A Stress-Strain-Outcome Model of Job Satisfaction: The Moderating Role of Professional Self-efficacy

Abstract

In this study, we adopt a stress-strain-outcome framework and conceptualize work overload as a stress, work exhaustion as a strain, and job satisfaction as an outcome. We argue that professional self-efficacy is a coping mechanism, place it as a moderator, and hypothesize that it would attenuate the effects of 1) work overload on work exhaustion and 2) work exhaustion on job satisfaction. We test the model by using survey data collected from 144 IT professionals in Finland by means of the Partial Least Squares technique. The findings suggest that work overload has a significant positive effect on work exhaustion, work exhaustion has a significant negative effect on job satisfaction, and professional self-efficacy attenuates both of these relationships. These findings imply that managers need to keep in mind the possible risks from work overload and exhaustion. Furthermore, they should try to improve their employees' professional self-efficacy to mitigate these risks.

Keywords

Job satisfaction, professional self-efficacy, work overload, work exhaustion, the World IT Project.

Introduction

The extensive adoption and use of IT in work environment has exposed employees to a massive amount of information and communication demands which require energy and cognitive processing beyond their capabilities and can lead to physical and psychological strain, and ultimately cause dissatisfaction with their jobs. Lack of job satisfaction has been suggested as one of the main drivers of high job turnover among IT employees (see Agarwal and Ferratt, 2001; Fraser, 2001; Niederman and Sumner, 2004; Poulin, 1994). Retaining IT employees is vital for an organization as they hold the tacit knowledge on how IT is related to the key business processes in an organization (McKnight et al., 2009). From an organizational point of view, replacing experienced IT employees is expensive. At the same time, due to a high demand on technical skills, experienced IT employees can easily find new jobs. Thus, IT employees exhibit a high level of turnover (Niederman and Sumner, 2004).

Against this backdrop, how managers manage and encourage IT professionals to continue their jobs has become a key issue for organizations. A lower level of job satisfaction may not only reinforce job turnover but also reduce employee performance as well as commitment to the organization. Consequently, significant amount of research has been carried out to identify the factors that negatively affect job satisfaction (Moore, 2000; Koeske and Koeske, 1989, 1993). Among numerous factors affecting job
satisfaction, strain generated from stress in the form of work exhaustion has been suggested to have a detrimental effect on job satisfaction (Moore, 2000). However, prior studies have seldom discussed how an individual difference-related factor, such as professional self-efficacy, may act as a coping mechanism and attenuate the effects of stress and strain on job satisfaction. This study fills this research gap by addressing the following research question:

**How does professional self-efficacy mitigate the effect of stress and strain on job satisfaction?**

In order to answer this research question, we adopt the stress-strain-outcome framework (Koeske and Koeske, 1989, 1993). We use job satisfaction as the outcome factor, work exhaustion as the strain factor, and work overload as the stress factor. In addition, we use professional self-efficacy as an individual difference factor and place it as a moderator in both stress-strain and strain-outcome relationships. We collected data from 144 IT professionals in Finland using a survey and tested the proposed model by employing the PLS technique. The results show that professional self-efficacy attenuates the effects of 1) stress on strain; and 2) strain on outcome.

The remainder of this paper is organized as follows. Section 2 describes the theoretical foundations and develops hypotheses. Section 3 is dedicated to data collection and analysis. Section 4 presents the theoretical and practical implications from our findings. Finally, section 5 concludes the paper with limitations and directions for future research.

**Theoretical Foundation and Hypotheses**

**The Stress-Strain-Outcome Framework**

An important theoretical foundation of stress research is the stress-strain-outcome (S-S-O) framework (Koeske and Koeske, 1989, 1993). The S-S-O framework links stressors with outcomes and places strain as the mediating factor. Stress is generated by demands in the work environment that are perceived by an individual as problematic. Work load, role conflict, and ambiguity are possible examples of stressors (Caplan 1971; Moore, 1997). Stress can lead to strain, which refers to the emotional and psychological reactions of the individual experiencing stress. In their S-S-O framework, Koeske and Koeske (1993) utilized emotional exhaustion as a strain. Strain can lead to various negative outcomes, particularly, to dissatisfaction with one’s job (Koeske and Koeske, 1993). Furthermore, Koeske and Koeske (1993) suggest that individual difference factors moderate the relationships in S-S-O. Personality traits, and professional self-efficacy are possible examples of individual difference-related factors.

**Job Satisfaction**

Job satisfaction is an employee’s overall assessment of all aspects of his or her job (Spector 1997). It is considered one of the most important constructs in organizational behaviour research because it may, under certain circumstances, affect employee productivity, citizenship behaviour, psychological well-being, loyalty, withdrawal, and retention (Judge et al. 2001; Saari and Judge 2004). Since organizations are very interested in the retention of their IT workforce (Joseph et al. 2015; Joseph et al. 2007; Mak and Sockel 2001), IS scholars have continuously explored the antecedents of job satisfaction of IT employees. For example, Igbaria and Greenhaus (1992) showed that role ambiguity, role conflict, and education are negatively related to job satisfaction, and Morris and Venkatesh (2010) concluded that job characteristics, such as task identity and skill variety, are linked to job satisfaction. Nevertheless, the search for the predictors of job satisfaction of IT workers still continues.

**Work Exhaustion**

The concept of work exhaustion stems from the literature on tedium (Pines et al., 1981) and job burnout (Maslach and Jackson, 1981; Schaufeli et al., 1995). Tedium refers to a state of physical, emotional, and mental exhaustion caused by long-term involvement in a demanding situation (Pines et al., 1981). Physical exhaustion is characterized by low energy, fatigue, weakness, illness, changes in eating habits and weight, and sleeping problems. Emotional exhaustion is related to helplessness, hopelessness, and entrapment. Mental exhaustion is associated with the development of negative attitude towards one’s self, work, and life (Moore, 1997).
The concept of job burnout is closely related to the emotional exhaustion component of tedium. It refers to the result of constant and repeated emotional pressure associated with intense involvement with people and high volumes of tasks over long periods of time (Pines et al., 1981). Early works on job burnout associated it with emotional exhaustion experienced by people in human service professionals and operationalized it using three components that capture the physiological syndromes of emotional exhaustion, depersonalization, and diminished personal accomplishment (Maslach and Jackson, 1981). Later, Schaufeli et al. (1995) revised the conceptualization of job burnout to be applicable in a wide range of industrial settings.

The discussion above reveals that work exhaustion has been a central component in tedium and job burnout conceptualizations. In this paper, we adopt the conceptualization of Schaufeli et al. (1995) and define work exhaustion as the degree to which an IT employee feels drained, tired, strained, and burned out from his or her work activities in order to investigate its effect on job satisfaction of IT professionals. Many prior studies suggested a negative association between work exhaustion and job satisfaction. For example, Maslach and Schaufeli (1993) found a negative correlation between job burnout and job satisfaction. Wolpin et al. (1991), in their longitudinal study, observed that job burnout reduced job satisfaction. Lizano and Barak (2015) also reported that work exhaustion has a direct impact on job satisfaction. Consequently, we propose the following hypothesis:

**H1.** Work exhaustion has a negative effect on job satisfaction.

**Work Overload**

Work overload is a recurring theme in studies of IS professionals (Ply et al., 2012; Bartol and Martin 1982; Li and Shani 1991; Moore 2000). Work overload can be of two types: quantitative and qualitative (Caplan, 1971). Quantitative overload occurs when an individual has to perform too many tasks in a given time. Qualitative overload occurs when someone finds the demand of performance is beyond his or her capability irrespective of how much time he or she might be given. In order to avoid qualitative overload, organizations often arrange training and skill development. Thus, in most cases, work overload in organizations may be quantitative in nature. Consequently, we define work overload as the extent to which one is faced with too much to do in the time available (Kirmeyer and Dougherty 1988).

In prior literature, work overload was suggested to be an important antecedent of work exhaustion (Gaudioso et al., 2017). For example, the early studies by Jackson et al. (1986) and Leiter (1991) found a causal relationship between work overload and work exhaustion, and subsequent investigations consistently confirmed this observation (Shantz et al. 2016). With respect to the IS field, Moore (2000) documented that work overload is the strongest contributor to work exhaustion for technology professionals. Other studies also showed that work overload is associated with crisis situations among IT employees (Fischer, 1998). Consequently, we hypothesize the following:

**H2.** Work overload has a positive effect on work exhaustion.

**Professional Self-efficacy**

Self-efficacy refers to one’s belief in his or her capabilities to organize and execute the courses of action required to produce given attainments (Bandura, 1997). This is a belief that is developed through successful past experiences, learning, verbal persuasion, and physiological and psychological states (Bandura, 1997). Self-efficacy is relevant in the occupational context as it may help dealing with job-related stress. Thus, self-efficacy is an important construct in the stress-strain-outcome model. It can help mitigating the effect of stress on strain as well as the effect of strain on outcome. Professional self-efficacy refers to an individual’s beliefs concerning his or her ability to successfully perform a given job task (Cherniss, 1993). In contrast to general self-efficacy (Bandura, 1997), professional self-efficacy is domain-specific and fits the research context. We use professional self-efficacy in our research, as it is a broader concept capturing all aspects of IT employee’s job, in contrast to other individual difference related factors, such as education, computer confidence and computer self-efficacy (Ragu-Nathan et al. 2008).

Louis and Sutton (1991) describe that when people encounter a new task, they try to apply their existing schemas in order to make sense of the situation. A schema is described as “an abridged, generalized, corrigible, organization of experience that serves as an initial frame of reference for action and
perception” (Weick 1979, p. 50). We argue that people with a higher level of professional self-efficacy possess better schemas and knowledge that can be used for doing their tasks. These people are better able to construct the schema required for a new task, compared to those with a lower level of professional self-efficacy.

Furthermore, humans use thinking and sense making for problem solving (Berente et al. 2011). Human thinking and sense making is people’s constructive activity of finding meaning from information in order to extend their state of knowledge on a particular problem (Dervin 1983). Thus, sense making is an information-seeking endeavour in which a person is forming a personal point of view by actively finding meaning in information, which fits in with what he or she already knows. People with higher professional self-efficacy are expected to be more efficient in recognizing information that fits with the problem in hand. For example, when IT employees with a high degree of professional self-efficacy are overloaded with work, they may trigger relevant schemas in their memory and develop a course of action to accomplish the task as quickly as possible. Moreover, they may also automatically recognize the most relevant bits of information, process them, and focus on the key activities that, in turn, may improve their task efficiency. In addition, those with high professional self-efficacy, despite being somewhat exhausted with an overwhelming volume of work, may know that they can always find ways to deal with the incoming tasks in an efficient way and, therefore, are less likely to blame the workplace for their state of work exhaustion. In other words, they are aware of their potential to become even more efficient in the future and assume they are responsible for their own productivity. Thus, they may be dissatisfied with their jobs to a lesser extent than their colleagues exhibiting a lower level of professional self-efficacy.

Based on the discussion above, we suggest that people with higher professional self-efficacy experience lesser work exhaustion from work overload as well as lesser job dissatisfaction from work exhaustion compared to those with lower professional self-efficacy. Consequently, we hypothesize the following:

**H3.** Professional self-efficacy negatively moderates the relationship between work exhaustion and job satisfaction (i.e., the relationship between work exhaustion and job satisfaction is expected to be less negative for employees with higher professional self-efficacy than for those with lower professional self-efficacy).

**H4.** Professional self-efficacy negatively moderates the relationship between work overload and work exhaustion.

The overall research model is shown in Figure 1.

![Figure 1. The Research Model](image)

**Methodology**

Data for this study was collected as part of The World IT Project (Palvia et al., 2017). It is a mega-project focusing on the various aspects of global IT in over 35 countries. An online survey of IT employees in Finland was conducted from September to December 2016 with the help of the Finnish Information Processing Association. Altogether, 149 responses were collected, out of which 144 were complete and
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Results

The Measurement Model

The analysis utilized the Partial Least Squares (PLS) approach with SmartPLS software (Ringle et al. 2005). We chose PLS as it has been found to perform as effectively as covariance-based structural equation modeling in detecting actual paths, and not falsely detecting non-existent paths (Goodhue et al. 2012). We followed Gefen and Straub’s (2005) procedure to test convergent and discriminant validity. We evaluated the convergent validity by examining item loadings, composite reliabilities (CR), and average variance extracted (AVE) values. With regards to item loadings, Fornell and Larcker (1981) have recommended values of at least 0.7 to be acceptable. One item from work overload and one item from professional self-efficacy did not meet this criterion. However, as the loadings were very close to 0.7, we decided to keep these two items. The composite reliabilities being above 0.8 and AVE values exceeding 0.5 further support satisfactory convergent validity (Fornell and Larcker 1981) (see Table 1).

<table>
<thead>
<tr>
<th>Construct/ Source</th>
<th>Item</th>
<th>CR</th>
<th>AVE</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Satisfaction/Moore (1997)</td>
<td>JS1. In general, I like working here.</td>
<td>0.94</td>
<td>0.86</td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td>JS2. All in all, I am satisfied with my current job.</td>
<td></td>
<td></td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td>JS3. In general, I don’t like my current job. (negatively worded)</td>
<td></td>
<td></td>
<td>0.93</td>
</tr>
<tr>
<td>Work Overload/Kirmeyer and Dougherty (1988)</td>
<td>WO1. I feel that the number of requests, problems or complaints that I deal with at work is more than expected.</td>
<td>0.87</td>
<td>0.64</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>WO2. I feel that the amount of work I do interferes with how well it is done.</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td></td>
<td>WO3. I feel busy or rushed at work.</td>
<td></td>
<td></td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>WO4. I feel pressured at work.</td>
<td></td>
<td></td>
<td>0.85</td>
</tr>
<tr>
<td>Work Exhaustion/Moore (2000)</td>
<td>WE1. I feel drained from activities at work.</td>
<td>0.91</td>
<td>0.72</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>WE2. I feel tired from my work activities.</td>
<td></td>
<td></td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>WE3. Working all day is a strain for me.</td>
<td></td>
<td></td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>WE4. I feel burned out from my work activities.</td>
<td></td>
<td></td>
<td>0.87</td>
</tr>
<tr>
<td>Professional Self-Efficacy/Moore (1997)</td>
<td>PSE1. I feel I’m making an effective contribution to what this organization does.</td>
<td>0.88</td>
<td>0.65</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>PSE2. In my opinion, I do a good job.</td>
<td></td>
<td></td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>PSE3. I have accomplished many worthwhile things in this job.</td>
<td></td>
<td></td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>PSE4. At my work, I feel confident that I am effective at getting things done.</td>
<td></td>
<td></td>
<td>0.91</td>
</tr>
</tbody>
</table>

Table 1. Composite Reliabilities, AVEs, and Loadings
We evaluated the discriminant validity by comparing the square roots of AVE values with the inter-construct correlations (Fornell and Larcker 1981) (see Table 2). As can be seen from the table, the square roots of the AVE values for all constructs are consistently higher than the off-diagonal correlation values, suggesting satisfactory discriminant validity. Table 3 presents discriminant validity assessment. All items loaded higher on their assigned latent construct than on other constructs (Fornell and Larcker 1981). This indicates that discriminant validity at the item level is met for all the constructs (Gefen and Straub 2005).

<table>
<thead>
<tr>
<th></th>
<th>Job Satisfaction</th>
<th>Work Overload</th>
<th>Work Exhaustion</th>
<th>Professional Self-Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Satisfaction</td>
<td><strong>0.93</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Overload</td>
<td>-0.33</td>
<td><strong>0.80</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Exhaustion</td>
<td>-0.42</td>
<td>0.68</td>
<td><strong>0.85</strong></td>
<td></td>
</tr>
<tr>
<td>Professional Self-Efficacy</td>
<td>0.37</td>
<td>-0.14</td>
<td>-0.17</td>
<td><strong>0.81</strong></td>
</tr>
</tbody>
</table>

Table 2. Inter-construct Correlations (the square root of AVE is along the diagonal)

<table>
<thead>
<tr>
<th>Items</th>
<th>Job Satisfaction</th>
<th>Work Overload</th>
<th>Work Exhaustion</th>
<th>Professional Self-Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>JS1</td>
<td><strong>0.93</strong></td>
<td>-0.31</td>
<td>-0.37</td>
<td>0.34</td>
</tr>
<tr>
<td>JS2</td>
<td><strong>0.93</strong></td>
<td>-0.27</td>
<td>-0.35</td>
<td>0.33</td>
</tr>
<tr>
<td>JS3</td>
<td><strong>0.93</strong></td>
<td>-0.33</td>
<td>-0.42</td>
<td>0.36</td>
</tr>
<tr>
<td>WO1</td>
<td>-0.39</td>
<td><strong>0.81</strong></td>
<td>0.59</td>
<td>-0.23</td>
</tr>
<tr>
<td>WO2</td>
<td>-0.04</td>
<td><strong>0.67</strong></td>
<td>0.40</td>
<td>0.07</td>
</tr>
<tr>
<td>WO3</td>
<td>-0.14</td>
<td><strong>0.85</strong></td>
<td>0.50</td>
<td>-0.02</td>
</tr>
<tr>
<td>WO4</td>
<td>-0.37</td>
<td><strong>0.85</strong></td>
<td>0.62</td>
<td>-0.20</td>
</tr>
<tr>
<td>WE1</td>
<td>-0.37</td>
<td>0.67</td>
<td><strong>0.91</strong></td>
<td>-0.10</td>
</tr>
<tr>
<td>WE2</td>
<td>-0.29</td>
<td>0.60</td>
<td><strong>0.83</strong></td>
<td>-0.04</td>
</tr>
<tr>
<td>WE3</td>
<td>-0.34</td>
<td>0.41</td>
<td><strong>0.78</strong></td>
<td>-0.26</td>
</tr>
<tr>
<td>WE4</td>
<td>-0.39</td>
<td>0.58</td>
<td><strong>0.87</strong></td>
<td>-0.14</td>
</tr>
<tr>
<td>PSE1</td>
<td>0.30</td>
<td>-0.12</td>
<td>-0.09</td>
<td><strong>0.75</strong></td>
</tr>
<tr>
<td>PSE2</td>
<td>0.27</td>
<td>-0.06</td>
<td>-0.07</td>
<td><strong>0.87</strong></td>
</tr>
<tr>
<td>PSE3</td>
<td>0.11</td>
<td>-0.03</td>
<td>-0.07</td>
<td><strong>0.69</strong></td>
</tr>
<tr>
<td>PSE4</td>
<td>0.39</td>
<td>-0.17</td>
<td>-0.22</td>
<td><strong>0.91</strong></td>
</tr>
</tbody>
</table>

Table 3. Item loadings and cross-loadings

Having verified the convergent and discriminant validity of the measurement, we assessed the potential existence of common method bias (CMB) (Podsakoff and Organ 1986). First, we conducted Harman’s (1976) one-factor test. A principal component analysis indicated four factors and no single construct accounted for a majority of the total variance. Second, we conducted a test described by Liang et al. (2007). We included a common method factor by reusing all the indicators from the principal constructs in the PLS model. We then calculated each indicator’s variances substantively explained by the principal construct and by the method factor. The results demonstrate that the average substantively explained variance of the indicators is 0.55, and the average method based variance is 0.01. The ratio of substantive variance to method variance is about 55:1. Given the small magnitude of method variance, we conclude that the CMB is unlikely to be a serious concern for this study.
We also examined how well our model fits the data to detect possible model misspecification (Henseler et al. 2013). We followed Henseler et al. (2013) and used the goodness-of-fit (GoF) and standardized root mean square residual (SRMR) statistics. We calculated GoF using the equation presented by Wetzels et al. (2009) and obtained a value of 0.53. According to the criteria by Wetzels et al. (2009) (small=0.1, medium=0.25, and large=0.36), our model has good fit. For SRMR, we obtained a value of 0.07. According to Hu and Bentler (1998), SRMR below 0.10 or more conservatively 0.08 indicates good model fit. As a result, we concluded that our model exhibits good fit to the data.

**The Structural Model**

The test of the structural model includes estimates of the path coefficients, which indicate the strengths of the relationships between the dependent and independent variables, and the $R^2$ values, which represent the amount of variance explained in the dependent variables (see Figure 2).

![Figure 2. The Structural Model](image)

Work exhaustion ($\beta=-0.36$, $p<0.001$) had a significant negative effect on job satisfaction, supporting H1. Work overload ($\beta=0.64$, $p<0.001$) had a significant positive effect on work exhaustion, confirming H2. As hypothesised in H3, the interaction term of work exhaustion and professional self-efficacy ($\beta=-0.12$, $p<0.05$) had a significant negative effect on job satisfaction. Finally, H4 was supported as the interaction term of work overload and professional self-efficacy ($\beta=-0.17$, $p<0.01$) had a significant negative effect on work exhaustion. We controlled the effects of age and gender on job satisfaction. The control variables, gender ($\beta=-0.008$, n.s.) and age ($\beta=0.003$, n.s.), had non-significant effects on job satisfaction. The model explained 28% of the variance in job satisfaction and 49% the variance in work exhaustion.

**Discussion and Implications**

The purpose of this study was to explore whether professional self-efficacy mitigates the effect of work overload and work exhaustion on job satisfaction of IT employees. For this, a stress-strain-outcome framework was adapted to the IT context, and professional self-efficacy was positioned as a moderator of its causal relationships. The proposed model was tested by using the data collected from 144 IT professionals in Finland.

**Theoretical Implications**

First, this study confirms the nomological validity of the stress-strain-outcome framework, which was initially developed for a general workplace environment (Koeske and Koeske, 1993). A successful adaptation of this framework in the IT context shows that this framework is robust and may be successfully employed in various areas of human activity. Second, consistent with the adapted framework, it was found that work exhaustion has a negative direct impact on job satisfaction of IT workers. This shows that those IT employees who feel drained, tired, strained, and burned out from their work activities tend to become dissatisfied with their jobs. Work exhaustion, in turn, is influenced by work overload, and the more overloaded the IT employees are, the more exhaustion they feel. This is not surprising given...
an exponentially growing amount of technical information and the complexity of organizational information systems. Third, professional self-efficacy negatively moderates (i.e., suppresses) the effects discussed above. This means that the IT workers who believe that they are good at their job and contribute to their organization experience less work exhaustion and are more satisfied with their current job. In other words, professional self-efficacy suppresses the negative impact of work overload and work exhaustion on employees’ assessment of all aspects of their jobs. Employees with high professional self-efficacy may effectively and efficiently employ pre-existing schemas and make a better sense of the IT task due to mere confidence is their professional abilities. In fact, various forms of self-efficacy have been frequently employed as moderators in the models of human behavior, and the present study confirms that professional self-efficacy plays a moderating role in the models focusing on the IT profession.

**Practical Implications**

This study also has managerial implications. First, managers should be aware of the fact that work overload and work exhaustion may have a detrimental effect on job satisfaction. They should keep in mind that lower job satisfaction can have consequences such as lower performance, lower commitment toward the work, or turnover. Thus, managers should periodically probe employees regarding their workload and work exhaustion by interviewing them or including the measurement items of this study in their annual organizational survey. Second, managers should also be aware of the fact that employees with a lower level of self-efficacy are affected to a greater extent by work overload and work exhaustion. Thus, managers may look for possibilities to improve employees’ self-efficacy. In practice, they should recruit employees with a higher level of self-efficacy and carefully check the job demands. They should arrange training for professional development. They should also set an appropriate level of expectations from their employees, and once the employees fulfill the expectation, the achievement should be acknowledged and rewarded.

**Conclusion**

The paper investigated the moderating role of professional self-efficacy on the relationships between 1) work overload and work exhaustion; and 2) work exhaustion and job satisfaction by adapting the stress-strain-outcome framework. The findings clearly show that professional self-efficacy can attenuate both of the relationships in S-S-O framework.

As with any other empirical research, the present study is subject to a number of limitations. At the same time, limitations could serve as avenues for further research. First, there may be a sampling bias. Because we collected data through a web-based survey, we cannot accurately estimate a non-response bias. Some IT employees indicated that the survey was too long (this survey was part of the larger study – The World IT Project) which made some employees reluctant to answer all questions. Therefore, it is possible that busy IT employees might not have participated. Second, the results of this study apply to the context of the Finnish IT sector. Future researchers are recommended to re-test this model in other countries. Third, future researchers are recommended to empirically confirm the effect of job satisfaction on turnover by extending this study’s model. Finally, job satisfaction can be influenced by a wide variety of factors including personality traits. Future researchers are recommended to look into this issue further.

**REFERENCES**


