



Factors Affecting Workforce Turnover Among Engineers in Klang Valley

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Abstract. This study aims to examine the determinants of turnover intention among civil engineers in Klang Valley. Civil engineering is an important profession in the construction sector for its powerful role in economic growth, yet the construction industry is experiencing high turnover rates. In spite of that, there is a lack of research examining the determinants of turnover intention among civil engineers. Based on the literature, this research hypothesizes that job stress, compensation satisfaction and technology-infused work environment are possible factors leading to intention to leave. This study employed a quantitative research design study, sampling a total of 92 civil engineers from Klang Valley. A web-based survey was administered and data was analysed using SPSS (v26). Overall, the findings of this study found that job stress and technology-infused work environment does impact the employee's intention to leave. However, this is not the case for compensation satisfaction, where this study reported that compensation has no impact on turnover intention. Thus, compensation is not the sole factor when engineers decide to stay or leave. These findings provide insights into the field of developing more refined human capital policies in the construction industries. The implications and limitations of this study are discussed.

Keywords: Job Stress · Compensation Satisfaction · technology-infused Workplace · Turnover Intention

1 Introduction

Malaysia is a high turnover rate country since the economy has grown rapidly since the 2000s. The voluntary employee turnover rate in Malaysia has been rising gradually since 2008 (Aon Hewitt, 2015), especially in the construction industry. Employee retention is crucial as companies compete for talent in a challenging economy. Based on Mymarjob 2015 report, the employee turnover rate soared from 1.1% to 13.2% in 2014 and further raised to 14.3% in 2015. Institute of Labour Market Information and Analysis (ILMIA), 2018 reported the average Malaysian employees' turnover rate was at 20% in the year 2017. However, 55% of construction employees were working less than two years with the existing organisation from 2011 to 2012. In addition, Randstard (2011) reported that 85% of the employees plan to leave their position in the next 1 year.

High stress and risk are the nature of the construction industry. These are the factors to cause the construction industry to be less attractive for young people to enter. This is

the reason causing the industry to be lack skilled workers (Kokkaew, 2012). The study is in line with Beswick et al. (2007), where the heavy and wide job scopes are perceived to be hazardous or dangerous as they need to visit the ongoing construction activities, monitor work progress, attending for meetings, and value work done. Wong et al. (2010) postulated that many engineers quit their job after working in the construction industry due to long working hours and heavy workloads. Bilau et al (2015) revealed that the reasons why construction employees' turnover were mainly as a result of no salary increment, dissatisfaction of working environment, organisation politics issues, among others. It is common for an engineer to handle more than 3 projects at a time in the construction industry. As such, (Leung et al., 2005) revealed that many of these people prefer to change firms with more flexibility due to this heavy workload.

The current outbreak of the pandemic, Covid-19 disturbed most of the businesses including the construction sector and C&S consultant firms. Malaysia's Government announced Movement Control Order (MCO) on 18th March 2020 which resulted in the non-essential sectors being shut down nationwide (Rafee, H. & Lee, R., 2020). Working from home has been the new normal since the advent of the pandemic. This situation had expedited the process of technology and the digital workplace for the industry. Telecommuters in the digital workplace become a necessity including C&S consultant employee workplace environment. The digital work environment is the only option for business operations to continue without disruption. High labour turnover remains an unresolved issue, which has continuously plagued the construction industry. Moreover, there is a lack of studies that examine the factors contributing to employee turnover in the construction industry (Hussain & Huei Xian, 2019). Civil and Structure Consultant engineers are important components in the construction industry. Most Civil and Structure Consultant firm staff perform many duties. Cooper (2004) described that staff turnover in the construction industry will be causing delays in the completion period, project quality issues. Subsequently, create client dissatisfaction, and result in profit issue. Therefore, understanding the reasons contributing to the high turnover rate among engineers warrant the attention of the research community.

Therefore, this study aims to propose a framework to investigate the factors contributing to employee turnover in a Civil & Structure Consultant firms. The proposed framework will enable researchers to investigate empirically the factors towards workforce turnover among engineers in the construction industries.

2 Literature Review

2.1 Underlying Theory of Study

The underlying theory of this study is Herzberg's Two Factor Theory (Herzberg, 1966). Herzberg identified motivation and hygiene as intrinsic and extrinsic factors respectively that cause satisfaction or dissatisfaction in the workplace. For example, working conditions, compensation satisfaction, and relationships with supervisors are the important factors related to motivation that would increase satisfaction in the workplace. Thus, when either one of the two-factor theories are insufficient, it can result in workplace turnover (Herzberg, 1966).

2.2 Job Stress and Turnover Intention

Engineers, especially in the construction industry are often regarded as a high-stress jobs because they have heavy and wide job scopes. These job scopes include the pre-contract stage and post-contract stage. The pre-contract stage includes project planning, design, authority submission and approval, and contract tendering, while the post-contract stage includes contract administrative, monitoring site progress and quality control.

Unstable, unsecured work environment, job insecurity, non-continuity and illogical procedural justice are often reasons for high workplace turnover (Ali & Baloch, 2008). Moreover, lack of support and supervision by the superior in conducting the assignment is also regarded as factors leading to high turnover rates (Yahaya et al., 2009; Firth et al., 2007).

2.3 Compensation Satisfaction and Turnover Intention

The nature of the construction industry is dangerous, complex and risky but still, they are not paid according to their needs. Therefore, engineers are rewarded with compensation to attract and retain them in an organisation (Masum, Azad & Beh, 2015). Among all the benefits and rewards, salary often plays the most important role in determining staff turnover decisions (Chi et al., 2012). Jo (2008) suggested that higher salaries and bonuses should be offered if the employee decided to resign. Based on previous literature, compensation in a working career plays an essential role in affecting employee turnover intention.

2.4 Technology-Infused Workplace and Turnover Intention

For the engineering profession, the workplace is not limited to the office. They frequently need to attend physical meetings with clients for design and work progress reporting, meetings with contractors for quality and site work progress monitoring; and meetings with authorities for technical coordination, among others. The technology and digital work environment are the main factors that might affect the performance and efficiency of engineers, especially during the Covid-19 pandemic. According to Milman (2002), unfavourable and poor working conditions are the main factors for high turnover intention among employees. Furthermore, a working environment with poor communication, political environment, poorly behaved colleagues is also found to be among the factors affecting high workplace turnover (Silva, 2006). In another study, researchers found that the organisation's culture and management style can also be a contributing factor to workplace turnover (Kurnia, Alice & Wander, 2012).

Therefore, improving the working environment and reducing work stress are necessary steps to reduce employee turnover (Lee et al., 2016; Author, Ah-Choo, & Soon-Hin, 2020; Author, 2020). Based on Taiwo (2010) study, improved working conditions can increase employees' productivity, and consequently satisfaction. The satisfaction of employees is very much dependent on how the working environment is designed. Thus, the working environment is seen to predict employee retention rate (Brenner, 2004).

Based on the discussion above, therefore, the following hypotheses were derived:

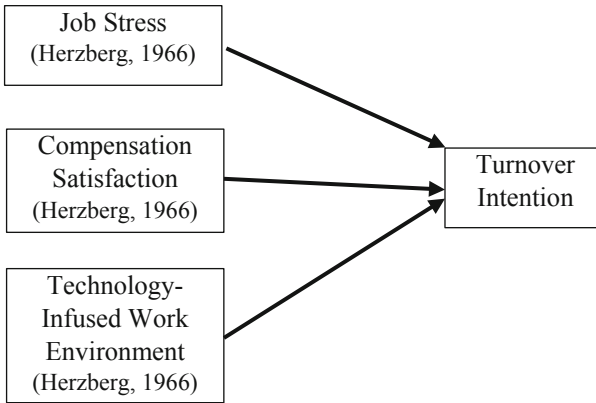


Fig. 1. Proposed Framework

H1: Job stress is positively related to employee turnover intention.

H2: Compensation Satisfaction is positively related to employee turnover intention.

H3: Technology-infused work environment is positively related to employee turnover intention (Fig. 1).

3 Methodology

This study employed a cross-sectional quantitative approach using purposive sampling where the respondents were chosen according to the preselected criteria to answer the research questions. Etikan et al. (2016) explained that this is the most effective method to be used when there is a need to examine a certain cultural domain with experts within the environment of study. The respondents in this study were civil engineers from Civil & Structure Consultant firms' employees in Klang Valley. The sample size was measured by using G*Power. It computed a minimum sample size of 82, with the effect size (f^2) = 0.15 and $\alpha = 0.10$ and Power = 0.90.

The questionnaire was adapted from previously validated scales (Holmgren, 2009; Alam & Muhammad, 2010; Zhong et al., 2020; Ratna & Kaur, 2016) using a 5-point Likert Scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire comprised sections of demographic, items on job stress, compensation satisfaction, technology-infused environment and intention to leave items. The web-based survey was administered and 92 employees from Civil & Structure Consultant firms in Klang Valley attempted the questionnaire.

4 Data Analysis

4.1 Reliability Testing

Sekaran & Bougie (2016) described that if the alpha value is within 0.7, the instrument was acceptable. Based on Table 1, all constructs have achieved a value of above 0.7, indicating positive reliability.

Table 1. Construct Reliability

Construct	Cronbach Alpha
Job Stress	0.775
Compensation Satisfaction	0.755
Technology-infused Environment	0.874
Intention to Leave	0.914

4.2 Pearson Correlation Analysis

Pearson Correlation Coefficient is the statistical test that measures the statistical relationship, or association, between two continuous variables. It is known as the best method of measuring the association between variables of interest because it is based on the method of co-variance. It gives information about the magnitude of the association, or correlation, as well as the direction of the relationship. Table 2 details the bivariate correlation between the variables of study using a Pearson r correlation. The summary of Pearson Correlation Results are as follows (see Table 2).

There is a significant positive weak relationship between job stress and employee turnover intention. $r(47) = 0.265$.

There is a significant negative weak relationship between Compensation Satisfaction and employee turnover intention. $r(92) = -0.383$.

There is a significant negative weak relationship between technology-infused work environment and employee turnover intention. $r(92) = -0.238$.

4.3 Hypotheses Testing

A paired-samples t -test was conducted to compare the intention to leave construct in job stress, compensation satisfaction and technology-infused workplace conditions during the Covid-19 crisis. Paired Samples t -Test was used to determine whether there is statistical evidence difference between paired observations. A paired t -test is designed to compare the means of the same group or item under two separate scenarios. A threshold of 1.645 with 90% confidence was used for this study.

Based on Table 3, there was a significant difference in the values for job stress ($M = 0.4340$, $SD = 0.8973$) and technology-infused work environment ($M = 0.5362$, $SD = 1.3756$). There was not a significant difference in the values for compensation satisfaction ($M = 0.0775$, $SD = 1.4381$). Job stress and technology-infused workplace seem to be factors increasing the intention to leave.

Table 2. Correlation Relationships of Independent Variables and Dependent Variable

Correlations		ILM	WEM	WSM	CSM
ILM	Pearson Correlation	1	-.238*	.265	-.383**
	Sig. (2-tailed)		.022	.072	.000
	N	92	92	47	92
WEM	Pearson Correlation	-.238*	1	-.108	.035
	Sig. (2-tailed)	.022		.469	.737
	N	92	92	47	92
WSM	Pearson Correlation	.265	-.108	1	-.202
	Sig. (2-tailed)	.072	.469		.173
	N	47	47	47	47
CSM	Pearson Correlation	-.383**	.035	-.202	1
	Sig. (2-tailed)	.000	.737	.173	
	N	92	92	47	92

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

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

Note: WSM^a = Job Stress Mean, CSM^b = Compensation Satisfactions Mean, WEM^c = Technology-infused Work Environment Mean, ILM^d = Intention to Leave (Turnover Intention) Mean

Table 3. Paired Samples Test Output

Paired Samples Test		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	WSM ^a - ILM ^d	.43404	.89733	.13089	.17058	.69751	3.316	46	.002
Pair 2	CSM ^b - ILM	.07754	1.43819	.14994	-.22031	.37538	.517	91	.606
Pair 3	WEM ^c - ILM	.53623	1.37563	.14342	.25135	.82112	3.739	91	.000

Note: WSM^a = Job Stress Mean, CSM^b = Compensation Satisfaction Mean, WEM^c = Technology-infused Work Environment Mean, ILM^d = Intention to Leave (Turnover Intention) Mean

5 Results and Discussion

Based on the results obtained through Paired Sample Test hypothesis analysis, $t = 3.316$ and $p = 0.02$, the findings of this study reveal a positive relationship between job stress and turnover intention. Thus, H1 is supported. Work stress makes employees want to quit the organisation (Firth et al., 2007) and. Minimal supervision and support were also identified as factors contributing to high turnover intention (Yahaya et al., 2009).

The second objective of examining the relationship between compensation satisfaction and employee turnover intention was measured through H2. Compensation is provided to employees to attract them and to retain them in an organisation (Masum, Azad & Beh, 2015). Staff benefits which are the basic needs for working staff are what staffs look for in their career. Although past research has revealed that among all the benefits and rewards, salary plays an important role in staff turnover decisions (Chi et al., 2012), the findings of this study reveal otherwise. H2 is not supported, postulating there is no relationship between compensation satisfaction and employee turnover intention. This finding postulate that good compensation is no longer a consideration for resigning. Communication deficiency could be the reason for among many working professionals to quit their job.

The findings of this study also supported that there is a significant relationship between technology-infused work environment and employee turnover intention through the testing of H3. This finding resonates with past research, where the work environment is vital to reduce employee turnover rate (Lee et al., 2016). The study conducted by Milman (2002) concluded that unfavourable and poor working environments were cited as major reasons for high turnover intention among employees. Based on Taiwo (2010) study, the improved condition of the work environment will improve employee productivity. This positively responded by the respondents in the questionnaire that Digital workplace increases my work effectiveness and achieved the highest mean at 3.79. Therefore, the research objective was achieved for this particular study.

6 Conclusion

This study provides an understanding of the relationship between job stress, compensation satisfaction, technology-infused work environment and how they influence the turnover intention of engineers during the Covid-19 pandemic. Overall, the findings of this study found that job stress and technology-infused work environment does impact the employee turnover intention. However, this is not the case for compensation satisfaction, where this study reported no link with employee turnover intention. Compensation hurts turnover intention. Compensation is not the sole factor when engineers decide to stay or leave.

This study has several limitations. First, the respondents were limited to only the construction industry. Future researchers should take a broader view of covering more industries. Secondly, the actual turnover was not focused, thereby not providing a strong establishment of causality. Employees who wish to leave a company will often be provided with a form or exit interview to understand the reasons for leaving. Future research could look into examining the actual data provided after the exit interviews (Table 4).

Table 4. Acceptance and Rejection of Research Hypotheses

No.	Hypothesis	Acceptance/Rejection
H1	There is a significant relationship between job stress and employee turnover intention.	Supported
H2	There is a significant relationship between Compensation Satisfaction and employee turnover intention.	Not Supported
H3	There is a significant relationship between technology-infused work environment and employee turnover intention.	Supported

Acknowledgments. The author would like to acknowledge Multimedia University for the support given during the development and publication of this manuscript.

Authors' Contributions. The author individually contributed to the manuscript. The author read and approved the final manuscript.

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