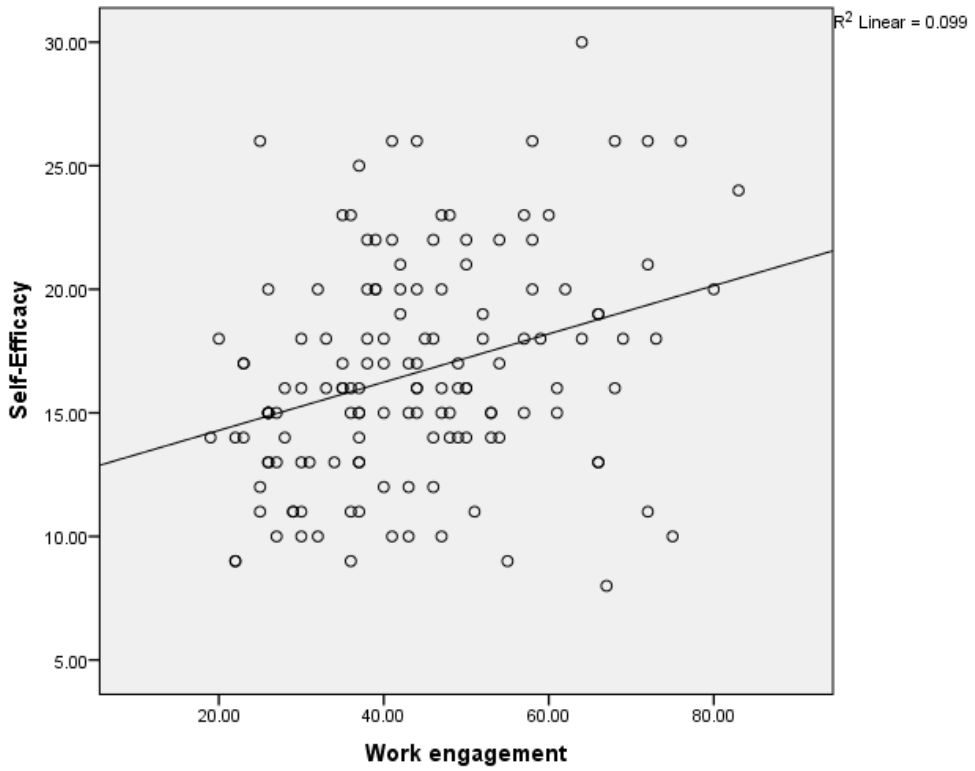

Figure 5.8: Self-efficacy and work engagement variables

From the figure above, it is proved that self-efficacy variable has a positive linear relationship with work engagement. To understand the whole picture of the variable, then diagrams of factor analysis is presented in the coming section:

5.3.1 Factor results of self-efficacy and work engagement

A) Work engagement dedication factor

Dedication factor had different influences; from facing difficulties, factor dedication was influenced positively. However solving problem factor of self-efficacy has not influenced dedication at all. This is a sign that the personal belief of being able to face difficulties

contributes significantly positive to dedication in work engagement. Please see the figures bellow:

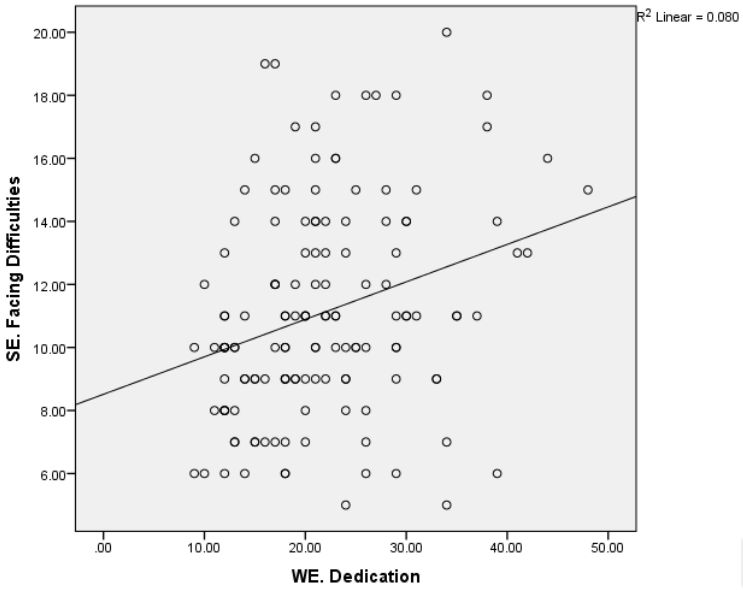

Figure 5.9: SE. Facing difficulties and dedication factor

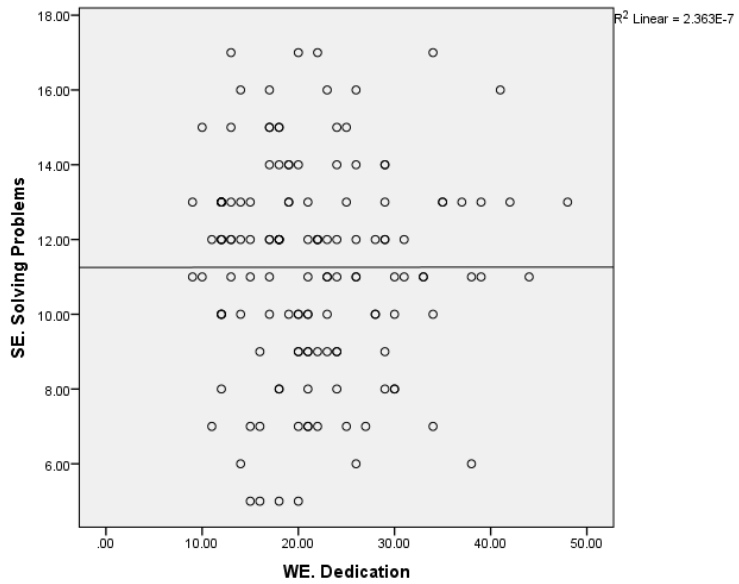

Figure 5.10: SE. Solving problems and dedication factor

B) Work engagement vigor factor

Similarly, we notice from the figures bellow that vigor factor is affected by the belief of ability to face difficulties, but not influenced by solving problems factor of self-efficacy.

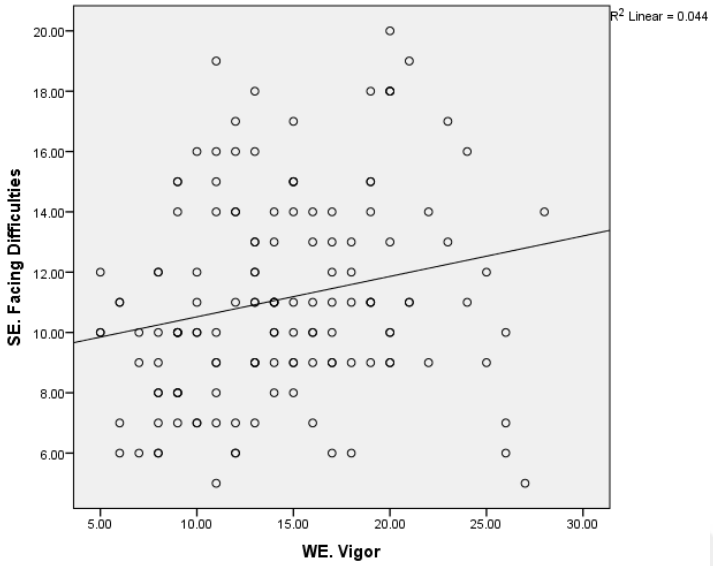

Figure 5.11: SE. Facing difficulties and vigor factor

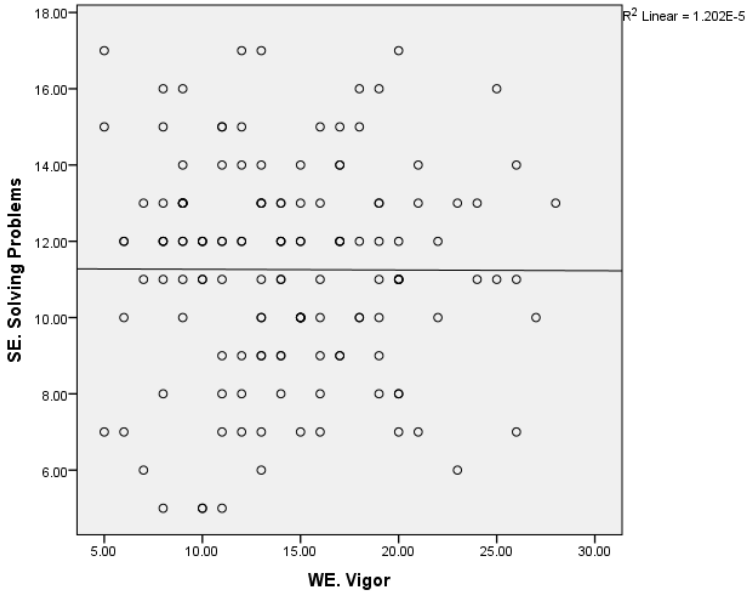

Figure 5.12: SE. Solving problems and vigor factor

C) Work engagement absorption factor

Again we can see from research results that absorption factor is influenced by only facing difficulties and not by solving problems factor of self-efficacy.

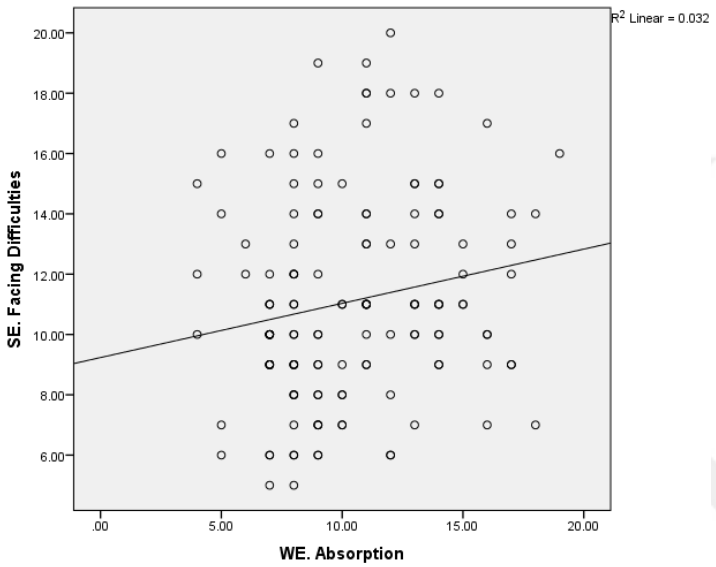

Figure 5.13: SE. Facing difficulties and absorption factor

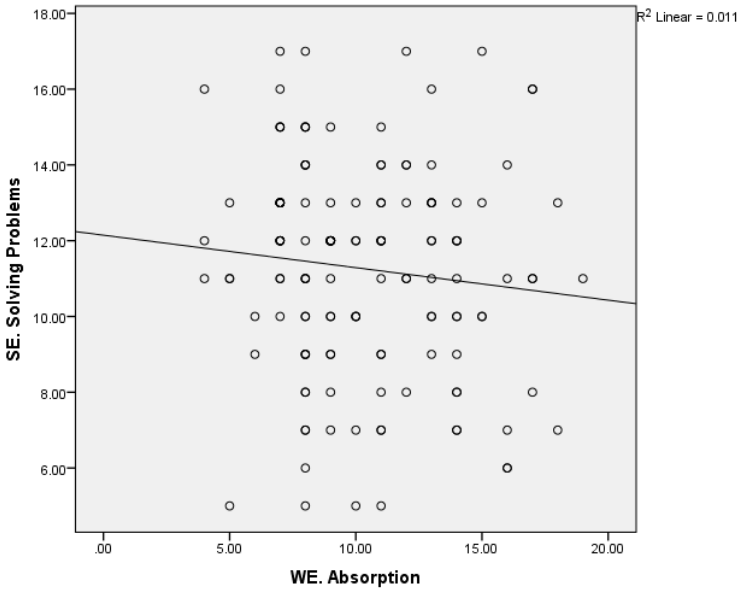

Figure 5.14: SE. Solving problems and absorption factor

Overall, the result of regression analyses and graphic representations shows that self-efficacy influences work engagement. The belief of ability to face difficulties had an influence on work engagement while the belief of ability to solve problems did not seem to have any influence on work engagement. This result shows that to actively engage, a person needs to actively face difficulties. Solving problems alone might not be sufficient, since problems can be easy and difficult, and solving the easy problem can be done unconsciously without active engagement from a person, while active **Summary:**

Overall, for employees who work in architecture consultation firms in Jordan, this research shows that perceived stress and work engagement is a relationship that can be modified and controlled with person's perceptions and beliefs. If a person is determined within one's self to perceive actual stress as is and to believe in one's ability to cope with stress, then one will enjoy with higher levels of engagement and spread it to people around him according to social cognitive theory's principle of imitation.

belief of ability to face difficulties is shown from results to be a certain booster of work engagement.

6 Implications and Conclusions

6.1 Implications

This section provides suggested implications for workers, managers, practitioners and academicians on stress, self-efficacy and work engagement model.

6.1.1 Implications for perceived stress

Scientists like (Matheny, Curlette, Aycock, Pugh, and Taylor, 1987; as cited in Luria & Torjman, 2009, p. 685-707) have offered lists of implications and resources to cope with stress. Their research includes physical, personality and cognitive resources. Physical resources mean resources such as physical health and fitness, personality resources such as; acceptance, self-motivation. Finally, cognitive resources; which are abilities of a person to monitor and cognitively control stress. Regarding coping strategies; Selye (1965, p. 97-99) suggested that pretreatment of stress with pre-stress is a very useful strategy to handle stress. For example, muscular exercise and cold baths are proven to be especially useful protections against stress. Graduate but not sudden body exercise can be used as a protective measure. Gradual training protects, while sudden unaccustomed effort can be harmful. Coping with stress using stress itself provides a starting point for practitioners. Those implications have to be applied carefully, for example, a person will most likely try to escape from stress when pre-stressing (e.g. quitting the gym, eating junk food). On the contrary, Sometimes, due to internal cognitive motivators, one can continue to stress oneself even when in reality the situation does not require that (e.g., workaholics or people who suffer from generalized anxiety disorders). Therefore, the implications of pre-stressing or cognitive modifiers have to be considered seriously and with the support of a specialist. Finally, Morning routines have been found to provide protecting measures against stress. People who sleep early and wake up early on balanced routine are

proven to have higher coping ability against stress. Initially, those and many others can be initiated

6.1.2 Implications for self-efficacy

Individuals learn by observation and imitation according to Bandura's social cognitive theory. Observational learning is governed by four processes (Bandura and Wood, 1989, p. 361-384); attentional processes, cognitive representational processes, modeling behavioral production processes, and finally, motivational production processes. In a social context, people determine via attentional process what to observe in a selected model then they extract, behaviors, attitudes from ongoing activities. People are influenced by observations they remember. After people observe certain behavior that matches their needs, they cognitively represent it in their brains as a cognitive map. Once a cognitive map is implanted, the brain starts to translate them into behaviors and appropriate courses of action. Later, brain selects those cognitive maps as it is reference point and start to represent person's self-efficacy scale. When a person is acquiring a new skill it keeps registering new cognitive map, this can be carried on by enactive mastery, imitation, or verbal persuasion. A person can implication self-efficacy as following; when a stress occurs for a person, a person compares the existing situation with already existing cognitive map —or what scientist refer to as self-efficacy— if a persons is well trained previously, and has the confidence to overcome a stressor then it is called that this person has utilized self-efficacy to overcome a stressor. The implication to develop self-efficacy levels can be initiated by constantly self-evaluating oneself during experiencing different varieties of challenges and overcoming them successfully. Based on self-satisfaction or dissatisfaction, the

self-evaluation process of peoples' own behavior regulates which learned observations are most likely to be successful, therefore to pursue in the future or not. This process establishes a personal standard of conduct and provides a significant source of self-efficacy development for an individual, accordingly, work engagement.

6.1.3 Implications for managers

For managers, social cognitive theory application is illustrated in a series of experiments of complex managerial decision-making processes using a simulated organization (Wood and Bandura, 1989, p. 361-384). They suggest; the induced beliefs influence managers about the controllability of organizations and the conception of managerial ability i.e. managers' self-efficacy. Their self-efficacy strongly affects both managers' self-regulatory processes and their organizational attainments. That is, perceived managerial self-efficacy influences organizational attainments both directly through goal setting or analytical thinking. As managers begin to form a self-schema of their efficacy, the organization performance system is regulated more strongly through their self-conception of managerial efficacy (Wood and Bandura, 1989, p. 361-384). Moreover, Managers have a wide range of implications to influence employees. First, self-efficacy training, workshops, and self-regulation exercises can be effective to deal with stress. Secondly, occasional modeling or selection of influential employees as role models that can be imitated by other staff in the organization. Moreover, managers can train employees on decision making, influencing levels of motivations through goals setting and self-cognitive regulation. Totally develop their self-efficacy levels and work engagement at the end.

6.2 Conclusions

Organizations frequently seek to engage their employees, the findings of the present study suggest that organization shall pay attention to stress levels and its employee's self-efficacy pointers. The result of empirical analysis on 140 architects in engineering firm show that their levels of engagement are influenced but employees' own perception of stress. If employees are trained to perceive stress objectively and act against it with the belief of having control over it, then the employee shall enjoy better levels of engagement in their role. Not only this but when employees are trained to deal with stress on the individual and collective scale, this shall allow the organization to flourish on individual and collective scale, which relatively results in high effectiveness. It is worth mentioning that the perception of stress symptoms of one's self is not sufficient for him to cope with stress, rather, the self-belief of one's capacity to deal with stress and overcome it is a key variable for increasing engagement levels. Organizations can empower employees using intrinsic and extrinsic motivational techniques. Those actions maintain employees healthy. And believing in their ability to overcome stresses individually, and together as an organization.

Secondly, the conclusions of this study proved empirically that self-efficacy of architects working in engineering firms in Jordan had influenced their work engagement levels. From the study, their self-efficacy has two main factors; facing difficulties and solving problems. Work engagement has reported being directly and positively influenced by architects' belief in their ability to face difficulties. However, it has reported no relation with their belief of solving problems. This result is particularly interesting because one person might solve easy problems

unconsciously; in that case, an architect's engagement will not increase of decrease since the problem is easy by its nature and doesn't require involvement to be solved. However, facing difficulties is a challenge by itself, and an architect cannot face difficulties easily unless one devotes his self into the role, or in other words to be engaged in a role to face one's problem. Accordingly, self-efficacy can provide a robust tool to increase engagement levels. Managers and organizations can increase their employees' self-efficacy levels by enactive master, training or role modeling, verbal persuasion and encouragement.

Over all, work engagement is a concept that can be developed in employees. Using short-term and long-term plans, organizations can instill strategies and techniques in their employees to cope with stress and to belief in one self to be able to overcome difficulties. Training has to be sustainable and effective, the best treatment of stress is by pre-stressing Selye (1965, p. 97-99) therefore, early preparation, frequent pre-training can be good strategies for a company to keep its employees engaged. Finally, engaged employees have been reported to perform better in their professional, personal, and social life. Therefore, according to the result of this study, the decision of investment in training of engagement either for a company's employees or a person's oneself is considered to be recommended and most likely to be useful for an organization success.

7 Limitation and Future Research

The present dissertation follows a cross-sectional self-report study method. The data was collected using a questionnaire over the internet; The disadvantage of self-report study that it the effects exhibited during the data collection phase may have been biased due to Common method variance, or the wish to answer consistently (Conway,2002, p.344-365). Moreover, respondents may have been exaggerating symptoms in their answers to make their situation seem worse, or better. However, on the one hand, it is not possible to report employees' work-related experiences in any different way than self-report. Future longitudinal studies can be highly recommended to validate this study. Another obstacle that faced the research is that; although the sample size is considered relatively high, further data collection is necessary. The same survey can be expanded to include several countries. It can also be useful to conduct this study for different sectors.

Limited by data collection, future research can be carried out about different variable interaction with work engagement. For example, mindfulness and locus of control have frequently been mentioned in literature to be influencing work engagement and to be connected with self-efficacy. It is because of the time constraints and the sample size that their variables information was not collected. Mindfulness has been reported to have influence over cognitive abilities; It can be very enriching to understand how does mindfulness influence engagement.

Another recommendation that this study has followed a quantitative method to collect data, it can be relevant to use a qualitative study approach to give more space for the respondents to explain their ideas and point of views freely without limiting questions.

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Appendices

Appendix A: Questionnaires

English version of the Questionnaire

Daily Activities Questionnaire

The following questions are trying to test the relationship between employee's engagement and perceived stress in the work environment. This can help you to cope with work stress and stay engaged using different strategies like mindful awareness. This means to be aware of stress causes and knows how to deal with the stressor internally or externally. Questions in this research are **related to your professional career only** so kindly answer them based on your professional experiences. From the question below, choose your answer on how frequent this event happens with you on a scale from 1-6 for each question. 1) Almost Always. 2) Very Frequently. 3) Somewhat Frequently. 4) Somewhat Infrequently. 5) Very Infrequently. 6) Almost Never.

	(1) Almost Always	(2) Very Frequently	(3) Somewhat Frequently	(4) Somewhat	(5) Very Infrequently	(6) Almost Never
UTRECHT work Engagement Scale (UWES) (Schaufeli & Bakker, 2003)						
1. At my work, I feel bursting with energy.						
2. I find the work that I do full of meaning and purpose.						
3. Time flies when I am working.						
4. At my job, I feel strong and vigorous.						
5. I am enthusiastic about my job.						
6. When I am working, I forget everything else around me.						
7. My job inspires me.						
8. When I get up in the morning, I feel like going to work.						
9. I feel happy when I am working intensely.						
10. I am proud of the work that I do.						
11. I am immersed in my work.						
12. I can continue working for very long periods at a time.						
13. To me, my job is challenging.						
14. I get carried away when I am working.						

15. At my job, I am very resilient, mentally.						
16. It is difficult to detach myself from my job.						
17. At my work, I always persevere, even when things do not go well.						
Perceived stress scale (Cohen & Mermelstein,1983)						
1. In the last month, how often have you been upset because of something that happened unexpectedly?						
2. In the last month, how often have you felt that you were unable to control the important things in your life?						
3. In the last month, how often have you felt nervous and "stressed"?						
4. In the last month, how often have you felt confident about your ability to handle your personal problems?						
5. In the last month, how often you felt that you were effectively coping with important changes that were occurring in your life?						
6. In the last month, how often have you found that you could not cope with all the things that you had to do?						
7. In the last month, how often have you felt that things were going your way?						
8. In the last month, how often have you felt that you were on top of things?						
9. In the last month, how often have you been able to control irritations in your life?						
10. In the last month, how often have you felt that you were on top of things?						
11. In the last month, how often have you been angered because of things that were outside of your control?						
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?						
13. In the last month, how often have you been able to control the way you spend your time?						
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?						

Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) **We request from you kindly to fill the following table as to which degree you agree or disagree with a statement in regard to your professional life. In order to do this, please read each statement carefully and fill into the bank with true (√) or false (X).**	(√) True		(X) False	
	Exactly true	Moderately True	Moderately False	Exactly False
1. I can always manage to solve difficult problems if I try hard enough.				

2. If someone opposes me, I can find the means and ways to get what I want.				
3. It is easy for me to stick to my aims and accomplish my goals.				
4. I am confident that I could deal efficiently with unexpected events.				
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.				
6. I can solve most problems if I invest the necessary effort.				
7. I can remain calm when facing difficulties because I can rely on my coping abilities.				
8. When I am confronted with a problem, I can usually find several solutions.				
9. If I am in trouble, I can usually think of a solution.				
10. I can usually handle whatever comes my way.				

Demographic information

1. What is your age?_____Years.

2. What is your gender? □ male □Females □Others

3. How long have you worked in a private firm?_____Years.

4. What is your highest completed level of education?

□ Secondary School, high school □ Bachelor degree □Master degree □Doctoral degree

English Form of the questionnaire: https://goo.gl/forms/zymDWAZB7KLYsQlx1