# A Model Explaining Employees' Retention in the Information Technology and Communication Industry

**[1]Wornchanok Chaiyasoonthron**

[1]*King Mongkut's Institute of Technology Ladkrabang, Thailand*

## Abstract

Human resources are the key success factors of organizations because employees derive the outcome and the competitive advantage of organizations. The information and communication technology (ICT) industry is recognized as one of the most important creative industries in Thailand. This research aims to study factors that have relationships with job-retention in the ICT industry. In this study, intention to stay is used to represent job-retention. The study employs Self-determination Theory (STD) and the Theory of Planned Behaviour (TPB) resulting in a structure of relationships. 359 respondents who are ICT workers in Bangkok Thailand were asked to fill a questionnaire. Structural equation modelling (SEM) is used to test the hypotheses. The results of the model after re-specification shows that perceived relatedness, perceived autonomy, perceived competence, the attitude toward an ICT job, subjective norm, and perceived financial compensation positively affect intention to stay. In addition, perceived relatedness, perceived autonomy, and perceived financial compensation positively affect the attitude toward the attitude toward an ICT job. The overall model can be used to explain intention to stay as much as 61.6 % and the overall model can be used to explain the attitude toward job as much as 62.9 %. Discussions are included in this research.

## INTRODUCTION

Human resources are one of the key success factors of the organization success in both public and private organizations. The reason is that employees at all levels drive the organization to success and deliver competitive advantage. Human resources underpin the competitive advantage of a company. Losing key employees could mean losing a competitive advantage. Employees operate the organization in various ways, such as managing operation, directing and issuing policies, planning, developing and researching innovation, and sustaining the organization's growth.

Scholars have studied what drive employees to leave organizations (Adegoke et al., 2015; Cho and Huang, 2012; Heijden et al., 2009; Lo et al., 2018). Few studies focused on the ICT industry (e.g.Cho and Huang, 2012). Several studies have been done in the nursing industry (Adegoke et al., 2015; Chan et al., 2009; Heijden et al., 2009; Lo et al., 2018; Robson and Robson, 2016). Prior studies concentrated on intention to leave (Cho and Huang, 2012; Flinkman et al., 2010; Heijden et al., 2009; Lo et al., 2018) as the ultimate factor of prediction. In addition, prior studies used job-satisfaction (Chan et al., 2009; Hausknecht et al., 2009; Lo et al., 2018) and affective commitment (Cho and Huang, 2012; De Neve and Devos, 2017; Hausknecht et al., 2009; Robson and Robson, 2016) as mediators to predict intention to leave.

In addition, none of these studies has been conducted in Thailand.

Because of the need for information and communication technology (ICT), Thailand is a country that aims to develop its economics in the direction of digital economy; it needs ICT to guide the development. Thailand puts ICT at the forefront of its national development plane during 2010 and 2020 that the nation wanted to bring Thai people to knowledge and wisdom; the economy would be sustained and lead the people to equality. However, one way to reach this objective is to have good human capital. ICT workforce must be able to have good knowledge and skills accepted as international level. If Thai organizations successfully manage this kind of workforce, they can expect a successful outcome of developing the economy based on ICT. ICT itself is important for the creative economy since ICT can be extended to other creative industries such as animation, electronic commerce, and so on. Consequently, an important ICT workforce would help Thailand successfully develop its economy.

Thai organizations must keep highly smart employees inside their companies. Job retention is very important because if organizations have no initiative to keep employees with them, they might face problems such as labor shortage and a lack of opportunities in producing innovation. When employees want to leave the organization, they might produce little performance.

Studies in this area might help companies to maintain their employees which in turn the companies can succeed in their business. However, such studies have been conducted very few studies that address the ICT employee's job retention. Moreover, such studies will address the development of the nation within 2563 (moe.go.th, 2015)

Certainly, these studies can be used to develop the human capital of the entire nation. This research aims to study factors that have relationships with job-retention in the ICT industry. This research focuses on factors that make ICT employees stay with companies. The scope focuses on employees in Bangkok only because Bangkok has the highest business activities in Thailand and it is the most crowded city in Thailand. Hence, the research question is what drive people have intention to stay in ICT companies?

## Literature review

Prior studies

Researchers have used job satisfaction as the major factor determining intention to leave or to stay.

For example, Heijden et al. (2009) used job satisfaction as the mediator to predict turnover intention. Heijden et al. (2009) also found that low social support supervisor, low social support colleagues, low leadership quality, and high work-to-home interference significantly lowered job satisfaction. Subsequently, low job satisfaction caused high intention to leave. Other researchers, Karanika-Murray et al. (2017), discovered that employees' psychological climate can influence how job characteristics influencing job satisfaction when the attitude of employees is controlled. Karanika-Murray et al. (2017) suggested that psychological climate is a contextual factor that influences both job satisfaction and perceptions that influence job satisfaction. Chan et al. (2009) discovered that age, experience, workplace, and job satisfaction (with financial benefits) are significantly predictable for the intention to leaver of nurses. Lo et al. (2018) used job satisfaction together with depressed mood to predict intention to leave. Lo et al. (2018) focused on job-related emotions: job stress, stress adaptation, and depressed mood as precursors of job satisfaction and intention to leave.

Besides job satisfaction, commitments have been used to as predictors of intention to leave. Cho and Huang (2012) found that organizational affective commitment, organizational continuance commitment, professional affective commitment, and professional continuance commitment significantly affected intention to leave an

organization for career development. In addition, Cho and Huang (2012) found the interaction between professional affective commitment and professional continuance commitment. De Neve and Devos (2017) used affective commitment together with teacher self-efficacy to predict intention to leaver of teachers. They discovered that affective commitment was stronger than teacher self-efficacy. Robson and Robson (2016) showed a statistically significant relationship between affective commitment and leave intention. In their model, affective commitment acts as the mediator. They also used leader-member exchange and perceived organizational supports to predict leave intention and affective commitment.

As prior studies have shown, studies in this area have built around job satisfaction or affective commitment as the main mediator of intention to leave. Hence, this study proposes another view of employee retention. Instead of using intention to leave, this study used intention to stay. Intention to stay at the opposite side of intention to leave. Intention to leave is useful for the prevention of job-resignation while the intention to stay shows a long-term organizational commitment. Additionally, this study combines two main behavioral theories together to predict the intention to stay. The study combines the Self-Determination Theory (SDT) and The Theory of Planned Behavior (TPB) together.

**Theoretical framework**

To the best of the author's knowledge, there is no study that combines SDT and TPB together. The author decided to SDT and TPB because both theories explain the motivation of human to perform a behavior and both theories can be applied in the workplace scenario. In addition, this study attempts to provide a novel contribution to research since prior research focuses on different constructs. Hence, the prediction result might be different.

SDT (Deci, 1975; Deci and Ryan, 2000; Ryan and Deci, 2000a, 2000c) suggests that people are motivated by some forms of intrinsic,

extrinsic, and intermediate motives. However, the major claim of this theory is that people have innate motivations that are related to the needs of autonomy, competence, and relatedness. If the three needs are fulfilled, people become self-motivated. If they, on the other hand, are not satisfied, motivation declines. The results of the increase or decrease in motivation lead to an increase or decrease in well-being (Deci and Ryan, 2000; Ryan and Deci, 2000b). The three needs have been applied to predict job-performance and organizational behavior (Chiniara and Bentein, 2016).

Perceived autonomy refers to the experience of self-control and freedom. It is an important aspect of human motivation (Deci and Ryan, 2000). In this research, feeling (Ryan and Deci, 2000a) of autonomy is focused rather than the need for autonomy because organizations need to satisfy people's need for autonomy. Autonomy is the current state of feeling of employees relating to how organizations satisfy their need for autonomy.

Perceived competence refers to the degree to which people feel or perceive their competence. When employees do not have satisfied experience from learning what they want, they will not want to engage in the development of knowledge and skills they need for work (Deci and Ryan, 2000).

Perceived relatedness, it means the feeling to be connected, loved, and cared for by other members of the organization (Deci and Ryan, 2000). The need to study autonomy, competence, and relatedness is because they are important factors guiding people involvement in jobs. Autonomy, competence, and relatedness facilitate determination (Deci et al., 1996).

There is a potential to bring the three needs to predict intention to stay. Prior research has been done to understand what drive job performance, individual and organizational commitments (Chiniara and Bentein, 2016). Autonomy, competence, and relatedness can be used to explain task performance, individual and organizational commitments (Chiniara and

Bentein, 2016). The three needs could be precursors of the attitude as explained by TPB.

TPB (Ajzen, 1991; Fishbein and Ajzen, 2010) suggests that people are motivated to perform specific behavior because they have high intention to perform the behavior and they have high ability to control their behavior. The factors that determine behavioral intention are attitudes, SN, and the ability to control behavior. Figure 1 shows the Theory of Planned Behavior.
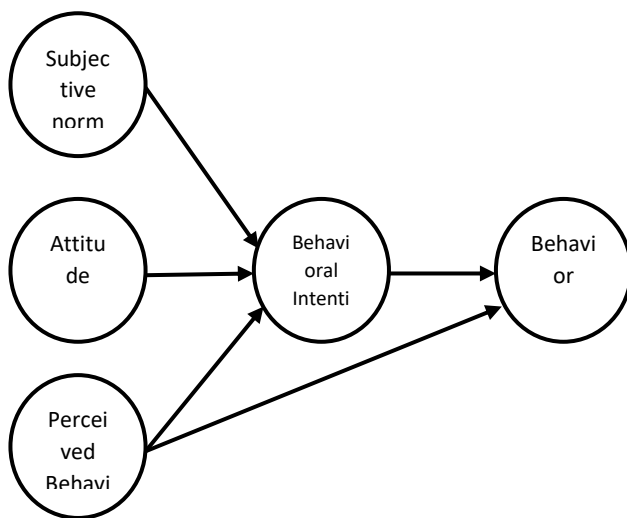


Figure 1. *The Theory of Planned Behavior*

Source: Ajzen (1991)

TPB is built upon the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975). TPB is the attempt to corroborate the use of PBC to TRA. The concept of PBC was taken from self-efficacy (Bandura, 1986). Hence, TPB provides a better predictive power than TRA.

In TPB, behavior refers to specific behavior that people perform. Behavioral intention refers to a part of attitudes. It is a cause of human action (Robbins, 2005). Often times, behavioral intention is viewed as the cognitive components of attitudes and behavioral intention is correlated with feelings (Fishbein and Ajzen, 1975). Subjective norm is a predecessor of behavioral intention. Subjective norm means that when important people suggest to an individual about the behavior, the individual is likely to perform the behavior. Attitudes can be viewed as feelings of behaviors. If people like or love doing a

specific behavior, they have high behavioral intention. PBC means that people believe that they can control their behavior (Fishbein and Ajzen, 2010). However, to represent job-retention, intention to stay is used to represent behavioral intention in this study.

The integration of SDT and TPB is possible because in the level of the three needs, feelings of autonomy, competence, and relatedness; they are the depictions of needs that individuals experience while they work. Figure 2 depicts the theoretical framework resulted from the integration of SDT and TPB. Based on the TPB and SDT, we obtain hypotheses as shown in figure 2.

Perceived relatedness (PR) positively influences attitude toward job (ATT)

If people feel connected, loved, and cared for by others, then the sense of commitment and belonging to the organization is formed (Chiniara and Bentein, 2016; Deci and Ryan, 2000). Humans require relatedness to sustain needs from people in family and society. Workplaces are a type of society that employees can work and live as a family. This condition creates relatedness. Good relationships in the workplace create a good working atmosphere, resulting in lower job-turnover.

Hypothesis 1: PR positively influences ATT

Perceived autonomy (PA) positively influences attitude toward job (ATT).

ATT is the composition of feelings, opinions, and intention (Fishbein and Ajzen, 2010). In this study, ATT refers to feels of like or love of the job that the employee currently works for (see Fishbein and Ajzen, 2010). Autonomy affects the effective part of the attitude (Chiniara and Bentein, 2016). Giving autonomy creates emotional attachment of employees toward job and organization. Hence, employees who have high autonomy tend to stay with organizations or job for a long period of time. The author subsequently set a hypothesis as follows:

Hypothesis 2: PA positively influences ATT

Perceived competence (PC) positively influences attitude toward job (ATT)

Like autonomy and relatedness, competence brings a good feeling of work experience behaviors to become compatible and essential (Chiniara and Bentein, 2016). PC could form the good affection part of the attitude. The author then set a hypothesis:

Hypothesis 3: PC positively influences ATT.

Perceived financial compensation (PFC) positively attitude toward job (ATT)

PFC acts as the perception of benefits. According to Fishbein and Ajzen (2010), when human perceive benefits resulting from behavior that they are performing, then the level of positive attitude improved. In STD, PFC acts as extrinsic motivation. Unlike, PR, PA, and PC, PFC influences the cognitive part of the attitude. Employees work for a job as a consequence of reasons based on payment. The author then set a hypothesis:

Hypothesis 4: PFC positively influences ATT.

Perceived relatedness (PR) positively influences the intention to stay (IS).

The relationship between PR and IS can be both indirect and direct. The indirect relationship is via ATT. However, the direct relationship can also happen because PR is an emotional attachment that employees have with their colleagues and organization (Chiniara and Bentein, 2016), creating a prefer cognitive situation driving IS. Hence, a hypothesis is set as follows:

Hypothesis 5: PR positively influences IS.

Perceived autonomy (PA) positively influences the intention to stay (IS).

The need for autonomy has been found to influence job performance (Chiniara and Bentein, 2016). Employees desire to become independent, self-control or free from management hierarchy. Having too tight control could lead to a feeling of boredom. Subsequently, Google, for example, allows employees to launch their own projects or initiatives (Todd, 2018).

Hypothesis 6: PA positively influences IS.

Perceived competence (PC) positively influences the intention to stay (IS).

PC is another factor influencing IS. PC is the feeling of competence, meaning the extent to which people feel or perceive that they are competence at work. If the employees do not feel that they have good knowledge and skills at work, their motivation will decline (Deci and Ryan, 2000). The results of this research show that when ICT employees have good competence, they tend to have high IS. Therefore, organizations should provide a means to improve employee's competence. In addition, we can speculate that PC can be used to improve employees' job performance.

The need for competence has found to a predictor of job-performance (Chiniara and Bentein, 2016). Ertürk and Vurgun (2015) studied factors that intervene in employee's work. They found that workplace supporting factors, mental abilities, and intention to leave are important for employee's work intervention. However, competence in the workplace is not about GPA. Barbee, Sullivan, and Antle (2009) found that GPA has no relationship with job-resignation. Cowin, Johnson, Craven, and Marsh (2008) found that the ways to keep employees in organizations are to give them advice, process re-engineering, an development of their skills to perform job-better.

Hypothesis 7: PC positively influences IS.

Perceived financial compensation (PFC) positively influences intention to stay (IS).

For the nursing profession, pay and benefits have been found as a predictor of intention to leave (Chan et al., 2009). The ICT industry pays a large amount of salary for programmers and software engineers. However, when compared with other factors, financial compensation may not influential as others. Chan et al. (2009) have not shown the comparison among factors capable of predicting intention to leave, which one has the highest beta-coefficient. STD could see financial compensation as extrinsic motivation

while TPB could judge financial compensation as a perception of benefits driving attitude and intention. PFC can keep people stay with the company. PFC is a form of extrinsic motivation. Financial rewards have a relationship with employees' performance (Kominis and Emmanuel, 2007); therefore, financial rewards can be used as a measure to improve employees' performance in other careers (Bruinsma, 2004; Ynalvez and Shrum, 2009). Hence, it is not surprising that PFC will lead to high IS. Hence, the following hypothesis has been set:

Hypothesis 8: PFC positively influences IS.

Perceived behavior control (PBC) positively influences the intention to stay (IS).

PBC is a factor capable of regulating intention according to TPB. People perform a behavior that they are able to control (Fishbein and Ajzen, 2010). PBC is similar to self-efficacy (Bandura, 1986; Fishbein and Ajzen, 2010). Low confident employees tend to leave the organization while high confident ones tend to stay. If ICT employees perform jobs that they feel not able to perform, they quit the job. On the other hand, if ICT employees feel confident about the job they do, then they might have a high intention to stay. This view has been confirmed in the case of teacher professional. The higher level of self-efficacy the lower level of intention to leave the job (De Neve and Devos, 2017). Hence, I set up a hypothesis as follows:

Hypothesis 9: PBC positively influences IS.

Subjective norm (SN) positively influences the intention to stay (IS).

People listen to other people and change their behavior according to other people (Fishbein and Ajzen, 2010). SN is a TPB's construct that affects behavior intention. SN means that the degree to which important people give opinions to an individual that he or she should do the behavior, the individual will highly possibly do the behavior (Ajzen, 1991; Fishbein and Ajzen, 1975, 2010). In Asian culture, superstars, friends, and parents are social influencers. In this research, SN is believed to protect

employees to leave their job. For example, if important people say to ICT workers that their job is good or that they should not quite their jobs, then their IS is high. Hence, this might be the notion that some organizations have a good reputation so that general people believe that employees working in such organizations should be proud even though the employees might think in the opposite way (Fishbein and Ajzen, 2010). Hence, the following hypothesis is set:

Hypothesis 10: SN positively influences IS.

Attitude toward job (ATT) positively influences intention to stay (IS)

ATT is a precursor of behavior intention (Fishbein and Ajzen, 2010). In TPC, ATT is used to predict intention. Traditionally, the intention is a part of attitude in the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975). TRA is a prior version of TPC. Good attitude toward a specific behavior will develop a plan or intention to execute the behavior. Human beings behave according to what they think is good for them. For example, when employees feel good with the job, they tend to work as long as they can. Hence, the path from ATT to IS is well-established in social science. The author then set a hypothesis:
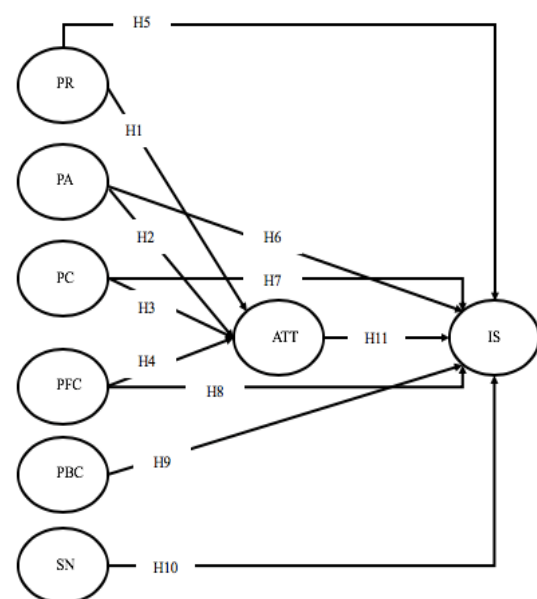
Hypothesis 11: ATT positively influences IS.



Figure 2. *The Theoretical Framework*

## Methodology

### Samples

The samples of this research were collected from IT practitioners who work in Bangkok Thailand. The sampling method is convenience sampling.

### Instrument

The items are developed based on the theories: SDT and TPB for a self-report questionnaire. The Likert type scales are used to measure respondents' opinions. The range of the scale is between 1 and 7. The constructs and their measurement are depicted in table 1.

Table 1. *The measurement of constructs.*

| Constructs | Items | Description | Reference |
|---|---|---|---|
| IS | IS1 | I intent to continuously work for this organization in the future. | (Fishbein and Ajzen, 2010) |
| | IS2 | I plan to continuously work for this organization in the future. | |
| | IS4 | I will never leave this organization in the near future. | |
| | IS5 | I do not want to leave this organization | |
| PA | PA1 | I worked in this organization as needs. | (Ryan and Deci, 2000b, 2000c, 2000a; Deci and Ryan, 2000; Deci and Vansteenkiste, 2004; Deci, 1975) |
| | PA2 | In this organization, I can work on my idea. | |
| | PA3 | In this organization, I have the authority to make decisions based on my opinion | |
| | PA5 | I can freely solve problems that come from working. | |
| | PA6 | I have the authority to operate without the restrictions from the organization. | |
| | PA7 | I have many choices to work in this organization. | |
| PC | PC1 | I am a person who has good knowledge, abilities, and skills. | (Ryan and Deci, 2000b, 2000c, 2000a; Deci and Ryan, 2000; Deci and Vansteenkiste, 2004; Deci, 1975) |
| | PC2 | I can overcome obstacles to perform well. | |
| | PC3 | I am good at work here | |
| | PC4 | I am a person who always achieves the goal. | |
| | PC5 | I always have confidence in the work. | |
| PR | PR1 | I feel a bond with colleagues. | (Ryan and Deci, 2000b, 2000c, 2000a; Deci and Ryan, 2000; Deci and Vansteenkiste, 2004; Deci, 1975) |
| | PR2 | I feel warm and comfy when I work here. | |
| | PR3 | I feel part of this organization. | |
| | PR4 | My colleagues and I spent time together. | |
| | PR5 | I have a good relationship with all co- workers. | |
| | PR6 | My colleagues love me. | |
| ATT | Att1 | I love the work I do. | (Fishbein and Ajzen, 2010) |
| | Att2 | I like my job. | |
| | Att3 | I enjoy the work I do. | |
| | Att4 | I feel fun when I work for the job. | |
| | Att5 | I feel good at this job. | |
| PFC | PFC1 | I get paid well | |
| | PFC2 | This organization pays well | |

| Constructs | Items | Description | Reference |
|---|---|---|---|
| | PFC3 | This organization pays good salaries | |
| | PFC5 | I earn a good income from this organization. | |
| SN | SN1 | People with influence think I should work here. | (Fishbein and Ajzen, 2010) |
| | SN2 | People are important to me think I should work here. | |
| | SN3 | I respect people who think I should work for this organization. | |
| | SN4 | People whom I love to think I should work for this organization. | |
| | SN5 | I worked for this organization, because the people in society think it is very good. | |
| PBC | PBC1 | My work I do is under my ability | (Fishbein and Ajzen, 2010) |
| | PBC2 | I have never come across any difficulties that I cannot handle them. | |
| | PBC3 | I am knowledgeable enough to deal with my job. | |
| | PBC5 | I am confident in my experience and capabilities to accomplish my job | |

## Reliability and Construct Validity

For reliability, Cronbach's Alpha was used to analyze the reliability. The minimum value of Cronbach's Alpha should be .6 (Hair, Black, Babin, & Anderson, 2010). For the validity, the items were analyzed by using exploratory factor analysis. The results of the exploratory factor analysis should ensure the factorial validity of constructs (Cook and Campbell, 1979).

## The Analysis Technique

The maximum likelihood estimation is used to estimate parameters. IBM's SPSS and AMOS 21.0 are used in this research.

## Research Results

According to table 2, the total number of samples is 359 ICT employees. Hence, this research covers the minimum requirement of research. The samples consist of 199 men or 55.4 % and 160 women or 44.6 %. Most respondents have age between 20 and 30 years old (180 respondents or 50.1%), followed by respondents having age between 30 and 40-year-old (123 respondents or 34.3 %). 257 respondents (71.6%) earned a bachelor's degree while respondents who earned a master account for 63 people (17.5 %)

Table 2. *The characteristics of samples*

| | Frequency | Percent |
|---|---|---|
| Gender | | |
| Men | 199 | 55.4 |
| Women | 160 | 44.6 |
| Age | | |
| 20 and below | 4 | 1.1 |
| 20 < age <= 30 | 180 | 50.1 |

| | | |
|---|---:|---:|
| 30 < age <= 40 | 123 | 34.3 |
| 40 < age <= 50 | 44 | 12.3 |
| above 50 | 8 | 2.2 |
| Education | | |
| Below Bachelor | 35 | 9.7 |
| Bachelor | 257 | 71.6 |
| Master | 63 | 17.5 |
| PhD or above | 4 | 1.1 |
| Total | 359 | 100.0 |

As shown in table 3, this study studied both ICT practitioners (255 people) and people working in the ICT industry (104 people). 55 programmers (15.4%), 35 IT supporters (9.7%), and 28 network administrators (7.8 %) were included in this survey.

Table 3. *ICT practitioners and other jobs workers in the ICT industry*

| | Frequency | Percent |
|---|---:|---:|
| Network Administrator | 28 | 7.8 |
| SEO | 4 | 1.1 |
| IT Consulting | 13 | 3.6 |
| Programmer | 55 | 15.3 |
| Application network | 7 | 1.9 |
| Database | 6 | 1.7 |
| Hardware | 9 | 2.5 |
| IT Audit | 5 | 1.4 |
| IT project | 21 | 5.8 |
| IT Security | 2 | .6 |
| IT Support | 35 | 9.7 |
| MIS | 6 | 1.7 |
| Mobile/wireless communication | 10 | 2.8 |
| Software tester | 6 | 1.7 |
| IT Marketing | 18 | 5.0 |
| IT analysis | 21 | 5.8 |
| Other IT jobs | 9 | 2.5 |
| Other jobs in the ICT industry | 104 | 29.0 |
| Total | 359 | 100.0 |

Validity and Reliability

In terms of construct validity, factorial validity, convergent validity, and discriminant validity are used to determine construct validity. Factorial validity is used to ensure that the items can be grouped according to the construct they represent. Average variance extracted (AVEs) is used to represent convergent validity. Convergent validity ensures that the item or measurement is a good representative of the construct. Discriminant validity is used to ensure that the construct being represented is different from another construct. In addition, reliability is assessed through Cronbach's Alpha and Construct Reliability (C.R.)

Table 4 shows the results of the exploratory factor analysis. Factorial validity is met because the items were grouped according to their designed constructs.

Table 4. *Exploratory Factor Analysis (Principal Axis Factoring)*

| | Factor | | | | | | | |
| | PR | PA | PFC | ATT | PC | SN | PBC | IS |
|---|---|---|---|---|---|---|---|---|
| PR4 | .817 | | | | | | | |
| PR2 | .801 | | | | | | | |
| PR1 | .777 | | | | | | | |
| PR5 | .706 | | | | | | | |
| PR3 | .702 | | | | | | | |
| PR6 | .643 | | | | | | | |
| PA3 | | .820 | | | | | | |
| PA2 | | .772 | | | | | | |
| PA5 | | .757 | | | | | | |
| PA6 | | .754 | | | | | | |
| PA7 | | .719 | | | | | | |
| PA1 | | .652 | | | | | | |
| PFC2 | | | .887 | | | | | |
| PFC3 | | | .885 | | | | | |
| PFC1 | | | .871 | | | | | |
| PFC5 | | | .830 | | | | | |
| Att3 | | | | .775 | | | | |
| Att2 | | | | .760 | | | | |
| Att1 | | | | .725 | | | | |
| Att4 | | | | .722 | | | | |
| Att5 | | | | .683 | | | | |
| PC1 | | | | | .806 | | | |
| PC2 | | | | | .765 | | | |

| | | | | | | | | |
|------|---|---|---|---|------|------|------|------|
| PC4 | | | | | .753 | | | |
| PC3 | | | | | .708 | | | |
| PC5 | | | | | .540 | | | |
| SN2 | | | | | | .855 | | |
| SN3 | | | | | | .837 | | |
| SN1 | | | | | | .792 | | |
| SN4 | | | | | | .776 | | |
| PBC4 | | | | | | | .756 | |
| PBC3 | | | | | | | .736 | |
| PBC5 | | | | | | | .677 | |
| PBC1 | | | | | | | .664 | |
| IS5 | | | | | | | | .746 |
| IS4 | | | | | | | | .705 |
| IS2 | | | | | | | | .700 |
| IS1 | | | | | | | | .672 |

For convergent validity, the average variance extracted (AVEs) is used to represent convergent validity. Convergent validity ensures that the item or measurement is a good representative of the construct. Discriminant validity is used to ensure that the construct being represented is different from other constructs. Table 5 represents that AVEs are all above 0.5 (0.65 - 0.90). The acceptable value of the AVE should be more than 0.5. Therefore, convergence validity is met. In addition, all the values of AVEs are more than the values of the squared correlations; this suggests that discriminant validity is met (Hair et al., 2010).

Table 5. *Squared correlations and AVEs.*

| | IS | PR | PA | PC | PFC | PBC | SN | Att |
|-----|------|------|------|------|------|------|------|------|
| IS | **0.77** | | | | | | | |
| PR | 0.45 | **0.73** | | | | | | |
| PA | 0.39 | 0.31 | **0.7** | | | | | |
| PC | 0.29 | 0.36 | 0.29 | **0.69** | | | | |
| PFC | 0.3 | 0.2 | 0.21 | 0.12 | **0.9** | | | |
| PBC | 0.31 | 0.4 | 0.36 | 0.53 | 0.17 | **0.65** | | |
| SN | 0.36 | 0.31 | 0.25 | 0.2 | 0.3 | 0.23 | **0.85** | |
| Att | 0.43 | 0.48 | 0.35 | 0.46 | 0.24 | 0.48 | 0.23 | **0.87** |

Note: Diagonal values are AVEs, and off-diagonal values are squared correlations

Table 6 shows standardized Factor Loadings, Construct Reliability (C.R.), and

Cronbach's alpha. These numbers are important to determine the reliability and validity of the constructs.

Table 6. *Standardized Factor Loadings, Construct Reliability (C.R.), and Cronbach's alpha*

| Construct | Item | Standardized Factor Loading | C.R. | Alpha |
|---|---|---|---|---|
| IS | IS1 | 0.961 | 0.855 | 0.938 |
| | IS2 | 0.976 | | |
| | IS3 | 0.757 | | |
| | IS5 | 0.786 | | |
| PC | PC1 | 0.819 | 0.801 | 0.922 |
| | PC2 | 0.838 | | |
| | PC3 | 0.826 | | |
| | PC4 | 0.878 | | |
| | PC5 | 0.784 | | |
| PA | PA1 | 0.813 | 0.806 | 0.938 |
| | PA2 | 0.908 | | |
| | PA3 | 0.927 | | |
| | PA5 | 0.828 | | |
| | PA6 | 0.758 | | |
| | PA7 | 0.761 | | |
| PR | PR1 | 0.802 | 0.83 | 0.945 |
| | PR2 | 0.893 | | |
| | PR3 | 0.901 | | |
| | PR4 | 0.9 | | |
| | PR5 | 0.839 | | |
| | PR6 | 0.772 | | |
| ATT | Att1 | 0.922 | 0.926 | 0.972 |
| | Att2 | 0.949 | | |
| | Att3 | 0.96 | | |
| | Att4 | 0.918 | | |
| | Att5 | 0.906 | | |
| SN | SN1 | 0.852 | 0.912 | 0.957 |
| | SN2 | 0.938 | | |
| | SN3 | 0.962 | | |

| | | | | |
|---|---|---|---|---|
| | SN4 | 0.923 | | |
| PFC | PFC1 | 0.962 | 0.947 | 0.975 |
| | PFC2 | 0.971 | | |
| | PFC3 | 0.953 | | |
| | PFC5 | 0.913 | | |
| PBC | PBC1 | 0.86 | 0.765 | 0.94 |
| | PBC3 | 0.824 | | |
| | PBC4 | 0.711 | | |
| | PBC5 | 0.813 | | |

In conclusion, factorial validity, convergent validity, discriminant validity, reliability are met the acceptable levels. Therefore, construct validity is achieved.

Figure 3 shows the results of structural equation modeling together with model fit indices.
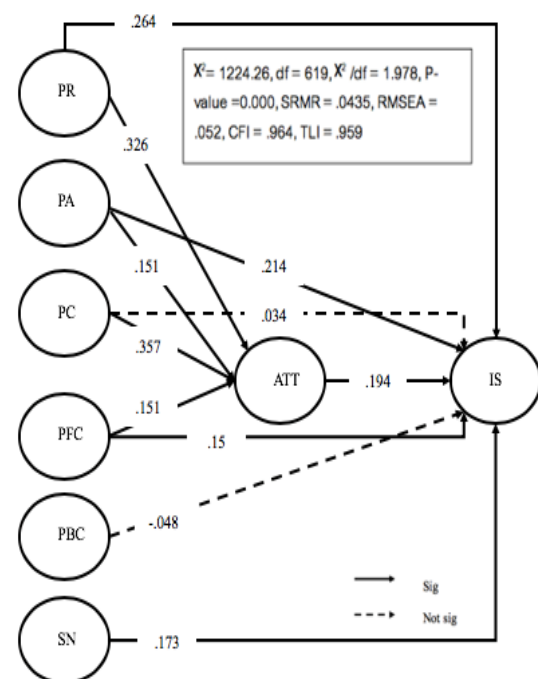


Figure 3. *the results of structural equation modeling*

Table 7. *Path Analysis of the Theoretical Model*

| Paths | Hypothesis | Standardized beta | P | $R^2$ |
|---|---|---|---|---|
| ATT← PR | H1 | .326 | < .001 | |
| ATT ← PA | H2 | .151 | .002 | |
| ATT ← PC | H3 | .357 | < .001 | .637 |
| ATT ← PFC | H4 | .151 | < .001 | |
| IS ←PR | H5 | .264 | < .001 | |
| IS ← PA | H6 | .214 | < .001 | .617 |
| IS ←PC | H7 | .034 | .603 | |

| IS ← PFC | H8 | .150 | < .001 | |
| IS ← PCB | H9 | -.048 | .437 | |
| IS ← SN | H10 | .173 | < .001 | |
| IS ← ATT | H11 | .194 | .002 | |

Table 7 suggests that PR positively affects ATT at the significance level .05 (p < .001). PA positively affects ATT at the significance level .05 (p = .002). PC positively affects ATT at the significance level .05 (p < .001). PFC positively affects ATT at the significance level .05 (p < .001). the R-square of the ATT is .637, suggesting that 63.7 % of the variance of the ATT can be explained by PR, PA, PC, and PFC.

Moreover, table 7 shows that PR positively affects IS at the significance level .05 (p < .001). PA positively affects IS at the significance level .05 (p < .001). PC does not positively affect IS at the significance level .05 (p = .603). PFC positively affects IS at the significance level .05 (p < .001). PCB does not positively affect IS at the significance level .05 (p = .437). SN positively affects IS at the significance level 0.05 (p < .001). ATT positively affects IS at the significance level .05 (p < .001).

¬¬¬¬ The model is then re-specified based on significant relationships. Non-relationships are removed. Figure 4 represents the results of structural equation modeling after re-specification.
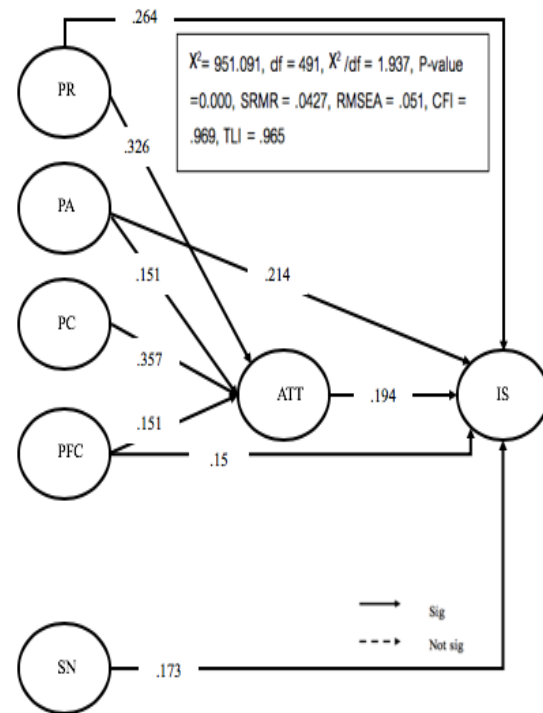


Figure 4. *The results of structural equation modeling*

Table 8 shows the standardized beta of each independent variable and the R-square of each dependent variable after the re-specification of the model.

Table 8. *Path Analysis of the Theoretical Model after Re-specification*

| Paths | Standardized beta | P | R2 |
| --- | --- | --- | --- |
| ATT ← PR | .334 | < .001 | |
| ATT ← PA | .152 | .002 | .629 |
| ATT ← PC | .334 | < .001 | |
| ATT ← PFC | .153 | < .001 | |
| IS ← PR | .262 | < .001 | |
| IS ← PA | .207 | < .001 | .616 |
| IS ← PFC | .147 | < .001 | |

| IS ← SN | .172 | < .001 |
|---------|------|--------|
| IS ← ATT | .194 | < .001 |

Table 9 shows standardized direct effects, indirect effects, and total effects of ATT and IS.

Table 9. *Standardized direct effects, indirect effects, and total effects*

|  | PFC | SN | PR | PA | PC | ATT |
|--|-----|----|----|----|----|-----|
| Direct effect on ATT | .153 | .000 | .334 | .152 | .343 | |
| Indirect effect on ATT | .000 | .000 | .000 | .000 | .000 | |
| Total effect on ATT | .153 | .000 | .334 | .152 | .343 | |
| Direct effect on IS | .147 | .172 | .262 | .207 | .000 | .194 |
| Indirect effect on IS | .030 | .000 | .065 | .029 | .066 | .000 |
| Total effect on IS | .177 | .172 | .327 | .237 | .066 | .194 |

According to table 9, PC is the most influential factor for ATT. It has a standardized total effect at .343. PR is the second influential factor with the standardized total effect at .334. PFC and PA have the standardized total effects at .153 and .152 respectively.

In terms of the standardized total effect of IS, based on table 10, PR is the most influential factor determining the IS. It consists of .262 standardized direct effect and .065 standardized indirect effect. The second influential factor is PA that consists of .207 standardized direct effect and .029 standardized indirect effect. ATT is the third factor that positively affects IS. It has the standardized total effect of .194 without the indirect effect. The fourth factor is PFC that has the standardized total effect on IS at .177. SN is the fifth factor that positively affects IS. It has the standardized total effect of .172 without the indirect effect. The less factor is PC accounting for the standardized total effect of .066 without the direct effect.

## Discussions

Theoretical implications

This study shows .617 of R-squared which is large when compared to other studies. Predicting intention to leave of nurses, Lo et al.

(2018) gained a model of .571 R-squared. Heijden et al (2009) attempted to predict intention to leave a nursing professional and gained .546 R-squared. The combination of STD and TPB predicts intention to stay well when compared with prior literature.

Moreover, the results show that ICT employees in Thailand attach to organizations since the relatedness, followed by autonomy and financial rewards. These results corroborate with Chiniara and Bentein (2016). Chiniara and Bentein (2016) predicted individual commitment by using relatedness and autonomy. They discovered that relatedness is more powerful than autonomy while they did not show the result of competence. Competence might be a construct relating to achievement rather than an intention to stay or leave.

Like job-satisfaction in prior studies, ATT can act as a mediator between predictors and the ultimate dependent variable. When employees like what they do, they will have a high intention to stay with the organization (Fishbein and Ajzen, 2010). In this study, IS represents job-retention.

However, ATT can be changed because there are factors that can enhance the attitude. This study shows that PC is the most powerful factor influencing the attitude. If the level of belief that employees feel competent at working in

their organization change, their attitude toward their job will change. They will like or love their job. Companies can improve employees' perceived competency via training or skill improvement. ICT employees might have good ATT. In addition to PC, perceived relatedness can be used to enhance ATT. Giving employees love and care will improve ATT. Celebration, parties, and happy events to build good relationships among employees in the organization could improve perceived relatedness, which in-turn help to improve the attitude.

However, in this research, the path from PBC to IS is not significant. If considering the definition of PBC, one can see that it is like PC. Hence, when PC is statistically controlled, the effect of PBC is nullified. Surprisingly, PC seems to be a less effective factor. This finding may raise a concern over the issue that employees who have less competence may have high intention to stay in the office. Nonetheless, more studies should be conducted to investigate this notion.

Practical implications

The HR department could do the following to improve intention to stay of ICT employees. The recommendations are based on table 9.

First of all, this study shows that PR is the most influential factor determining IS. ICT workers intend to stay with their companies because they feel related to other colleagues. They feel love, connectedness, and care are conditions that keep them with the company. It is an intrinsic motivation that affection given by others keeps employees to stay with the company (Deci and Ryan, 2000). The activity that facilitates a high relatedness working climate condition could affect the psychotically condition of employees (Karanika-Murray et al., 2017). For instance, compassionate love and intimacy could leverage employees' feeling of attachment to their organizations. However, research pointed out that workplace relationships are complex and possibly have negative outcomes. Future research needs a better understanding of workplace relationships could lead to positive or negative outcomes in

particular when considering organizational and technology changes (Pillemer and Rothbard, 2018).

The second strategy is to increase PA. Giving freedom to ICT employees could improve intention to stay. ICT employees do not like a workplace providing no freedom. Developing creativity demands freedom. ICT employees are regarded as one of the creative employees. Several ICT companies provide freedom for their employees. Google, for instance, has a database that employees can sign-up for a project that they are interested in (Todd, 2018). Google shows how it gives freedom to employees. This strategy could be applied well in Thailand also. PA is the feeling of employees to present how their organizations satisfy their need for autonomy. It means people need authority and freedom to accomplish their jobs (Deci and Ryan, 2000). PA shows that workers in the ICT industry require freedom and authority at work. They may not like a chain of command. Autonomy is the opposite of heteronomy, which is control and regulation without self-approval (Ryan and Deci, 2006). However, too much freedom can turn employees to reject everyday routine work that is also critical for organizations (Todd, 2018). Hence, the balance between too much and too little freedom in the workplace is the key for sustaining organization success. In addition, if considered the organizational outcomes, the relationship between PA and organizational outcomes may not be linear. Non-linear relationships could challenge the assumptions of statistical techniques used in social science research.

The third strategy is to use financial rewards. Money is still a strategy to attach ICT employees to the organization. Paying more than competitors, many companies tend to use this strategy. However, financial rewards could be the last source of strategies if the first two strategies can be deployed. Companies can improve their pay for employees, but it is not better than PR and PA that are more cost-effective.

These three strategies improve ATT. Like general behavior, working is governed by ATT.

If organizations have employees who do not love or like their jobs, it is likely that such employees will leave their organizations than employees who love to do their jobs. The process of recruiting employees who love the job they do is a good strategy to maintain IT employees in organizations.

## Limitations

Although this research provides a new insightful model of motivating ICT employees to stay in a company, some research limitations have been discovered.

First, this research does not employ random sampling because getting ICT employees to answer the questionnaire is difficult. It is conducted by using purposive sampling. Even though doing so cannot be generalized to the entire ICT works in Bangkok Thailand, it can help to depict to some extent the characteristics of ICT employees in Bangkok.

Second, this research does not connect IS and job performance. One cannot infer that if employees have higher IS, they have higher job performance. Future research should investigate this issue.

Third, this research is conducted by surveying ICT workers. Generalization to other types of workers, such as medical doctors or professors, has not done. Hence, future research should focus on other professionals.

Forth, there might other factors that this study does not account for. For example, Adegoke, Atiyaye, Abubakar, Auta, and Aboda (2015) found that hospitals need to motive nurses by applying non-monetary measures such as healthcare assurance systems, work supporting systems, job-security, and structure of career progress. In addition, Hausknecht, Rodda, and Howard (2009) studying 24,829 employees shows that people want to continue working for organizations include job satisfaction, extrinsic rewards, organizational commitment, and organizational prestige. Hence, non-financial compensation and other supporting programs might increase the intention to stay. However,

researchers need to consider factors providing better predictive power.

## Conclusion

Human resources are the key success factors of organizations in all most public and private organizations because employees drive the outcome and the competitive advantage of organizations. This research aims to study factors that have relationships with job-retention in the ICT industry. This study focuses on ICT employees in Bangkok Thailand because Bangkok has the highest business activities in Thailand and it is the most crowded city. This study integrates STD and TPB resulting in a structure of relationships. Constructs from both theories are perceived relatedness, PA, PC, the ATT, SN, PBC, and IS. PFC is also included in the model. This study asked 359 respondents who are ICT workers in Bangkok Thailand. Structural equation modeling (SEM) is used to test the hypotheses. The model is then re-specified. The results of the model after re-specification shows that perceived relatedness, PA, PC, ATT, SN, and PFC positively affect IS. In addition, perceived relatedness, PA, and PFC positively affect the attitude toward ATT. The overall model can be used to explain IS as much as 61.6 % and the overall model can be used to explain ATT as much as 62.9 %. These two figures are very impressive. However, PBC is not significant because it is like PC. When PC is controlled, the effect of PBC is invalidated. Generalization of this research is limited due to a lack of random sampling, connection to job-performance, and other professionals. Future research should focus on what is the relationship between IS and job-performance. In addition, future research should focus on how similar between ICT and other professionals, such as medical doctors or professors.

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