

**FACTORS AFFECTING EMPLOYEE LOYALTY AMONG ENGINEERING
EMPLOYEES IN THAILAND**

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Thesis Title	Factors affecting employee loyalty among engineering employees in Thailand
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ABSTRACT

Based on the economic downturn in Thailand between 2023 and 2025. A further approach to promote economic growth is to get the private sector involved in the government's development plans for the Eastern Economic Corridor (EEC). Engineering is one of the professions that helps other industries and large-scale projects succeed. The country's economic growth and these projects are mostly driven by the engineering sector. Considering the significance of this position, engineering team members' loyalty will contribute to the development of sustainable businesses, sectors of the economy, and ultimately reduce the organization's investment costs.

Therefore, the study's objectives are to evaluate and diagnose the current state of employee loyalty among engineering workers in Thailand, investigate the relationships between job design, social relationships, work environment, compensation, and employee loyalty, and offer relevant suggestions to the engineering business for improving employee loyalty. The study was carried out in 2023 during February until September. In this study, 443 engineering employees in Thailand were studied. Cluster sampling was used as the data collecting method, and the sample size was determined using the Taro Yamane formula. A questionnaire survey was utilized to collect primary data, which was subsequently analyzed using the SPSS software. Multiple regression analysis and Pearson's correlation were used in the study to examine the outcome. The findings indicate that among Thai engineering employees, job design, social relationships, work environment, and compensation have a significant and moderately positive correspond with employee loyalty. Which job design variable was most positively correlated with employee loyalty, with a Pearson's correlation coefficient of 0.611. Subsequently in that order, are compensation, relationships, and

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work environment. In summary, every organization can utilize the findings to promote employee loyalty and address workers' requirements according to their priorities in terms of job design, compensation, social relationships, and work environment, correspondingly, as appropriate.



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CHAPTER 1

INTRODUCTION

1.1 Background and Significance of the study

The Thai economy typically declines from 2023 until 2025. However, according to Krungsri Industrial Team (2023), there will be four main factors that will drive economic growth including 1) A recovery in the tourism sector, 2) Rising consumer confidence, a strengthening labor market, and more spending by consumers with higher earnings would benefit the economy, 3) The comeback of the private sector from both the tourism sector and related areas. Investment in the digital economy and spending on infrastructure megaprojects that support the continued development of the Eastern Economic Corridor (EEC), and 4) Products sold into the ASEAN region will drive further growth in exports. Therefore, these current trends still exhibit a positive dynamic of expansion.

According to the government spending on large-scale infrastructure projects has encouraged more private-sector investment. Focus on Eastern Economic Corridor (EEC) development plans with THB 2.2 trillion (Krungsri Industrial Team, 2023), it can be divided into 4 mega projects including the high-speed rail link connecting the region's three airports, the construction of the Eastern Aerotropolis and the redevelopment of U-Tapao Airport, phase 3 of the Map Ta Phut Port operations, and phase 3 of the Laem Chabang Port development as depicts in figure 1.1 Krungsri Industrial Team (2023) further explains that this assist in bringing new investment opportunities, particularly in the automotive, smart electronic, and modern business healthcare sectors to the area. From this information, one of the professions that contributes to the success of large-scale projects and other industries is the engineer. Thus, the engineering sector will be a key factor in driving the economic growth of the country, particularly in the private sector.

	Infrastructure Projects	Total Investment	Year of Operation
	1. High-speed Train	276,561	2026
	2. U-tapao Airport	204,240	2025
	3. Map Ta Phut Industrial Port Phase 3	64,905	2026
	4. Laem Chabang Port Phase 3	109,215	2026
	Total 4 Projects	654,921	

Sources: EEC Office, as of March, 2022

Figure 1.1 Main infrastructure Projects in EEC

Source: Krungsri Industrial Team (2023)

Across a range of business applications, engineers are in charge of planning, calculating, designing, investigating, troubleshooting, and managing production. For instance, Civil engineers who are working in building construction, Electrical engineers support electrical fields in the building, transportation, and manufacturing sectors (“Electrical Engineer Job Description [Updated for 2023],” 2023), System engineers, among others, design, develop, and maintain an organization's information technology system (“Systems Engineer Job Description [Updated for 2023],” 2023), etc. There is always some involvement in the execution of several initiatives, both directly and indirectly.

With the importance of the role of engineers in driving the economy to these industries, the loyalty of engineering employees will help develop organizations, industries, and the economy to be efficient and sustainable. Britannica (1998) said loyalty relates to a person's commitment or emotional devotion to a specific object, which may be other people, or a group of people. It takes the form of thinking and behavior and strives to determine the goals of those who are devoted to those objects. When workers were satisfied in their jobs and their requirements, would making them feel at home in a company, these are developing employee loyalty (Soegandhi, 2018).

To develop employee loyalty, employees enjoy satisfying experiences and are more willing to participate, according to work design models, which highlight the importance of enhanced jobs (Pajo & Lee, 2011). A meta-analysis of work design research Humphrey, Nahrgang, and Mogensson (2007) found that a variety of attitudinal and behavioral work outcomes were connected to the meaningfulness of the work as it was experienced, with task significance operating as a significant predictor of this meaningfulness. In the workplace, loyalty can grow through a positive relationship

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and work environment. Ramadhanty, Saragih, & Aryanto (2019) said layout, temperature, lighting, workspace, and connections with superiors and coworkers are physical and non-physical factors that affect employee loyalty which can provide advantages for the business. Relationships developed at work and in the neighborhood around it are influenced by a variety of factors, including the cultural setting, the proportion of possibilities for social engagement outside of work, as well as the social skills, experience, and interests of those who work there (Chadsey & Beyer, 2001) and productivity can rise with positive working relationships and mutual support between coworkers and superiors (Ramdhan, 2018). In addition, the center of any employment transaction and a defining feature of any work relationship is compensation (Glassman, Champagne, & Zugelder, 2010). It could be seen that this work related, and environmental factors are important factors to develop employee loyalty in the engineering industry.

On the other hand, employee disloyalty to the company is still influenced by a wide range of issues. For instance, when employees understand that a company cannot guarantee security, Poor management, limited engagement, no opportunity for professional advancement, and poor compensation, they would not feel terrible about leaving (Ojaokomo, 2023). Vechbanyongratana and Paweenawat (2020) addressed for thai engineers, low salary or a lack of job possibilities are factors that cause them to change jobs.

To cope with these challenging issues in the contemporary engineering era in Thailand. Important issue comprises of employee loyalty in an engineering industry, this research aims to investigate the relationship of job design, social relationships, work environment, and compensation, which factor have a significant relationship to loyalty of employee among engineering employees in Thailand?

1.2 Research Questions

1.2.1 What is the existing situation of employee loyalty among engineering employees in Thailand?

1.2.2 Is there a significant relationship between job design, social relationships, work environment, compensation, and employee loyalty?

1.2.3 What are appropriate recommendations for the engineering industry to improve employee loyalty?

1.3 Research Objectives

Research objectives are

1.3.1 To assess and diagnose the existing situation of employee loyalty among engineering employees in Thailand.

1.3.2 To investigate the relationship between job design, social relationships, work environment, compensation, and employee loyalty.

1.3.3 To provide appropriate recommendations for the engineering organization to improve employee loyalty.

1.4 Research Hypothesis

To test the effect of job design, social relationships, work environment, compensation, and employee loyalty, hypotheses are synthesized as follows.

H1o: There is no significant relationship between job design on the loyalty of employee among engineering employees in Thailand.

H1a: There is a significant relationship between job design on the loyalty of employee among engineering employees in Thailand.

H2o: There is no significant relationship between social relationships on the loyalty of employee among engineering employees in Thailand.

H2a: There is a significant relationship between social relationships on the loyalty of employee among engineering employees in Thailand.

H3o: There is no significant relationship between work environment on the loyalty of employee among engineering employees in Thailand.

H3a: There is a significant relationship between work environment on the loyalty of employee among engineering employees in Thailand.

H4o: There is no significant relationship between compensation on the loyalty of employee among engineering employees in Thailand.

H4a: There is a significant relationship between compensation on the loyalty of employee among engineering employees in Thailand.

H5o: Job design, social relationships, work environment, and compensation are not statistically significantly predicting employee loyalty.

H5a: Job design, social relationships, work environment, and compensation are statistically significantly predicting employee loyalty.

1.5 Conceptual Framework

The study's independent variables include job design, social relationships, work environment, and compensation. Employee Loyalty is a dependent variable. The conceptual framework can be developed in the following methods, as shown in Figure 1.2.

The conceptual framework for studying employee loyalty involves examining the impact of independent variables such as job design, social relationships, work environment, and compensation on the dependent variable of employee loyalty. Job design refers to the organization of tasks within a role, while positive social relationships and a supportive work environment contribute to employee loyalty. Additionally, fair compensation, including salary and benefits, plays a crucial role. The overarching goal is to understand how these factors collectively influence employee loyalty—their commitment and attachment to the organization. This conceptual framework guides research efforts to empirically explore the relationships between these variables, providing insights that can inform strategies for enhancing employee loyalty in organizations.

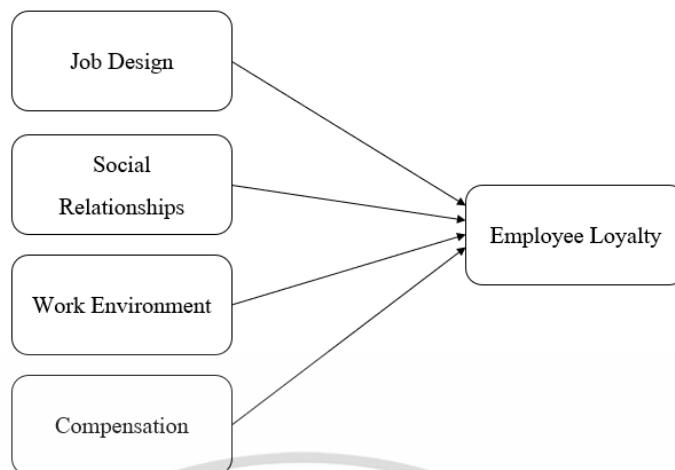


Figure 1.2 Conceptual framework

Source: Researcher (2023)

1.6 Scope of Research

1.6.1 Scope of population

The study aims to identify specific engineering workers in Thailand. Workers with prior engineering industry experience were taken into consideration as research respondents.

1.6.2 Scope of variables

The research's independent and dependent variables are included as follows:

Independent variable:

- Job design
- Social relationships
- Work environment
- Compensation

Dependent variable:

- Employee Loyalty

1.6.3 Scope of time

The research was conducted in February to September 2023.

1.7 Research Benefits

The results of this study are expected to show how factors including job design, social relationships, work environment, and compensation effect employee loyalty in Thai engineering businesses. The next section provides an overview of the study's benefits for stakeholders.

1.7.1 Benefits to engineering teams and employees

To identify the company, they would like to work for and receive their valuable advantages, engineering employees might benefit from understanding the needs of this professional organization.

1.7.2 Benefits to Engineering Organizations

The findings of this study can be applied to engineering industry organizations to support their growth. Develop strategies that will keep engineers committed to the company and satisfied with their work. Includes minimizing issues brought on by the departure of honorary staff as well.

1.7.3 Academic contribution

A similar researcher might use them as a reference to examine related variables influencing employee loyalty in other sectors.

1.8 Definition of Terms

1.8.1 Job design is a procedure that businesses employ to add responsibilities to already existing jobs or establish new ones (Indeed Editorial Team, 2023). It is described as the method by which tasks should be created, distributed across organizational levels, and organized into individual or team tasks (Tarraco, 2005; Grant, Fired & Juillerat, 2011). The five characteristics are skill variety, task identity, task significance, autonomy, and feedback (Hackman & Oldham, 1976), all of which work to increase workers' satisfaction of employee's jobs and develop feelings of pride, devotion, and relationship with the company (Eisenberger, Huntington, Hutchison, & Sowa, 1986).

1.8.2 Social relationships is developed and maintained in a variety of contexts, including as places of work, entertainment, and community, in the working setting enables coworkers in the form of subordinates, friends, or superiors to share common demands, worries, terminology, and

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cultural experiences (Chadsey & Beyer, 2001). And Workers have the chance to share a significant life experience through their employment, which can serve as a foundation for relationships (Pogrebin, 1987).

1.8.3 Work environment is temperature, humidity, ventilation, lighting, and noise, as well as the workplace's cleanliness and the presence or absence of necessary tools for the job, are all factors that might influence how well employees perform their responsibilities (Maineldi, Hendriani, & Daulay, 2014) Employee also include in a work environment, when employees perform work-related tasks, as well as in all their interactions with others, including those outside of the workplace (Kennedy, Pengaruh Lingkungan Kerja terhadap Loyalitas Karyawan pada PT Reed Panorama Exhibitions, 2018).

1.8.4 Compensation is any form of payment or gift given to an employee in appreciation for their efforts (Dessler, 2017). It may take the form of a monetary such as base pay, cost-of-living, and bonus rewards (Aguinis, 2013) or non-monetary reward such as power, recognition, promotions, company cars, retirement plans, and praise (Ineson, Benke, & László, 2013; Covington & Müeller, 2001; Merchant & van der Stede, 2007) when each person reached their personal goal (Magnan & Martin, 2018). Well-designed compensation systems might improve satisfaction with work and productivity by aligning incentives and rewards with business goals (Pierce, Rubinfeld, & Morgan, 1991).

1.8.5 Employee loyalty refers to the desire of employees to invest all their talents, knowledge, time, and ideas in achieving company objectives (Soegandhi, 2018). It is possible that when employees feel loyal to their company when encourages positive reactions, while discouraging negative ones (Leck & Saunders, 1992). To encourage a longer employment relationship, an organization's management develops training programs, benefit packages, performance reviews, and work systems for their employees (Mahalingam & Suresh, 2018). Performance may be enhanced by a loyal workforce. High-loyalty workers will like and be enthusiastic about their work, which will result in more efficient work (Ramadhanty, Saragih, & Aryanto, 2019).

1.8.6 Engineering employee includes a diverse range of sectors such as civil, military, mechanical, transportation, industrial machinery and equipment, electronics, chemicals, etc. The acronym is typically used to refer to the sector of economic activity focused on the production of engines, machinery, and machine tools. The introduction of systematic assembly techniques based

on the moving assembly line, with all the processes connected in a flow pattern, marked the next stage in the development of the engineering industry and made it possible to build a complex product quickly and effectively (Buchanan, n.d.).



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CHAPTER 2

LITERATURE REVIEW

The literature review provides a comprehensive overview of the research on job design, social relationships, work environment, compensation, employee loyalty and related research in the engineering industry in Thailand.

2.1 Job design

2.1.1 Job characteristics

2.1.2 Career development

2.2 Social relationships

2.2.1 Community in workplace

2.2.2 Organizational culture

2.3 Work environment

2.3.1 Occupation health and safety

2.4 Compensation

2.5 Employee loyalty

2.6 Related research

2.1 Job Design

Job design has been discussed in several concepts throughout the past few decades. According to Smith (1776) and Babbage (1835), the division of labor could simplify jobs to improve worker efficiency and productivity. Industrial engineers and others who want to increase control and efficiency in the workplace continue to use "Scientific Management" from Taylor (1911) as a source of inspiration for job design. This book stressed the value of breaking down work tasks into smaller, more specific components and assigning them to employees based on their skills and abilities (Taylor, 1911). On the other hand, Walker and Guest (1952) found the problem on the assembly line that people did not particularly enjoy the monotonous, repetitive work they were now expected to do, which was why they occasionally acted in ways that undermined the efficiencies engineers had built into work systems. Maximum efficiency in work design tended to

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decrease employee satisfaction, higher absenteeism and turnover rates, and more difficult staff management in simpler positions (Hackman & Lawler, 1971).

According to problems, Herzberg, Mausner, and Snyderman (1959) proposed the Two-Factor Theory, which distinguished between two types of variables that can contribute to job satisfaction (motivators) and job dissatisfaction (hygiene factors) in the workplace. And the job characteristic model by Hackman and Oldham (1976) replaced the Two-Factor Theory, this includes five crucial job characteristics: skill variety, task identity, task significance, autonomy, and feedback.

Humphrey, Nahrgang, and Morgeson (2007) provided a comprehensive overview of the existing research on work design and proposed an integrated framework shown in figure 2.1 that considers the interplay between motivational, social, and contextual factors and discovered that work characteristics related to motivation, such as skill variety, task identity, autonomy, and feedback, were positively connected to these outcomes.

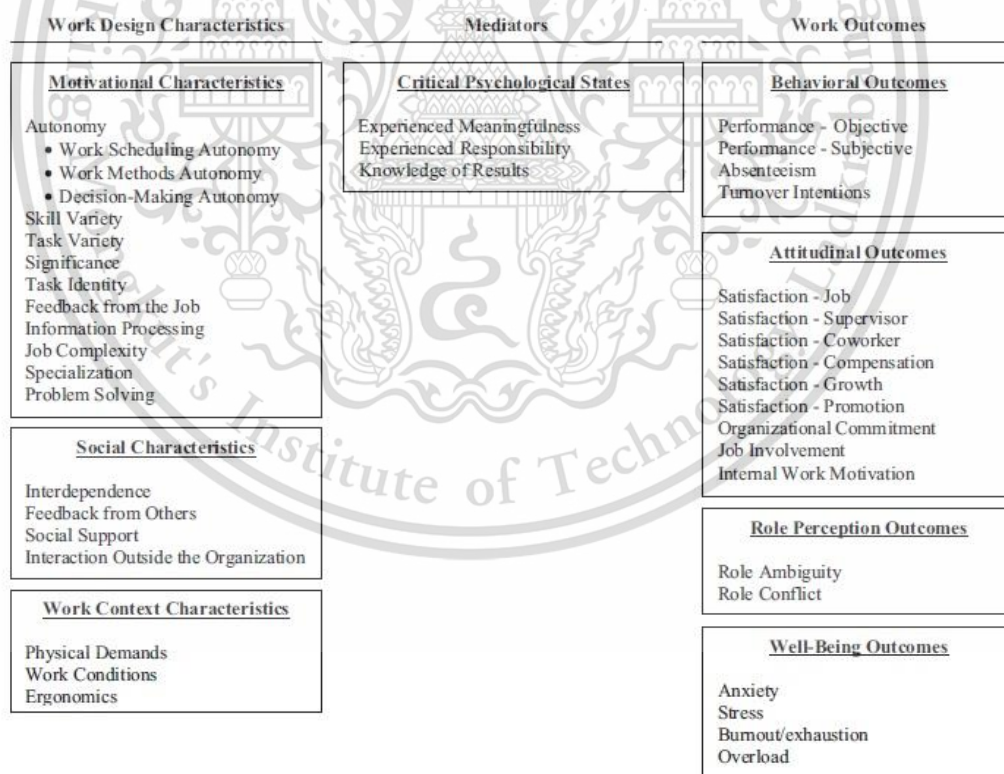


Figure 2.1 Expanded work design model

Source: Humphrey, Nahrgang, and Mogeson (2007)

According to Humphrey, Nahrgang, and Moger's (2007) meta-analysis result from work design model, they discovered social aspects of the job, such as chances for communication outside of the company and social support which included workplace friendship opportunities were significant predictors of a variety of positive work outcomes and accounted for progressive variation in key criteria in addition to the fundamental motivational aspects of the job. In the case of software engineering industry, Santos et al. (2019) found that autonomy, task variety, and feedback are examples of work design factors that have a beneficial impact on software engineers' motivation and job satisfaction. Employees have higher levels of satisfaction and are more driven to carry out their duties when they are given the opportunity to make decisions, participate in a variety of jobs, and receive regular feedback.

In conclusion, job design is a crucial factor that can impact employee outcomes including job satisfaction, motivation, engagement, and organizational commitment. The effectiveness of job design is dependent on several factors including organizational culture, leadership, and employee skills and abilities. Various approaches to job design, such as motivational, social, and holistic approaches, each have their own strengths and weaknesses. Organizations may design workplaces that enhance employee satisfaction and productivity by comprehending the many approaches to job design and the elements that affect their efficiency.

2.1.1 Job characteristics

The experiences, job satisfaction, motivation, and general well-being of employees are significantly influenced by job characteristics. It is essential for businesses to create jobs that support the best performance and employee engagement by understanding the key dimensions of job characteristics and their impact on people.

The Job Characteristics Model (JCM) developed by Hackman and Oldham (1976) is a widely recognized framework that they suggested five characteristics to increase workers pleasure of their jobs included skill variety (the point to which a work demands individuals to use a variety of talents and abilities), task identity (the point to workers can comprehend the overall results of their job), task significance (the impact of the job on other people or society), autonomy (the degree of independence and power granted to employees), and feedback (the variety of information that employees receive regarding their work performance).

The JCM also highlights how crucial it is to understand the essential psychological conditions that mediate the link between job characteristics and employee outcomes. These states include experienced meaningfulness of work, experienced responsibility for work outcomes, and knowledge of results as shown in figure 2.2 (Hackman & Oldham, 1976).

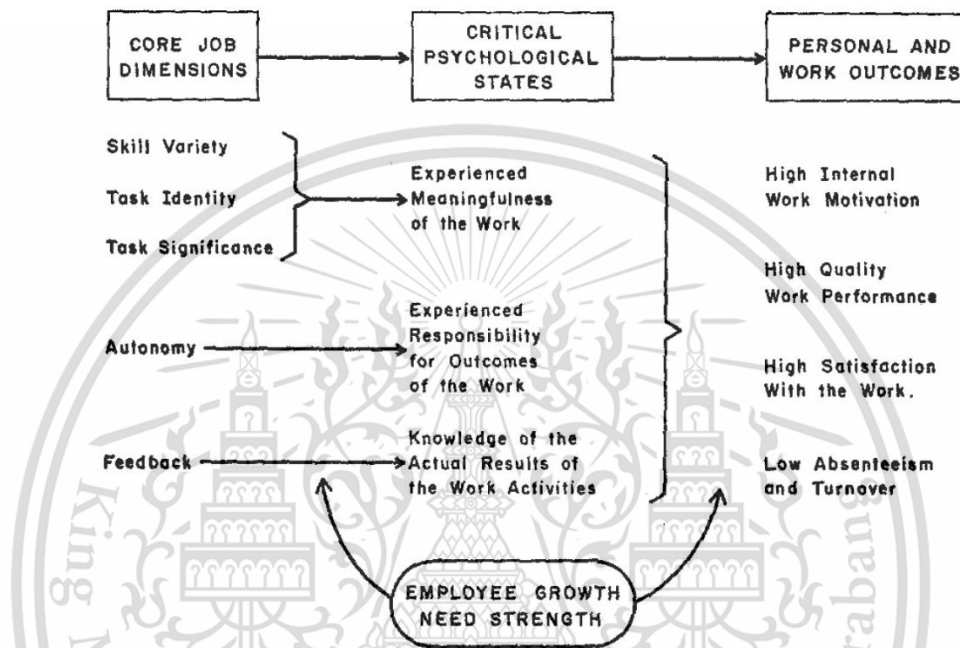


Figure 2.2 The job characteristics model of work motivation

Source: Hackman and Oldham (1976)

The study continuously shows that various employee outcomes are impacted by job characteristics. Good relationships exist between job characteristics and performance, motivation, and job satisfaction. Employees report better levels of job satisfaction and are more motivated to perform well when jobs offer high degrees of skill variation, task identity, task significance, autonomy, and feedback (Hackman & Oldham, 1976). Parker, Wall, and Cordery (2001) simplified these expansions and identified a wider variety of job characteristics that can influence a wider set of outcomes, such as safety and creativity. Employees are more likely to show enhanced loyalty to their employers when they have greater levels of autonomy, skill variety, and task significance. These job characteristics help employees feel a sense of pride, devotion, and relationship with the company, all of which promote loyalty (Eisenberger, Huntington, Hutchison, & Sowa, 1986).

2.1.2 Career development

Simonsen (1997) described career development refers to a continuing process of planning and directed action toward one's own work and life goals. The terms "development" and "career development" both relate to growth, continuous acquisition, and application of one's abilities. When given job assignments that match with worker's career interests and desires, employees can see opportunities for career advancement (Kraimer, Seibert, Wayne, Liden, & Bravo, 2011).

The development of a career is significantly influenced by individual traits. According to research, an individual's participation in activities for professional growth is influenced by variables like self-efficacy, professional goals, motivation, and self-directed learning orientation (Briscoe, Hall, & DeMuth, 2012). Moreover, Arthur, Hall and Lawrence (2015) described the ability of employees to navigate their careers is improved by supportive organizational practices such as offering career development programs, mentoring opportunities, training and development activities, and clear career paths.

Additionally, there are several ways to encourage successful career development. Goal setting, employment rotations, mentoring partnerships, and official and informal learning opportunities are some of them (Noe, Clarke, & Klein, 2014; Scandura & Lankau, 1997). Schneider, Gunnarson and Wheeler (1992) mentioned that a promotion opportunity is crucial to an employee's pleasure in secure employment. The benefits of career development for people and organizations can be considerable. For the employee, it frequently results in higher levels of job satisfaction, income, a better work-life balance, improved self-esteem, and a sense of success. (Arthur, Khapova, & Wilderom, 2005). Improved satisfaction with work, engagement, and performance for individuals are all results of successful career development, as are keeping talent and organizational success. People and organizations can foster an atmosphere that is favorable for continued learning, growth, and advancement in their careers by recognizing the significance of career development and bringing successful tactics and supportive practices into practice.

2.2 Social relationships

Work-related and nonwork-related social interaction are two main categories of relationships that typically take part at workplaces (Kirmeyer, 1988; Chadsey-Rusch, Gonzalez, Tines, & Johnson, 1989). According to Chadsey and Beyer (2001), both factors have a variety of

significance for work systems. They defined work-related interaction as interactions that are directly relevant to the workplace, such as asking for assistance, sharing information, and reacting to reviews. They are crucial to finishing the task, thus they are essential for developing social interactions with employers (Salzberg, Agran, & Lignugaris, 1986). However, the Nonwork-related part is also important in developing strong relationships and social bonds with coworkers since it enables staff members to discover points of interest in common and share personal information (Chadsey & Beyer, 2001).

Adhikari (2017) stated social relationships in the workplace refers to interaction between employees with coworkers in the form of subordinates, friends, or superiors that can result in positive or negative feelings, attitudes, and perspectives. Additional social dimensions, such as engagement with people outside of the firm, social support, initiated collaboration, and received interdependence, are suggested by the study from Morgeson and Humphrey (2006) as influencing variables in employee motivation and well-being. An employee that is emotionally invested becomes totally committed to the business, high levels of engagement enhance shareholder value, build consumer loyalty, and help organizations retain their best employees (Lockwood, 2007).

There are four main viewpoints on social support, according to Grant and Parker (2009), which are: The demand-control-support model that explained about the negative effects of occupational expectations on stress, strain, burnout, and physical symptoms and illnesses (Karasek & Theorell, 1990). The job demands–resources model developed by Bakker and Demerouti (2007), concerning the environment and conditions of performance in relation to the quality of employees' working lives (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). According to Rhoades and Eisenberger's (2002) organizational support theory, when employees feel that their contributions are valued and that their employer values them as a person, they are more likely to respond with stronger affective commitment, improved performance, increased citizenship, and decreased withdrawal, the result from research shown that feeling supported by the organization is largely influenced by the assistance received from supervisors (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002). And the social undermining perspective (Duffy, Ganster, & Pagon, Social undermining in the workplace, 2002), Employees who were undermined by a manager or coworker reported poorer levels of well-being, commitment, and self-efficacy at work and had higher levels of unproductive activities. (Duffy, Ganster, Shaw, Johnson, & Pagon, 2006). The way to encourage a warmer and more cooperative workplace is to

support employee, which allow employees to take part in their companies' shares and decision-making processes as well as experience a sense of "psychological ownership" that may reduce misunderstandings, anxiety, and depression (Vogli, 2010).

Social relationships are important in people's lives because they affect happiness, mental health, and physical health. A sense of belonging, friendship, and emotional support are all provided by strong social support networks. Emotional attachment and strong relationships at work are essential for the organization's survival and improvement (Adhikari, 2017). Businesses that prioritize relationships in the workplace foster a cooperative environment that encourages teamwork, interaction, and worker well-being. Organizations can build a fruitful and peaceful work environment that improves individual and organizational achievements by encouraging constructive social interactions and developing an atmosphere of community.

2.2.1 Communication in workplace

To effectively collaborate, coordinate, and make decisions, communication is an essential part of organizational. Communication refers to the exchange of information between persons using a common system, which may include signs, symbols, and workplace behaviors or activities (Purwanto, 2018). Effective communication improves the work environment, promotes a feeling of community, enhances the culture of the organization, and encourages employee engagement and dedication (Dwyer, Richard, & Chadwick, 2003). Bovee and Thill (2015) stated it raises productivity, fosters teamwork, and increases employee engagement, all of these help an organization succeed overall. Kartini and Yunaningsih (2020) also stated employee loyalty is positively impacted by communication at work, and higher levels of workplace communication result in higher levels of employee loyalty.

Communication is essential to the success of engineering projects. Effective communication makes it simpler to discuss project goals, objectives, and technical knowledge, ensuring that everyone in the team is on the same page (Mir & Pinnington, 2014). Additionally, it assists in fostering cooperation and teamwork among engineers and other other stakeholders in the engineering sector. According to Mir and Pinnington (2014), effective communication builds teamwork and trust, creating a positive work atmosphere that promotes creativity and raises output in total.

Despite the importance of workplace communication, several obstacles may prevent it from being effective. One significant issue is communication overload, which happens when staff members become overwhelmed with too many messages and details, which lowers efficiency (DiMicco, et al., 2008). Ineffective communication can also be affected by language difficulties, cultural differences, and gaps in communication styles (Bovee & Thill, 2015). According to Adu-Oppong and Agyin-Birikorang (2014), the sender, the message, the medium, the decoder, the receiver, and the feedback have all been identified as the components of communication. They said complete understanding and clarity are not achieved if there are any obstacles in these components.

In conclusion, the engineering industry confronts communication difficulties. Effective communication can be complicated by technical terms, difficult concepts, and specialist expertise, particularly when dealing with non-technical stakeholders. To effectively translate technical information into statements that are understandable by all stakeholders, engineers must have good communication skills for project success, teamwork, and stakeholder engagement. Effective communication makes it easier to coordinate projects, reduces mistakes, and strengthens teamwork. Engineers can improve their communication abilities to close the gap between technical and non-technical stakeholders even while technical communication challenges continue to exist.

2.2.2 Organizational culture

Organizational culture is defined as "the way of life for entire society" (Akpa, Asikhia, & Nneji, 2021) which includes the general beliefs, standards, value, and presumptions that shape how people behave in a certain workplace. A concept that orients personnel, directs them in their behaviors and communication, and reveals the nature of the organization is referred to as organizational culture (Yildiz, 2014).

The components and characteristics of organizational culture have been captured by a variety of conceptual frameworks. The Competing Values Framework (CVF), created by Cameron and Quinn (2006), distinguishes between four main cultural types include Clan, Adhocracy, Market, and Hierarchy, each with its own traits and emphasizes detail shown in figure 2.3 Clan defines warm, welcoming environment where focus on commitment, communication, and growth, Adhocracy refers to a culture of creativity and invention focused on valuing individuality, Market refers to a setting that is results-driven and prioritizes profitability and goal achievement, Hierarchy is an organized and formal setting with a consistency and verifiable unity emphasis (Cameron & Quinn, 2006).

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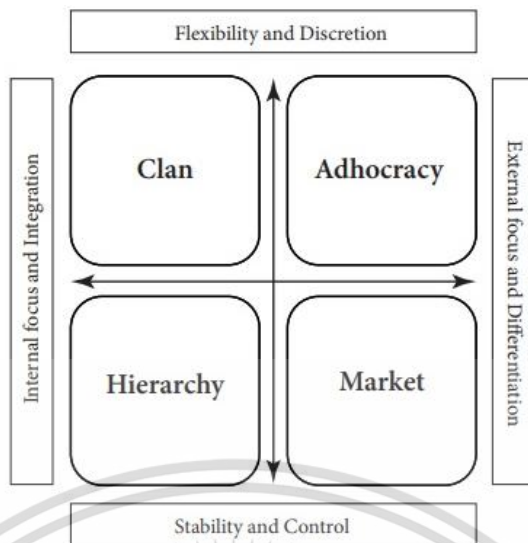


Figure 2.3 The competing values framework

Source: Cameron and Quinn (2006)

Schein's (1992) model of organizational culture levels is another conceptual framework that is mentioned. The model consists of three levels: artifacts and behaviors, espoused values, and basic underlying assumptions. It provides an in-depth structure for understanding and analyzing organizational culture. According to figure 2.4, the terms artifact and behavior describe visible and tangible culture, espoused values are views about what ought to occur in an organization, and basic assumption refers to thinking or doing to accomplish agreed-upon goals without ever having any doubts or problems (Schein, 1992).

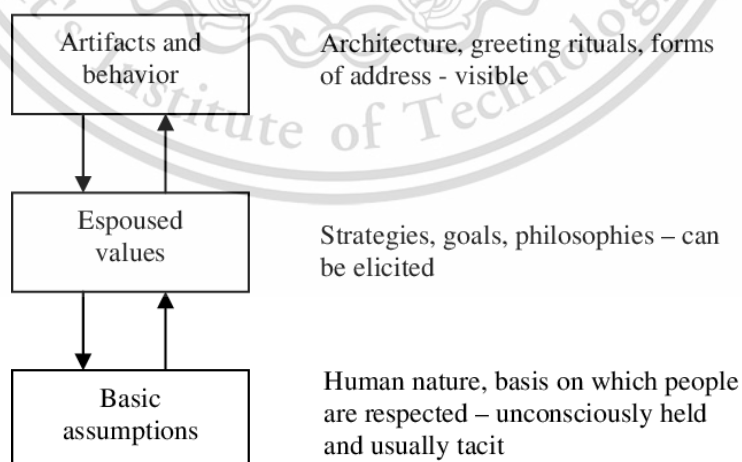


Figure 2.4 Organizational culture levels

Source: Schein (1992)

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The impact of organizational culture on various organizational outcomes. Akpa, Asikhia, and Nneji (2021) stated that it helped companies that understand how to effectively establish their cultures receive the benefits of increased production and improved employee satisfaction. However, employees must completely embrace the organizational culture, and senior management must provide clear instructions and motivation to encourage staff to use the culture of the firm to further the goals of the business (Rehman, 2012). A pleasant organizational culture is also associated with lower levels of employee stress, burnout, and turnover, which improves employee well-being and retention (Lowe, Kroeck, & Sivasubramaniam, 1996).

2.3 Work Environment

The work environment is a variety of factors that surround and affect workers at work and have an impact on their performance, including temperature, humidity, ventilation, lighting, noise, cleanliness of the workplace, and work equipment is adequate (Maineldi, Hendriani, & Daulay, 2014; Purwandari, Kompensasi, & Kerja, 2008, Kennedy 2018). Ramadhanty, Saragih, and Aryanto (2019) stated both physical like facilities, room temperature, etc., and non-physical factors, such as relationships between colleagues and managers, are the work environment that are the surroundings of the workers' workplace.

Lowe and Chan (2010) described workplace conditions and organizational issues can have a negative impact on employee health and well-being as well as the productivity of the organization. Employee demand will eventually decrease to a low level if the workplace is unpleasant and they have negative views of many workplace factors like sick leave, poor performance, and mental illness, this will have a disruptive impact on the organization's growth and productivity (Roslee & Goh, 2021). On the other hand, to organize work environment that would impact on organizational outcomes. Lowe and Chan (2010) presented healthy work environment logic model as shown in figure 2.5, the framework generally refers to both physical and mental well-being as well as safety and psychosocial well-being, with better organizational performance, from higher-quality healthcare to lower costs, results from a healthy, safe, and motivated workforce.

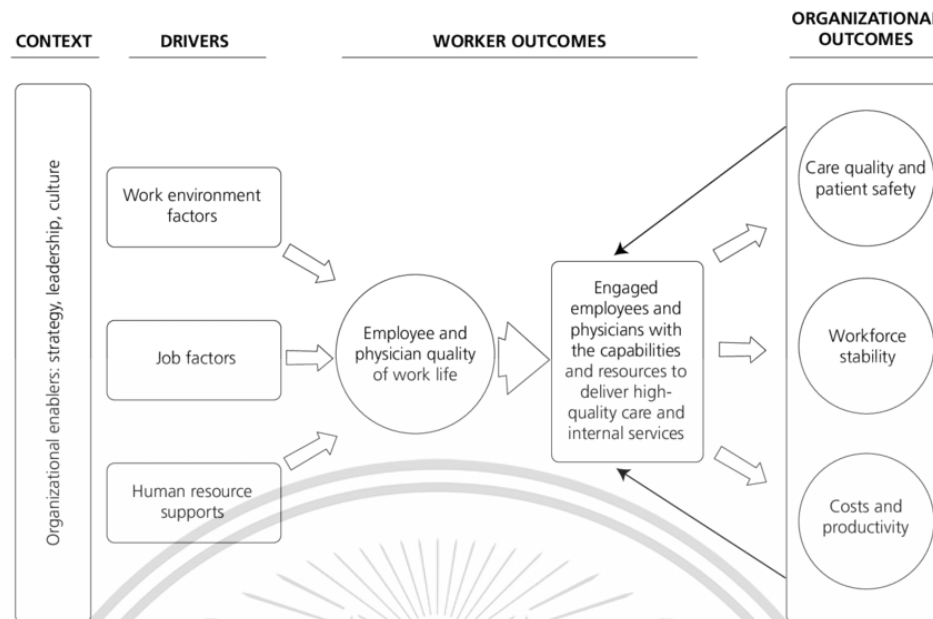


Figure 2.5 Healthy work environment logic model

Source: Lowe and Chan (2010)

When there is a supportive work environment, employees will be willing to apply their talents, skills, and knowledge, as well as people who feel satisfied with their work environment, they tend to provide positive work output (Zhenjing, Chupradit, Ku, Nassani, & Haffar, 2022). Ahakwa, Yang, Agba, and Atingabili (2021) stated a pleasant, safe, and trustworthy workplace benefits employee dedication to the workplace, creative thinking, productivity, commitment, and financial wellness, all of which affect the institution's success. Employers have long provided job protection to employees as a way to increase their performance and business loyalty (Zhenjing et al., 2022).

2.3.1 Occupation health and safety

Occupational health and safety (OHS) is an integrated approach to employee health care designed to keep workers in the business safe from hazards, diseases, and other risks related to their jobs. It is widely acknowledged to be the science of foreseeing, remembering, assessing, and limiting workplace dangers that can negatively impact workers' health and wellbeing (Muthuviknesh & Anil Kumar, 2014). Timpe (1993) said to maintain equitable working conditions and effective preventive strategies, occupational health and safety is essential. And it helps to increase a company's capacity for supporting and maintaining sustainability for the economy, society, and environment (Tappura, Sievänen, Heikkilä, Jussila, & Nenonen, 2015).

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Muthuviknesh and Anil Kumar (2014) states at all levels, from the individual workplace to the local and global, occupational accidents, illnesses, and diseases, and catastrophic industrial disasters have long been a reason for concern. To keep up with ongoing technical and economic progress, measures and strategies aiming at avoiding, control, decrease, or eliminate occupational hazards and risks have been created and implemented (Hale & Hovden, 1998).

Qasim et al. (2014) described as prior to focusing on social, confidence, and growth requirements, humans seek to meet their physiological and safety needs following Maslow's hierarchy of needs, these are the objectives for OHS: 1) owners and teams who fail to provide an appropriate environment for their employees may face penalties. 2) demonstrates the difficulties and risks that workers might face, as a result, it supports employees with health and safety measures that ensure their safety. 3) establish a link between the organization's responsibility to train employees in health and safety to prevent accidents, damage to assets, and other issues at work.

When it comes to occupational health and safety, the engineering sector presents difficulties. Working with hazardous materials, using large machinery, working at heights, and being exposed to numerous physical and chemical risks are all common parts of engineering operations. Engineers may also have complicated workdays, heavy workloads, and strict deadlines, which might raise their risk of mishaps, injuries, and stress at the office. OHS promotion activities in the engineering industry have a big impact on both personnel and businesses. Making OHS a priority will help to prevent work-related accidents, illnesses, and diseases, which will improve employee health and morale. The positive work environment encourages greater satisfaction with work, motivation, and commitment, which tend to be loyal to the organization (Zhenjing et al., 2022).

2.4 Compensation

The benefits given to employees in exchange for their performance, both monetary and non-monetary, are known as compensation that plays a crucial role in attracting, motivating, and retaining employees within organizations. Glassman, Champagne, and Zugelder (2010) stated it can be viewed as the basis of any employment exchange and an essential component of each work relationship. It includes form of reward of cash provided to workers appreciation for their job performance (Dessler, 2017).

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The Compensation Development Team (2023) divided numerous compensation-related principles into the following categories: 1) Adequacy, earnings set by employers should be adequate for subsistence or for supporting a family and not less than the lowest level that employees should earn. 2) Equity, pay must be equitable for knowledge, identical training and expertise, and employment with equivalent obligations and duties. 3) Balance, the harmony of the wage-to-welfare ratio between job and money. 4) Security, compensation must consider the stability of life, including health and safety. This involves providing more compensation for employment with dangerous conditions. 5) Incentive, consider about offering rewards to employees that perform more efficiently, more effectively, and with complete understanding individuals talents. 6) Control, to stay within the designated budget, keep the cost of operations within the acceptable range.

For both employees and businesses, the design and implementation of compensation plans have several benefits. Fair and competitive pay increases employee happiness and reduces turnover intentions (Gerhart & Rynes, 2003). By matching incentives and rewards with company goals, well-designed compensation systems can increase employee engagement and performance (Pierce, Rubenfeld, & Morgan, 1991). The employee motivation would offer their best efforts to achieving company goals is increased when they feel their compensation is fair by improved productivity, creativity, and satisfaction with clients, effective compensation methods have an advantageous effect on organizational performance (Delery & Doty, 1996).

2.5 Employee Loyalty

Different ideas and viewpoints are applied to loyalty. When people become loyal, it indicates that they want to devote themselves to someone (Arvidson & Axelsson, 2014). Employee loyalty can be something they feel toward their firm, their coworkers, or their supervisor, which can play a significant role in how effectively a company performs (Jansson & Wiklund, 2019). Hirschman (1970) was one of the first who developed a theory on loyalty. He stated that before ever considering the possibility of leaving employee work, a loyal worker became a member of an organization that cared and went above and beyond (Hirschman, 1970).

Otherwise, there are numerous interpretations of what it means to be loyal and the actions of a loyal employee. Jansson and Wiklund (2019) said that positive reactions to loyalty include being patient and sharing good word of mouth, while unfaithful reactions are discouraged by loyal

workers, such as failing to complete assignments or even choosing to leave the company. Low employee morale, low work satisfaction, and high job turnover are all consequences of low job satisfaction (Soler, 1998).

To look for ways to improve employee loyalty better, there are various factors that contribute to employee loyalty including compensation, teamwork, a pleasant workplace, career growth, employee education and training, occupational health and safety, and job satisfaction (Soegandhi, 2018). Researchers have discussed a few variables that have an impact on employee loyalty. Dirks and Ferrin (2002) described trust and communication by fostering an enjoyable place to work and establishing the employee-employer connection, trust and effective communication between workers and the company enhance loyalty. Employee organizational loyalty is higher when work satisfaction among employees rises (Fisher, 2000; Petty, Brewer, & Brown, 2005). With these factors, it would show several positive outcomes for both individuals and organizations from employee loyalty. For instance, Alfes, Shantz, and Truss (2012) discovered that when employees trust their supervisors, they are more likely to put more effort into their work and stay with their companies. Helps create an organization with a positive culture that values trust, teamwork, and a sense of belonging, which in turn attracts and keeps talent (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). Loyal workers are more likely to stay with their employer, which lowers turnover costs and maintains a consistent workforce (Gardner, Van Dyne, & Pierce, 2004).

Employee loyalty helps firms in the engineering sector to be successful, productive, and competitive. Organizations may retain specialized skills, guarantee project consistency, promote information sharing and collaboration, improve teamwork and communication, and establish an outstanding organizational reputation by nurturing loyalty. The long-term success and expansion of engineering firms can be attributed to understanding the value of employee loyalty and putting such methods into practice.

2.6 Related Research

In the study by Lubis, Rusiadi, and Effendi (2022) called “The Influence of Satisfaction, Compensation, and Communication on Loyalty of Honorary Employees at the Class 2 Railway Engineering Center for Northern Sumatra Region”. Government employees and temporary, honorary employees were divided into two groups of workers at the Class 2 Railway Engineering Center in Indonesia. The researcher discovered that honorary workers had a different status than government employees, that many of them encounter communication isolation, they could not meet their basic needs with the money they earned, and their contributions are ignored, as if they are not allowed to make a variety of contributions to the agency's success. Therefore, their research aimed to determine whether communication, salary, and job satisfaction all had a positive and significant impact on the loyalty of honorary employees. At the Class 2 Railway Engineering Center for Northern Sumatra Region, they discovered that these variables had a beneficial and important effect on the loyalty of honorary personnel. The author further advised the organization to give honorary employees a chance to voice their ideas, opinions, and other viewpoints for the leadership to consider, not discriminate against employees, refrain from requiring them to perform tasks that are beyond their capacity and maintain the welfare of honorary employees by considering their pay (Lubis, Rusiadi, & Bachtiar, 2022). This study was considered important to this research since it investigated the effects that specific factors have on employee loyalty.

Another article is looking at the impact of organizational commitment on employee loyalty in the information technology industry called “The Impact of Organizational Commitment on Employee Loyalty in IT Industry with Reference to Coimbatore City” by Mahalingam and Suresh (2018). The study aims to determine whether organizational commitment affects employee loyalty and investigates the connections between revenue, manager attitude, and organizational commitment. People that are committed to their organization frequently feel like they belong, fit in, and understand the goals of the organization (Mahalingam & Suresh, 2018). It will motivate them to work if they have job satisfaction. The result of this study was found that organizational commitment, employee loyalty, managers attitude, employee attitude had an impact on employee loyalty. The author suggested that employers have a duty to provide benefits and incentives to their staff members so that they would behave better and remain devoted to the company. This article was chosen based on giving an overview of related research within employee loyalty and providing

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good examples of factors to represent the needs and perspectives of employees toward the organization.



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CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

The purpose of the study was to determine the outcome of the current employee loyalty situation in Thailand's engineering sector, the relationship between all factors, and suggestions for the engineering industry to increase employee loyalty. The essential components of the research model were the focus of a quantitative questionnaire method to data collection. Creswell (1994) stated quantitative research is a sort of study involving numerical data collection and mathematical analysis to comprehend happenings. The researcher employed the widely used snowball sampling approach, which is used in qualitative research, to gather data both on paper and online by starting in September 2023. According to Nikolopoulou (2022), it is a useful method for conducting research on people with particular qualities who could be hard to find in other ways. To evaluate the variables influencing employee loyalty in the Thai engineering sector, this research design seemed most appropriate.

3.2 Population and Sample

The population of the study is employee in engineering industry in Thailand. Engineers now operate in a variety of organizations such as the energy industry, automotive industry, construction industry, etc. Cluster sampling was the method of data collecting that was used. The study's sample groups were primarily focused on employees who work in the engineering industry. Simple random sampling assisted in reaching out to the appropriate workforce segments and gathering employee opinions from a wider range of age groups. The Council of Engineers Thailand (2023) reported that there were around 198,000 members of the engineering council in Thailand. With this quantity, the sample size for this research would be 400 samples, which uses the Taro Yamane method. This method was calculated following formula:

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = The sample size

N = The member of engineers in Thailand

e = Sampling of error which is $\pm 5\%$

3.3 Research Method

Quantitative method, the objective of the quantitative method is to collect numerical data and generalize it across communities or to explain an event in particular (Babbie, 2010; Muijs, 2010). This form of data collection could be chosen by the engineering sector to figure out the relationship between variables within a population.

3.4 Research Instrument

The researcher employed a questionnaire to gather data for this investigation. It is going to be divided into two sections. Section one is the survey in general information from participants such as gender, age, education level, field of work, income, and the working time. The second section is the survey in which the factors affect employee loyalty measured including five items of job design from Morgeson and Humphrey (2006), Hackman and Oldham (1980), Weng and Hu (2009), and Idaszak and Drasgow (1987), five items of social relationships adapted from Sawamiwathsoogij (2016), five items of working environment adapted from Morgeson and Humphrey (2006), and five items of compensation applied from Roberts (2005) and Mikander (2010). All questions are based on the Likert scale methodology, which divides respondents' opinions into five levels as shown in table 3.1. Scores range were calculate based on weighted average: Maximum score-minimum score/Total level = 0.8

Table 3.1 Five-point rating on Likert scale

Scores	Qualitative Rating	Score range
5	Strongly agree (SA)	4.21-5.00
4	Agree (A)	3.41-4.20
3	Neutral (N)	2.61-3.40
2	Disagree (D)	1.81-2.60
1	Strongly disagree (SD)	1.00-1.80

3.5 Data Collection

This study applied quantitative approach, employees who work in the engineering sector in Thailand were given a survey questionnaire. The researcher used paper and online forms as the two main distribution channels for the questionnaires. This study arranges the delivery of questionnaires to several engineering community and engineering companies, the paper form was sent by contacting the various engineering teams in each company to schedule the distribution of questionnaires to their team, totally eight companies. A total of 200 sets of paper questionnaires were given to companies; 113 sets were returned, representing a 56.5% response rate. Additionally, the researcher has had discussions with individuals who have worked in the engineering sector about the online form. They would share the questionnaire with the related person in their workplace and network. This method would get the questionnaire out to individuals engaged such as coworkers, supervisors, and others active in the network in this profession. In the end, 443 respondents in all filled out the questionnaires, which were gathered using both paper and online forms.

3.6 Statistical Data Analysis

After collected data from all questionnaires. The analytical method used in this study is statistical software called SPSS to process data.

3.6.1 SPSS

A tool that assists in the analysis of statistical data into different formats is called the Statistical Package for the Social Science (SPSS). In the Thai engineering business, this software

is used to analyze the gathered data such as general information of respondents, determine, and develop conclusions on the relationships between the factors that impact employee loyalty.

3.6.2 Validity and reliability test of the research instrument

The validity of the questionnaire or the relationship between the questionnaire and the objective is measured by the index of item objective congruence (IOC), which was developed by Rovinelli and Hambleton (1977). Experts would assess each item's relationship to independent and dependent factors to make sure that all questions are related to research objective and appropriate. Finding the average for each question involves rating the scores for each question between -1, 0 and 1. Which rating -1 when ensure that the questionnaire is measured and does not meet its objectives, rating 0 indicates uncertain that the measurement question matches the aims, and rating 1 indicates that the measurement question matches the objectives.

The question will be considered acceptable if the average score of the results is greater than 0.67. On the other hand, if the result is less than 0.67, the question will be rejected. The results obtained from experts can be used to calculate the IOC according to the following formula:

$$IOC = \frac{\sum R}{N}$$

Where:

IOC = The index of item objective congruence

$\sum R$ = The overall evaluation of various experts

N = Total number of experts

The Cronbach's alpha is a measure of internal consistency reliability for a set of items within a scale or questionnaire. The result of Cronbach's alpha is a coefficient that ranges between 0 and 1. A higher alpha value indicates greater internal consistency among the items, suggesting that they are measuring the same underlying construct reliably (Collins, 2007). Average Cronbach's alpha for this instrument is 0.885.

3.6.3 Inferential statistics

In this study, inferential statistics were used for utilized the sample data as a reference for the entire population, and the results are described or summarized while the hypothesis is tested using the Pearson's correlation and multiple regression analysis.

3.6.3.1 Pearson's correlation

The Pearson correlation coefficient (r) is a method of calculating a linear correlation that provides a value between -1 and 1, indicating the strength and the direction of the correlation between two variables (Turney, 2022). Positive correlation, defined as a change in the independent variable and dependent variable in the same direction, is represented by a number between 0 and 1. No correlation, or a value of 0, indicates no evidence of any link between the variables. Additionally, a negative correlation occurs when the independent variable and dependent variable change in opposite directions, and its value ranges between 0 and -1. According to figure 3.1, There is an important relationship between the variables if the points are near to the line of best fit. However, the variables would have a weak relationship at the point that far from the line. Additionally, a line of best fit that has a r value of 0 is not useful for explaining the relationship between the variables.

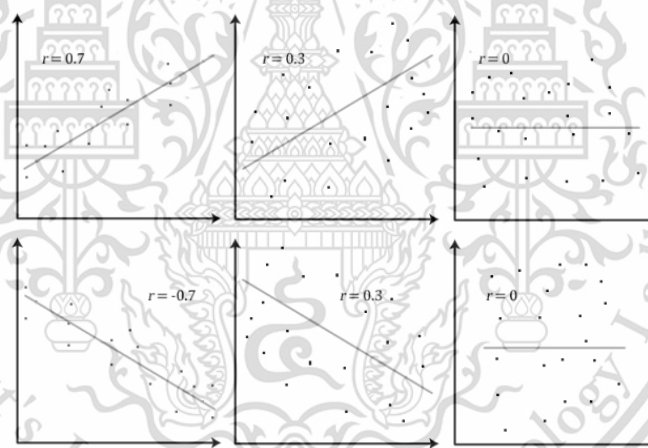


Figure 3.1 Pearson correlation diagrams

Source: Waters (2013)

The formula for calculating the Pearson correlation coefficient (r) is as follows:

$$r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum x)^2][N \sum y^2 - (\sum y)^2]}}$$

Where:

N = The number of pairs of scores

$\sum xy$ = The sum of scores between independent variable and dependent variables

$\sum x$ = Total scores of dependent variables

$\sum y$ = Total scores of independent variables

$\sum x^2$ = The sum of squared dependent variables

$\sum y^2$ = The sum of squared independent variables

3.6.4.2 Multiple regression analysis

Multiple regression analysis is a statistical evaluation method that extends linear regression. The goal of this process is to make predictions about the value of a variable whose value is influenced by another variable. The formula for calculating the multiple regression analysis is:

$$Y = b_1x_1 + b_2x_2 + \dots + b_nx_n + c$$

Where:

Y = the dependent variable

b_i = the regression coefficients

x_1 = first independent variable

x_2 = second independent variable

x_3 = third independent variable

c = constant

CHAPTER 4

ANALYSIS RESULTS

This chapter describes the results of the questionnaire, that consists of four parts. The first part begins with demographic information of respondents including gender, age, education, field of engineering work, income per month, and the working in the organization of respondents in section 4.1. Next, section 4.2 presents descriptive analysis for each variable including job design, social relationships, work environment, compensation, and employee. Then, section 4.3 statistical analysis of a which factor that affecting employee loyalty among engineering employees in Thailand, the hypothesis testing provides the result of quantitative analysis including the multiple regression analysis, the Pearson's correlation. Finally, describe suggestions from respondents in section 4.4.

The objectives of the study are 1) to assess and diagnose the existing situation of employee loyalty among engineering employees in Thailand, 2) to investigate the relationship between job design, social relationships, work environment, compensation, and employee loyalty, 3) to provide appropriate recommendations for the engineering industry to improve employee loyalty.

4.1 Demographic Information

This part aims to provide the demographic information of 443 respondents which are working in the engineering industry. The result of demographic information is summarized in the following table 4.1 to table 4.6.

Table 4.1 Gender of respondents

Gender	Frequency	Percentage
Male	328	74.04
Female	107	24.15
LGBTQ+	7	1.58
Not specified	1	0.23

In table 4.1, gender of respondents. Specifically, 328 (74.04%) respondents were male, 107 (24.15%) were female, 7 (1.58%) identified as LGBTQ+, and 1 (0.23%) did not specify their gender.

Table 4.2 Age of respondents

Age	Frequency	Percentage
20 and below	11	2.48
21-25	57	12.87
26-30	52	11.74
31-35	28	6.32
36-40	37	8.35
41-45	55	12.42
46-50	41	9.25
Over than 50	162	36.57

As shown in table 4.2. For the age groups of 20 and under, 21 – 25, 26 – 30, 31 – 35, 36 – 40, 41 – 45, 46 – 50, and above 50, the corresponding percentages were 2.48%, 12.87%, 11.74%, 6.32%, 8.35%, 12.42%, 9.25%, and 36.57%.

Table 4.3 Education of respondents

Education	Frequency	Percentage
High school or below	14	3.16
Vocational education	48	10.84
Diploma	3	0.68
Undergraduate	299	67.49
Master	75	16.93
Doctoral	4	0.90

In terms of education, the result from table 4.3 shows 67.49% of respondents overall had ungraduated degrees, which is more than half of the respondents' educational background. The master's degree comes in second place with 16.93% of the total. The percentage of respondents

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with a diploma, a doctoral degree, a vocational education, or less than a high school education was 3.16%, 10.84%, 0.90%, and 0.68%, respectively.

Table 4.4 Field of engineering work of respondents

Field of engineering work	Frequency	Percentage
Biomedical	9	2.03
Civil	10	2.26
Computer	21	4.74
Design	10	2.26
Electrical	68	15.35
Electronic	49	11.06
Food	8	1.81
Industrial	39	8.80
Information Technology	18	4.06
Instrumentation	30	6.77
Logistics	12	2.71
Manufacturing	24	5.42
Mechanical	22	4.97
Mechatronics	1	0.23
Petrochemical	9	2.03
Rail transportation	2	0.45
Telecommunication	26	5.87
Technical	11	2.48
Research and Development	13	2.93
Project manager	9	2.03
Purchase and sales	25	5.64
Other	27	6.09

According to table 4.4, there were 21 different main fields of work within the engineering industry. The three respondent groups with the highest percentages are the electrical group (15.35%), the electronic group (11.06%), and the industrial group (8.80%). The rest of all were

biomedical with 2.03%, civil with 2.26%, computer with 7.74%, design with 2.26%, food with 1.81%, information technology with 4.06%, instrumentation with 6.77%, logistics with 2.71%, manufacturing with 5.42%, Mechanical with 4.97%, Mechatronics with 0.23%, Petrochemical with 2.03%, Rail transportation with 0.45%, Telecommunication with 5.87%, Technical with 2.48%, Research and Development with 2.93%, Project manager with 2.03%, Purchase and sales with 5.64%, and the other such as quality assurance team, aeronautical engineering, environmental and various other, percentage were 6.09%.

Table 4.5 Income per month of respondents

Income per month (unit THB)	Frequency	Percentage
Below 30,000	109	24.60
30,001-60,000	142	32.05
60,001-90,000	76	17.16
90,001-120,000	64	14.45
120,001-150,000	22	4.97
More than 150,000	30	6.77

Table 4.5 shows the income per month (in THB) of respondents. 32.05% of respondents reported earning between 30,001 and 60,000 Baht. With 24.60%, the second highest was less than 30,000 Baht. 17.16% of 60,001 – 90,000 Baht came next. The percentages for 90,001 – 120,000 Baht, 120,001 – 150,000 Baht, and more than 150,000 Baht were the following: 14.45%, 4.97%, and 6.77%.

Table 4.6 The working time in this organization of respondents

The working time in this organization	Frequency	Percentage
Less than 1 year	54	12.19
1-5 years	116	26.19
6-10 years	71	16.03
11-15 years	45	10.16
16-20 years	39	8.80
More than 20 years	118	26.64

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Table 4.6 the working time in this organization are covered in the last section. With 26.64%, the group older than 20 years had the highest percentage. The second-highest percentage was 1 – 5 years with 26.19%. Where less than 1 year percentage was 12.19%. The next was 6 – 10 years with 16.03%, and 16-20 years was 8.8%.

4.2 Descriptive Analysis

4.2.1 Job design

In terms of job design, including four items as shown in table 4.7. The highest mean value is 4.05, the job allows me to complete the work I am responsible for. The next place is My job offers me a lot of opportunities for independence and autonomy in how I carry out my duties and I receive feedback on my performance from the job itself with mean value at 3.88. Finally, the fourth place is the work which includes an appropriate range of tasks with the mean value 3.73.

Table 4.7 Mean and standard deviation of job design variable

Job design	Mean	Std. Deviation	Qualitative rating
1. The work includes an appropriate range of tasks.	3.73	0.89	Agree
2. The job allows me to complete the work I am responsible for.	4.05	0.74	Agree
3. My job offers me a lot of opportunities for independence and autonomy in how I carry out my duties.	3.88	0.85	Agree
4. I receive feedback on my performance from the job itself.	3.88	0.78	Agree
Overall mean	3.88	0.64	Agree

4.2.2 Social Relationships

Regarding social relationships, as shown in table 4.8, the highest mean value at 4.06, shows that employees in engineering industry feel that they get along well with their coworkers. Next, through my work, I get the chance to make close friendships, reaching a mean value of 3.99. Third place is concern for the subordinates is a priority for my supervisor with mean value at 3.97. Then, the fourth place with mean value 3.93 is my coworkers respect and listen to my opinions. Lastly, the lowest mean value at 3.77 is I am satisfied that the organizational culture is positively impacting the employee relationship with coworkers.

Table 4.8 Mean and standard deviation of social relationships variable

Social Relationships	Mean	Std. Deviation	Qualitative rating
1. Through my work, I get the chance to make close friendships.	3.99	0.71	Agree
2. My coworkers respect and listen to my opinions.	3.93	0.80	Agree
3. I get along well with my coworkers.	4.06	0.72	Agree
4. Concern for the subordinates is a priority for my supervisor.	3.97	0.78	Agree
5. I am satisfied that the organizational culture is positively impacting the employee relationship with coworkers.	3.77	0.84	Agree
Overall mean	3.95	0.62	Agree

4.2.3 Work environment

As the result from table 4.9, with the highest mean value 3.88, employees feel their error rate will be reduced if the machine they handle suits them. Next place, the job involves the use of necessary tools for the job with a mean value 3.86. At mean value 3.78, the environment at the workplace is comfortable in terms of temperature and humidity is third place. The fourth place is mean value 3.77, my productivity is good because the company provides a good working

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environment. And the last place is the workplace's seating arrangements are suitable (e.g., ample opportunities to sit, comfortable chairs, good postural support) with a mean value of 3.72.

Table 4.9 Mean and standard deviation of work environment variable

Work Environment	Mean	Std. Deviation	Qualitative rating
1. The environment at the workplace is comfortable in terms of temperature and humidity.	3.78	0.83	Agree
2. The workplace's seating arrangements are suitable (e.g., ample opportunities to sit, comfortable chairs, good postural support).	3.72	0.88	Agree
3. The job involves the use of necessary tools for the job.	3.86	0.85	Agree
4. My productivity is good because the company provides a good working environment.	3.77	0.85	Agree
5. My error rate will be reduced if the machine I handle suits me.	3.88	0.82	Agree
Overall mean	3.80	0.68	Agree

4.2.4 Compensation

In terms of compensation, table 4.10 shows result from respondents that the highest mean is 4.07 with if I receive a monetary prize or salary increase as a reward for my great work, I will be motivated to do even better. I'm enough inspired to perform even better by praise and recognition for my excellent work is the second priority with mean value of 3.74. Third rank is the basis of monetary rewards, such as pay increases, bonuses, and overtime compensation, is acceptable with a mean value of 3.73. The company has a well-designed compensation system which is the next

priority with a mean value of 3.51. And the last place with a mean value of 3.44 is the company that provides non-monetary rewards such as recognition, power, and praise for me.

Table 4.10 Mean and standard deviation of compensation variable

Compensation	Mean	Std. Deviation	Qualitative rating
1. The basis of monetary rewards, such as pay increases, bonuses, and overtime compensation, is acceptable.	3.73	0.90	Agree
2. The company provides non-monetary rewards such as recognition, power, and praise for me.	3.44	0.92	Agree
3. If I receive a monetary prize or salary increase as a reward for my great work, I will be motivated to do even better.	4.07	0.82	Agree
4. The company has a well-designed compensation system.	3.51	0.96	Agree
5. I'm enough inspired to perform even better by praise and recognition for my excellent work.	3.74	0.83	Agree
Overall mean	3.70	0.69	Agree

4.2.5 Employee loyalty

As to employee loyalty, I have dedicated my best effort to my organization which has the highest mean value with 3.97. I am ready to go above and beyond what is often expected to contribute to the success of this organization, and I think my talents can be fully utilized in the organization, both are second place with a mean value at 3.86. Next is care about the future of this organization with mean value 3.81. Last place, I have a strong sense of loyalty to this organization which has mean value 3.76, As shown in table 4.11.

Table 4.11 Mean and standard deviation of employee loyalty variable

Employee Loyalty	Mean	Std. Deviation	Qualitative rating
1. I am ready to go above and beyond what is often expected to contribute to the success of this organization.	3.86	0.79	Agree
2. I think my talents can be fully utilized in the organization.	3.86	0.78	Agree
3. I have dedicated my best effort to my organization.	3.97	0.74	Agree
4. I care about the future of this organization.	3.81	0.84	Agree
5. I have a strong sense of loyalty to this organization.	3.76	0.89	Agree
Overall mean	3.85	0.69	Agree

4.3 Statistical analysis of a which factor that affecting employee loyalty among engineering employees in Thailand

The hypothesis testing is presented in this section. To determine whether to accept or reject the hypothesis, statistical analysis between the independent and dependent variables is used in this hypothesis test. The outcome of the analysis uses Pearson's correlation and multiple regression analysis with SPSS for data analytic procedure. With the multiple regression analysis with SPSS from model summary in table 4.12, $R^2 = 0.488$, which means 48.8% of the variation in the employee loyalty is accounted for by the job design, social relationships, work environment, and compensation. The concept of multiple regression analysis states that a result is considered significant if it is less than 0.05 or 5 percent, the hypothesis is acceptable. However, if it exceeds 0.05, the hypothesis is rejected.

Table 4.12 Model summary from SPSS

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.698 ^a	0.488	0.483	0.49920	1.935

4.3.1 Hypothesis test between job design and employee loyalty

H1o: There is no significant relationship between job design on the loyalty of employee among engineering employees in Thailand.

H1a: There is a significant relationship between job design on the loyalty of employee among engineering employees in Thailand.

Table 4.13 Multiple regression analysis and Pearson's correlation analysis of H1o and H1a

Job design	Corporate Reputation
Pearson's correlation	0.611
Sig (2-tailed)	0.000
N	443

To test Hypothesis 1 whether there is a significant relationship between job design on the loyalty of employee. As table 4.13 shows significant value is 0.000 which is less than 0.05 and Pearson's correlation coefficient is 0.611 means there is moderate positive correlation between job design on the loyalty of employee. Therefore, rejected H1o and accepted H1a. There is a significant relationship between job design on the loyalty of employee among engineering employees in Thailand.

4.3.2 Hypothesis test between social relationships and employee loyalty

H2o: There is no significant relationship between social relationships on the loyalty of employee among engineering employees in Thailand.

H2a: There is a significant relationship between social relationships on the loyalty of employee among engineering employees in Thailand.

Table 4.14 Multiple regression analysis and Pearson's correlation analysis of H2o and H2a

Social relationships	Corporate Reputation
Pearson's correlation	0.599
Sig (2-tailed)	0.000
N	443

To test Hypothesis 2 whether there is a significant relationship between social relationships on the loyalty of employee among engineering employees in Thailand. Table 4.14 shows The Pearson's correlation coefficient is 0.599, indicating a moderate positive correlation between work design and employee loyalty, and the significant value is 0.000, which is less than 0.05. Therefore, rejected H2o and accepted H2a. There is a significant relationship between social relationships on the loyalty of employee among engineering employees in Thailand.

4.3.3 Hypothesis test between work environment and employee loyalty

H3o: There is no significant relationship between work environment on the loyalty of employee among engineering employees in Thailand.

H3a: There is a significant relationship between work environment on the loyalty of employee among engineering employees in Thailand.

Table 4.15 Multiple regression analysis and Pearson's correlation analysis of H3o and H3a

Work environment	Corporate Reputation
Pearson's correlation	0.575
Sig (2-tailed)	0.000
N	443

To test Hypothesis 3 whether there is a significant relationship between work environment on the loyalty of employee among engineering employees in Thailand. Table 4.15 shows the significant value is 0.000, which is less than 0.05, and the Pearson's correlation coefficient is 0.575, which shows a moderate positive correlation between work design and employee loyalty.

Therefore, rejected H3o and accepted H3a. There is a significant relationship between work environment on the loyalty of employee among engineering employees in Thailand.

4.3.4 Hypothesis test between compensation and employee loyalty

H4o: There is no significant relationship between compensation on the loyalty of employee among engineering employees in Thailand.

H4a: There is a significant relationship between compensation on the loyalty of employee among engineering employees in Thailand.

Table 4.16 Multiple regression analysis and Pearson's correlation analysis of H4o and H4a

Compensation	Corporate Reputation
Pearson's correlation	0.602
Sig (2-tailed)	0.000
N	443

To test Hypothesis 4 whether there is a significant relationship between compensation on the loyalty of employee among engineering employees in Thailand, as a result from table 4.16, the significant value is 0.000, which is less than 0.05, and the Pearson's correlation coefficient is 0.602, which shows a moderate positive correlation between work design and employee loyalty. Therefore, rejected H4o and accepted H4a. There is a significant relationship between compensation on the loyalty of employee among engineering employees in Thailand.

4.3.5 Hypothesis test between job design, social relationship, work environment, and compensation are not statistically significantly predicting employee loyalty

H5o: Job design, social relationships, work environment, and compensation are not statistically significantly predicting employee loyalty.

H5a: Job design, social relationships, work environment, and compensation are statistically significantly predicting employee loyalty.

Table 4.17 Multiple regression analysis of H5o and H5a

Model	B	Standard error	Beta	t	Significant value
(Constant)	0.534	0.167		3.198	0.001
Job design	0.273	0.055	0.253	4.938	0.000
Social relationships	0.202	0.059	0.181	3.414	0.001
Work environment	0.209	0.049	0.204	4.239	0.000
Compensation	0.180	0.054	0.178	3.327	0.001

To test Hypothesis 5 whether job design, social relationships, work environment, and compensation are statistically significantly predicting employee loyalty. From table 4.17, the significant value is 0.001 which is less than 0.05. Therefore, rejected H5o and accepted H5a, Job design, social relationships, work environment, and compensation are statistically significantly predicting employee loyalty.

Furthermore, according to multiple regression formular:

$$Y = b_1x_1 + b_2x_2 + \dots + b_nx_n + c$$

Where Y is the employee loyalty, b_i is the regression coefficients, x_i is independent variable which are job design, social relationships, work environment, and compensation, c is constant it can be conveyed that $0.534 + 0.273\text{Job design} + 0.202\text{Social relationships} + 0.209\text{Work environment} + 0.180\text{Compensation}$ is equal 48.8% of independent variables has the ability to forecast employee loyalty.

4.4 Suggestions from respondents

Respondents share their thoughts mostly around responsibility for individual duties, which could advance the organization's growth and achieve their goals. Also, Organizations should design work appropriately. Including recruiting additional employees if needed to lighten the workload for employees. Another comment that was made was about relationships in the workplace. Respondents share that Communication between each person regardless of position, attention from

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supervisors, and having a clear organizational culture in order to set the direction of the organization and build morale for employees.



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CHAPTER 5

CONCLUSION AND DISCUSSION

The actual results from statistical and quantitative analysis are compiled in this chapter along with conclusion and discussion and recommendations for the company. This research intends to study factors affecting employee loyalty among engineering employees in Thailand which are job design, social relationships, work environment, and compensation. In order to deliver value to the organization and gain access to their valued benefits, engineering employees may find it helpful to comprehend the requirements of this professional association and apply to engineering employee associations that foster their development. Develop strategies that will maintain engineers' loyalty to the organization and their level of fulfillment in their jobs.

5.1 Discussion

This study aims to assess and determine the current state of employee loyalty in Thailand's engineering sector, investigate the relationships between job design, social relationships, work environment, compensation, and employee loyalty, and offer appropriate recommendations to the organization on how to further develop employee loyalty. There are over 198,000 members of the engineering council in Thailand, according to the Council of Engineers Thailand. With this amount, therefore the researcher applied Taro Yamane's theory to calculate the population sample. With sampling of error is $\pm 5\%$, sample of population would be approximately 400 samples. The questionnaires were performed in both paper form and online form. Questionnaires were collected from 443 employees who work in the engineering organization. The questionnaire consists of 2 main parts, which are general information of respondents and factor affecting employee loyalty among engineering employees in Thailand. The data was analyzed by using Statistical Package for the Social Science (SPSS) with Pearson's correlation analysis and multiple regression analysis.

5.1.1 What is the existing situation of employee loyalty among engineering employees in Thailand?

Based on data collected from questionnaires, after the data analysis process, it can summarize the detail of existing for each variable as follows:

- Job design: the mean is 3.88 and qualitative rating is “agree.” Pearson’s correlation coefficient is 0.611 is shows a moderate positive correlation between work design and employee loyalty.
- Social relationships: the mean is 3.95 and qualitative rating is “agree.” Pearson’s correlation coefficient is 0.599 is shows a moderate positive correlation between work design and employee loyalty.
- Work environment: the mean is 3.80 and qualitative rating is “agree.” Pearson’s correlation coefficient is 0.575 is shows a moderate positive correlation between work design and employee loyalty.
- Compensation: the mean is 3.70 and qualitative rating is “agree.” Pearson’s correlation coefficient is 0.602 is shows a moderate positive correlation between work design and employee loyalty.

From mean value and qualitative rating are shows that most employees agree with all independent variables including job design, social relationships, work environment, and compensation that have a moderate positive correlation with employee loyalty.

5.1.2 Is there a relationship between job design, social relationships, work environment, compensation, and employee loyalty?

According to result of hypothesis, there are results as follow:

- Hypothesis 1: From table 4.13, the significant value is 0.000 which is less than 0.05 and the Pearson's correlation coefficient is 0.611. Therefore, there is a significant relationship between job design on the loyalty of employee among engineering employees in Thailand. This is in line with Santos et a. (2019).
- Hypothesis 2: From table 4.14, the significant value is 0.000 which is less than 0.05 and the Pearson's correlation coefficient is 0.599. Therefore, there is a significant relationship between social relationships on the loyalty of employee among engineering employees in Thailand. This is in line with Adhikari (2017) and Morgeson and Humphrey (2006).

- Hypothesis 3: From table 4.15, the significant value is 0.000 which is less than 0.05 and the Pearson's correlation coefficient is 0.575. Therefore, there is a significant relationship between work environment the loyalty of employee among engineering employees in Thailand. This is in line with Ahakwa et al. (2021) and Zhenjing et al. (2022)
- Hypothesis 4: From table 4.16, the significant value is 0.000 which is less than 0.05 and the Pearson's correlation coefficient is 0.602. Therefore, there is a significant relationship between compensation on the loyalty of employee among engineering employees in Thailand. This is in line with Gerhart and Rynes (2003), Pierce et al, (1991) and Delery and Doty (1996).
- Hypothesis 5: From table 4.17, the significant value is 0.001 which is less than 0.05. Therefore, Job design, social relationship, work environment, and compensation are statistically significantly predicting employee loyalty.

In conclusion, the quantitative reveals that job design, social relationship, work environment, and compensation statistically significantly to employee loyalty among engineering employees in Thailand. Furthermore, Pearson's correlation coefficient shows that job design was the most significant to employee loyalty. Then, compensation, social relationships, and work environment, respectively.

5.2 Conclusion

This study reveals that factors affecting employee loyalty among engineering employees in Thailand are job design, social relationships, work environment, and compensation. All independent variables have a significant relationship with employee loyalty. According to research objectives, what are appropriate recommendations for the engineering organization to improve employee loyalty? Applying this conclusion, the organization may implement each variable as follows in the future to increase employee loyalty:

- For job design, job design was found to have the most significant of all variables. The descriptive analysis found that “The job allows me to complete work I am responsible for” has the highest mean value at 4.05. The result shows that employees agree with how they comprehend the overall results of their job, this would increase job satisfaction, motivation, engagement, and employee loyalty for the organization. On the other hand, the lowest

mean value at 3.73 is “The work includes an appropriate range of tasks.” This might describe how employees are least satisfied with their received scope of work. From the suggestion part of questionnaire, some workers desire that their employers prioritize their skills over their educational background, others want the company to balance the workload or design a job that better fits their needs. The job characteristics model (JCM), created by Hackman and Oldham (1976), contains guidelines that the organization may apply in this situation. These guidelines relate to the questionnaire's questions about skill variety, task identity, autonomy, and feedback. All these topics are able to be improved upon by any business to better serve the demands of their workforce. Improving job design holds key managerial implications for increasing employee loyalty. A well-crafted job that aligns with employee skills and interests fosters job satisfaction and engagement, contributing to increased loyalty.

- To develop social relationship, the highest mean value of social relationships is 4.06 with “I get along well with my coworkers.” And the next is “Through my work, I get the chance to make close friendships” at 3.99. The results show that most employees feel that if employees have a good relationship with their coworkers, it might increase employee loyalty for the organization. The lowest mean value, 3.77, is found for the statement, "I am satisfied that the organizational culture is positively impacting the employee's relationship with coworkers." The organization's image is reflected in its culture, which should be well-defined to establish the organization's direction and raise employee morale. Furthermore, a few respondents mentioned that they would like their supervisor to show greater empathy and consideration for their employees. In addition to bringing about peace of mind, this would also contribute to greater employee loyalty. Enhancing social relationships within the workplace carries significant managerial implications for increasing employee loyalty. Managers can promote team-building activities, open communication channels, and a positive organizational culture to foster strong social bonds among employees. By cultivating a supportive and collaborative environment, managers contribute to increased job satisfaction and a sense of belonging, which are crucial components of loyalty.
- To improve work environment, the descriptive analysis shows respondent mostly agree with “My error rate will be reduced if the machine I handle suits me” and “The job involves the use of necessary tools for the job” at mean value 3.88 and 3.86. This result shows that

tools that are convenient for workers to use are necessary for their jobs. How at ease they are with the instruments they employ may have an impact on how smoothly their daily activities run. As a result, businesses shouldn't disregard this need. Improving the work environment holds vital managerial implications for enhancing employee loyalty. Managers can create a positive and inclusive workplace by focusing on factors such as physical comfort, a supportive organizational culture, and opportunities for professional development. A well-designed work environment contributes to higher loyalty in the workplace.

- For compensation, the highest mean value in compensation part is 4.07 with “If I receive a monetary prize or salary increase as a reward for my great work, I will be motivated to do even better” and the lowest mean value is 3.44 which is “The company provides non-monetary rewards such as recognition, power, and praise for me.” Consequently, it was discovered that workers are content when their excellent performance is rewarded with a monetary reward or salary raise. However, it also demonstrates that companies often ignore non-monetary advantages like power, acclaim, and recognition. Additionally, these things may strengthen employee loyalty to a company. As a result, the organization ought to evenly balance all these things. Enhancing compensation has substantial managerial implications for fostering employee loyalty. Competitive and fair compensation packages are crucial in attracting and retaining top talent. Managers should regularly review and adjust salaries and benefits to align with industry standards, demonstrating a commitment to recognizing and rewarding employee contributions. By addressing compensation as a key aspect of the employment relationship, managers can significantly contribute to increased employee loyalty.

5.3 Recommendation for future research

To recommend for future research, data collection from a more diversified population should be taken consideration in future study according to one limitation of this research that majority of the respondent are more than 50 years old. In this instance, researchers may potentially choose to focus on another specific industry. However, more variables might be added to this study by researchers. It could also result in case studies involving different countries. This is due to the

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possibility that the variables influencing employee loyalty could change based on the conditions and setting in each country.



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APPENDIX A

Questionnaire English version

Factors affecting employee loyalty in Thailand Engineering Industry

The objective of this questionnaire is to study the effect of job design, social relationships, work environment, and compensation to employee loyalty in engineering industry.



Part 1: General Information of respondents

Click the option applicable for each of the questions listed below.

Gender *

- Male
- Female
- LGBTQ+
- Prefer not to say

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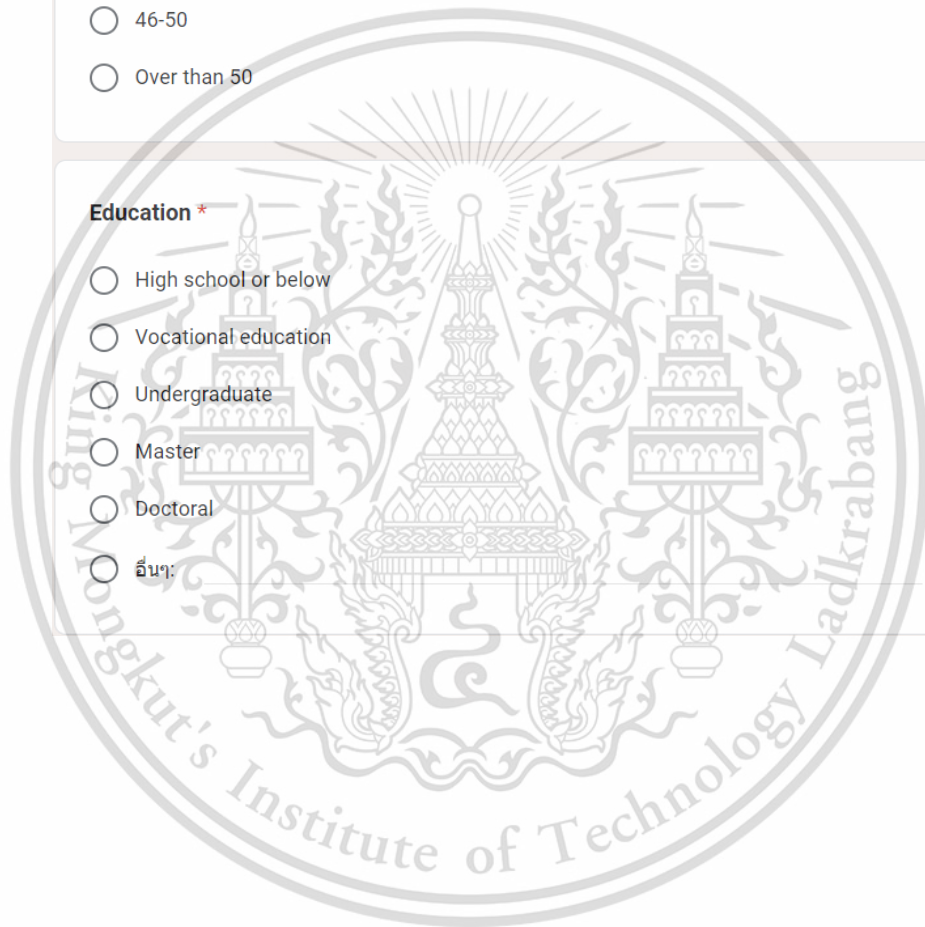
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Age *

- 20 and below
- 21-25
- 26-30
- 31-35
- 36-40
- 41-45
- 46-50
- Over than 50

Education *

- High school or below
- Vocational education
- Undergraduate
- Master
- Doctoral
- อื่นๆ:



Field of engineering work *

- Biomedical
- Civil
- Computer
- Design
- Electrical
- Electronic
- Food
- Industrial
- Information Technology
- Instrumentation
- Logistics
- Manufacturing
- Mechanical
- Mechatronics
- Petrochemical
- Rail transportation
- Telecommunication
- Project manager
- Research and Development
- Purchase and sales
- Technical
- อื่นๆ: _____

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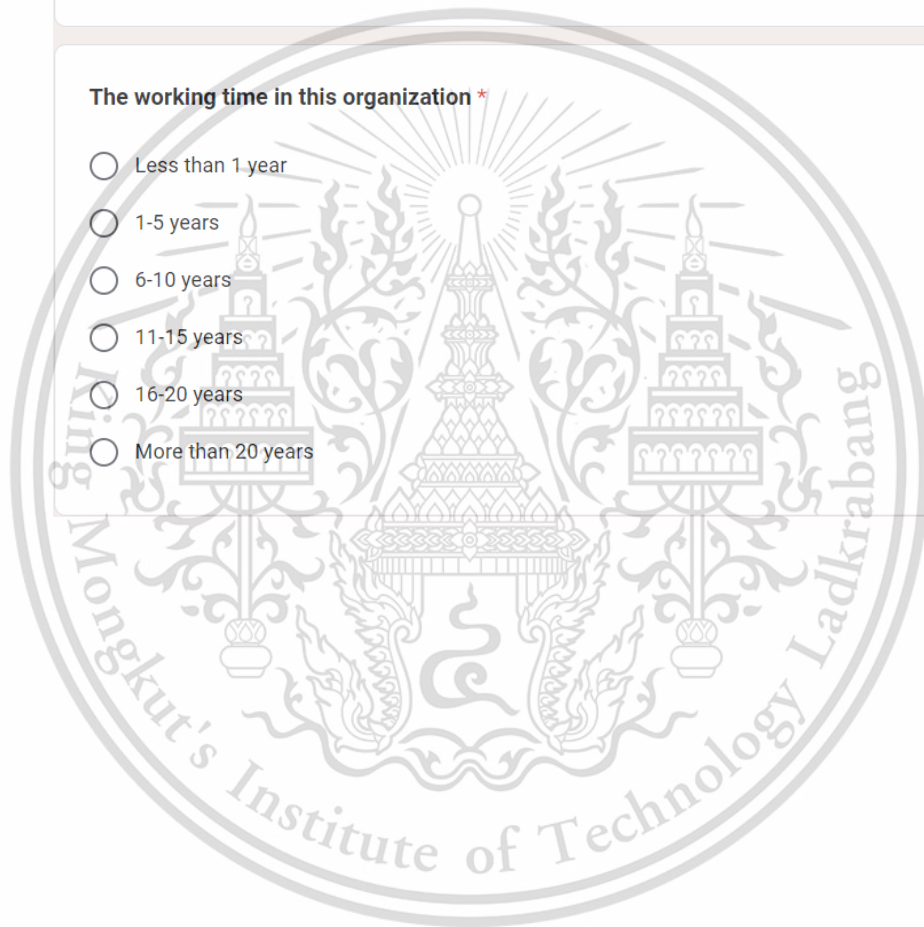
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Income per Month (unit THB) *

- Below 30,000
- 30,001-60,000
- 60,001-90,000
- 90,001-120,000
- 120,001-150,000
- More than 150,000

The working time in this organization *

- Less than 1 year
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- More than 20 years



Part 2: Factors affecting employee loyalty in Thailand Engineering Industry

Click the option applicable for each of the questions listed below.

Job Design *

Strongly
disagree

Disagree

Neutral

Agree

Strongly
agree

The work includes an appropriate range of tasks.

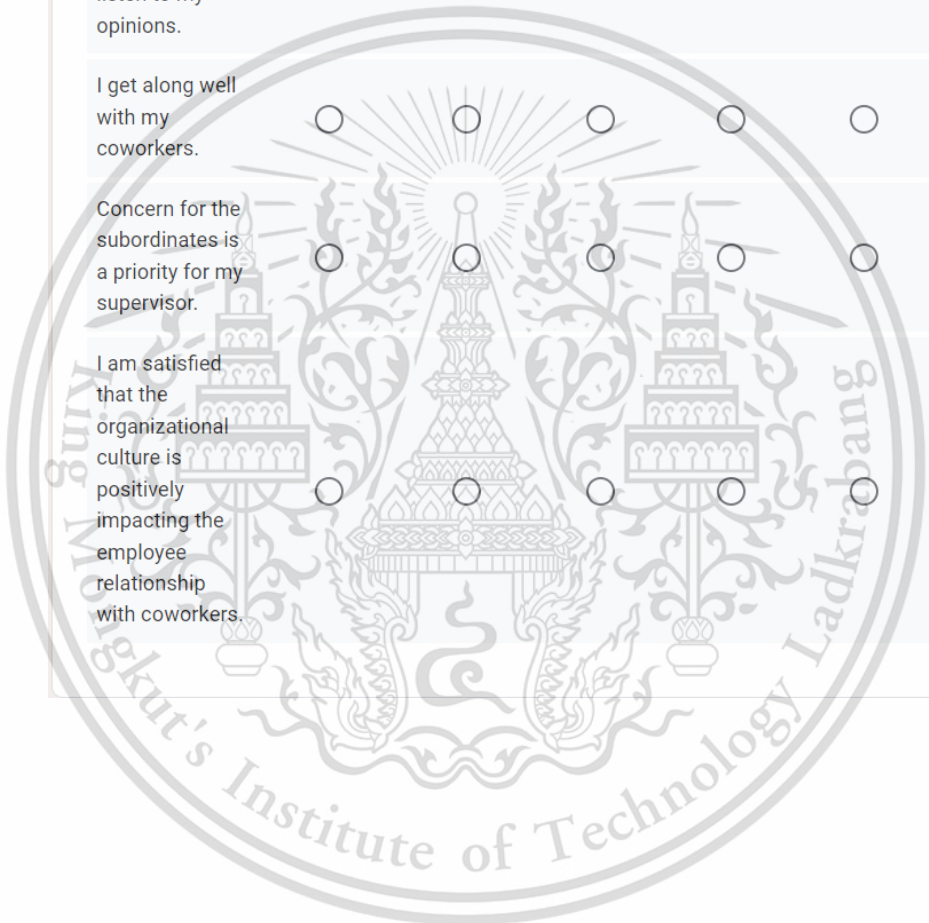
The job allows me to complete the work I am responsible for.

My job offers me a lot of opportunities for independence and autonomy in how I carry out my duties.

I receive feedback on my performance from the job itself.

Social Relationships *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Through my work, I get the chance to make close friendships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My coworkers respect and listen to my opinions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get along well with my coworkers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concern for the subordinates is a priority for my supervisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied that the organizational culture is positively impacting the employee relationship with coworkers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Work Environment *Strongly
disagree

Disagree

Neutral

Agree

Strongly
agree

The environment at the workplace is comfortable in terms of temperature and humidity.

The workplace's seating arrangements are suitable (e.g., ample opportunities to sit, comfortable chairs, good postural support).

The job involves the use of necessary tools for the job.

My productivity is good because the company provides a good working environment.

My error rate will be reduced if the machine I handle suits me.

Compensation *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The basis of monetary rewards, such as pay increases, bonuses, and overtime compensation, is acceptable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The company provides non-monetary rewards such as recognition, power, and praise for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I receive a monetary prize or salary increase as a reward for my great work, I will be motivated to do even better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The company has a well-designed compensation system.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm enough inspired to perform even better by praise and recognition for my excellent work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Employee Loyalty *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I am ready to go above and beyond what is often expected to contribute to the success of this organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my talents can be fully utilized in the organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have dedicated my best effort to my organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I care about the future of this organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a strong sense of loyalty to this organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comment/Suggestion

คำตอบของคุณ _____

ส่ง ล้างแบบฟอร์ม

APPENDIX B

Questionnaire Thai version

ปัจจัยที่ส่งผลต่อความภักดีของพนักงาน ในอุตสาหกรรมวิศวกรรมของประเทศไทย

แบบสอบถามนี้จัดทำขึ้นเพื่อประเมินและวิเคราะห์สถานการณ์ปัจจุบันของ Employee Loyalty in Thailand Engineering Industry จากปัจจัยอันได้แก่การออกแบบงาน ความสัมพันธ์ทางสังคม สภาพแวดล้อมการทำงาน และค่าตอบแทน



ส่วนที่ 1: ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม
โปรดเลือกคำตอบในข้อที่ตรงกับความเป็นจริงมากที่สุด

เพศ *

- ชาย
- หญิง
- LGBTQ+
- ไม่ระบุ

อายุ *

- 20 ปี หรือต่ำกว่า
- 21-25 ปี
- 26-30 ปี
- 31-35 ปี
- 36-40 ปี
- 41-45 ปี
- 46-50 ปี
- มากกว่า 50 ปี

การศึกษา *

- มัธยมปลาย หรือต่ำกว่า
- อาชีวศึกษา
- ปริญญาตรี
- ปริญญาโท
- ปริญญาเอก
- อื่นๆ: _____

ข่างานวิศวกรรมที่ท่า *

- ไฟฟ้า
- อิเล็กทรอนิกส์
- เครื่องกล
- คอมพิวเตอร์
- เทคโนโลยีสารสนเทศ
- โทรคมนาคม
- การผลิต
- ปิโตรเคมี
- อุตสาหการ
- ชีวการแพทย์
- โอลิสติกส์
- เครื่องมือวัด
- แมคคาทรอนิกส์
- ระบบขนส่งทางราง
- อาหาร
- โยธา
- ฝ่ายวิจัยและพัฒนา
- ช่างเทคนิค
- ออกแบบ
- ผู้จัดการโครงการ
- ฝ่ายขายและจัดซื้อ
- อื่นๆ: _____

รายได้ต่อเดือน (บาท) *

- น้อยกว่า 30,000
- 30,001-60,000
- 60,001-90,000
- 90,001-120,000
- 120,001-150,000
- มากกว่า 150,000

ระยะเวลาที่ทำงานในองค์กรนี้ *

- น้อยกว่า 1 ปี
- 1-5 ปี
- 6-10 ปี
- 11-15 ปี
- 16-20 ปี
- มากกว่า 20 ปี



ส่วนที่ 2: ปัจจัยที่ส่งผลต่อความภักดีของพนักงานในอุตสาหกรรมวิศวกรรมของประเทศไทย
โปรดเลือกคำตอบในข้อที่ตรงกับความคิดเห็นของท่านมากที่สุด

การออกแบบงาน *

	ไม่เห็นด้วยมากที่สุด	ไม่เห็นด้วย	เฉยๆ	เห็นด้วย	เห็นด้วยมากที่สุด
งานของฉันมีขอบเขตงานที่เหมาะสม	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันสามารถทำงานในขอบเขตงานให้สำเร็จได้	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
งานของฉันเปิดโอกาสให้ฉันได้เป็นอิสระในการปฏิบัติหน้าที่ของฉัน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันได้รับคำติชมเกี่ยวกับผลการทำงานของฉันจากตัวงานเอง	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ความสัมพันธ์ทางสังคม *

	ไม่เห็นด้วยมากที่สุด	ไม่เห็นด้วย	เฉยๆ	เห็นด้วย	เห็นด้วยมากที่สุด
ฉันได้รับโอกาสในการสร้างมิตรภาพที่ใกล้ชิดจากการทำงานของฉัน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
เพื่อนร่วมงานของฉันเคารพและรับฟังความคิดเห็นของฉัน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันเข้ากับเพื่อนร่วมงานได้ดี	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ความห่วงใยต่อผู้ใต้บังคับบัญชาเป็นสิ่งสำคัญสำหรับผู้บังคับบัญชาของฉัน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันพอใจในวัฒนธรรมองค์กรที่ส่งผลเชิงบวกต่อความสัมพันธ์ระหว่างพนักงานกับเพื่อนร่วมงาน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

สภาพแวดล้อมการทำงาน *

	ไม่เห็นด้วยมากที่สุด	ไม่เห็นด้วย	เฉยๆ	เห็นด้วย	เห็นด้วยมากที่สุด
สภาพแวดล้อมในที่ทำงานมีความสะอาดสบายในเรื่องของอุณหภูมิและความชื้น	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
การจัดที่นั่งในสถานที่ทำงานมีความเหมาะสม (เช่น ที่นั่งที่เพียงพอ เก้าอี้ที่สบาย และการรองรับท่านั่งที่ดี)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
งานของฉันมีเครื่องมือที่จำเป็นสำหรับการทำงาน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ผลผลิตในการทำงานของฉันดีเพราะบริษัทมีสภาพแวดล้อมการทำงานที่ดี	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
จำนวนความผิดพลาดในการทำงานของฉันจะลดลงหากมีเครื่องมือในการทำงานที่เหมาะสม	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

คำตอบแทน *

	ไม่เห็นด้วยมากที่สุด	ไม่เห็นด้วย	เฉยๆ	เห็นด้วย	เห็นด้วยมากที่สุด
คำตอบแทนที่เป็นตัวเงิน เช่น การขึ้นค่าจ้าง โบนัส และค่าล่วงเวลา เป็นที่ยอมรับได้	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
บริษัทให้คำตอบแทนที่ไม่เป็นตัวเงิน เช่น การยอมรับอำนาจ และการชมเชยแก่ฉัน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
หากฉันได้รับรางวัลเป็นเงินหรือเงินเดือนเพิ่มขึ้นเป็นรางวัลสำหรับการทำงาน ฉันจะมีกำลังใจที่จะทำผลงานให้ดียิ่งขึ้นไปอีก	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
บริษัทมีระบบคำตอบแทนที่ออกแบบมาอย่างดี	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันมีแรงบันดาลใจเพียงพอที่จะทำงานได้ดียิ่งขึ้นจากการยกย่องและจดจำผลงานอันยอดเยี่ยมของฉัน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ความภักดีของพนักงาน *

	ไม่เห็นด้วยมากที่สุด	ไม่เห็นด้วย	เฉยๆ	เห็นด้วย	เห็นด้วยมากที่สุด
ฉันพร้อมที่จะก้าวไปไกลกว่าสิ่งที่คาดหวังเสมอเพื่อจะมีส่วนช่วยให้องค์กรนี้ประสบความสำเร็จ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันคิดว่าพรสวรรค์ของฉันสามารถนำไปใช้ประโยชน์ในองค์กรได้อย่างเต็มที่	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันได้ทุ่มเทความพยายามอย่างเต็มที่ให้กับองค์กรของฉัน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันใส่ใจอนาคตขององค์กรนี้	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ฉันมีความภักดีต่อองค์กรนี้เป็นอย่างมาก	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ความคิดเห็นและข้อเสนอแนะ					
คำตอบของคุณ	<input type="text"/>				

ส่ง ล้างแบบฟอร์ม

APPENDIX C

Result of statistical analysis from SPSS

Reliability

[DataSet0]

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

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

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.885	.885	5

CORRELATIONS

```

/VARIABLES=job_design social_relationships work_environment compensation loyalty
/PRINT=TWOTAIL NOSIG
/STATISTICS DESCRIPTIVES
/MISSING=PAIRWISE.

```

Correlations

[DataSet0]

Descriptive Statistics

	Mean	Std. Deviation	N
job_design	3.8849	.64477	443
social_relationships	3.9476	.62000	443
work_environment	3.8014	.67930	443
compensation	3.6984	.68723	443
loyalty	3.8524	.69436	443

Correlations

		job_design	social_relations hips	work_enviro nment	compensation	loyalty
job_design	Pearson Correlation	1	.697**	.563**	.655**	.611**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	443	443	443	443	443
social_relationships	Pearson Correlation	.697**	1	.602**	.667**	.599**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	443	443	443	443	443
work_environment	Pearson Correlation	.563**	.602**	1	.669**	.575**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	443	443	443	443	443
compensation	Pearson Correlation	.655**	.667**	.669**	1	.602**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	443	443	443	443	443
loyalty	Pearson Correlation	.611**	.599**	.575**	.602**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	443	443	443	443	443

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

REGRESSION

```

/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN (.05) POUT (.10)
/NOORIGIN
/DEPENDENT loyalty
/METHOD=ENTER job_design social_relationships work_environment compensation
/RESIDUALS DURBIN.

```

Regression

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	compensation job_design work_environment social_relationships ^b		Enter

a. Dependent Variable: loyalty

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.698 ^a	.488	.483	.49920	1.935

a. Predictors: (Constant), compensation, job_design, work_environment, social_relationships

b. Dependent Variable: loyalty

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	103.954	4	25.988	104.286	.000 ^b
	Residual	109.151	438	.249		
	Total	213.105	442			

a. Dependent Variable: loyalty

b. Predictors: (Constant), compensation, job_design, work_environment, social_relationships

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.534	.167		3.198	.001
	job_design	.273	.055	.253	4.938	.000
	social_relationships	.202	.059	.181	3.414	.001
	work_environment	.209	.049	.204	4.239	.000
	compensation	.180	.054	.178	3.327	.001

a. Dependent Variable: loyalty

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.6736	4.8543	3.8524	.48496	443
Residual	-2.32423	2.89682	.00000	.49694	443
Std. Predicted Value	-4.493	2.066	.000	1.000	443
Std. Residual	-4.656	5.803	.000	.995	443

a. Dependent Variable: loyalty

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- Engineering at Picosoft Company, 2020-Present

