Under Paid Engineers in Malaysia:

A Study on Fresh Graduate Engineers and Experienced Engineers

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Project Paper Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Business Administration

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DECLARATION

I hereby declare that the case study is based on my original work except for quotations and citations that have been duly acknowledged. I also declare it has not been previously or concurrently submitted for any other degree at Universiti Tun Abdul Razak (UNIRAZAK) or other institution.

Signature :

Name : Maheswaran Govindasamy

Date : 18th June 2022

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By
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Underpaid salary is a global issue in both developed and developing countries that causes social and economic problems and is the target of mitigating programs both nationally and internationally. This will indirectly lead to salary inequality issue as well. This study aims to analyze, examine, and compare the factors of fresh and experienced engineers being underpaid. To conduct the research, four identified variables will be used: oversupplied graduates, limited job opportunity, unavailability of employment according to skill sets and cost of living. A simple random sampling will be amended, and the sample size consists of 100 samples that will be divided into two groups, fresh engineers, and experienced engineers. The researcher will be using a questionnaire to gather data for this study. The data will be analyzed by using the Statistical Package from Social Science Version 25 (SPSSv 25). The study's findings were clarified by implementing frequency analysis, descriptive analysis, correlation and multiple regression to address the objectives of research.

Keywords: Underpaid, Oversupplied graduates, Limited job opportunity, Unavailability of employment according to skill sets, Cost of living

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Underpaid engineers in Malaysia had been a major issue as this reflects the imbalance in economy, private sectors administration and cost of living. Compared to our ASEAN counterparts, engineers are getting paid lesser with the productivity that been produce. Engineers are being well paid in Singapore, same goes in Vietnam which is booming with the economy restructure as investors have their sight on there. Furthermore, with the pandemic Covid-19 situation for the past 2 years, hundreds of companies and firms had been shut down and thousands had lost their source of income.

This also has made engineers either fresh or experienced to save their job by accepting lower salaries and being underpaid. Government on the other hand need to view on the private sector as well in determining the salary and incentives. They need to plan with the employers and bring this issue upfront, to save the underpaid fresh and experienced engineers as cost of living is contrast with other areas in the country.

Underpayment means that the less payment that an employee receives upon they deserve for the work that had been done. Most people think that underpayment means they are being paid less than they feel they're worth. However, the market dictates what someone deserves to be paid (Stella Morrison, 2021). Indeed, this has a serious effect on the fresh and experienced engineer when it comes in getting underpaid in Malaysia.

Mostly engineers are getting underpaid due to some circumstances. In most of the journals and research related, the main factors would be due to supply vs demand. When there is no demand, there will be less supply needed in an organization. A country’s economy condition also does impact and contribute to the underpaid issue as developed and developing countries does have the differences in paying engineer’s salary either fresh or experienced.

Underpaying is as bad or worse than overpaying. It breeds frustration and affects productivity and in the long run, you may lose your employees as well as money (D. Brant Pittman, 2015). Once an engineer is being underpaid, for surely their work performance will drop drastically and this will cost the employer the business. This indeed will impact the investment as well. Furthermore, this will tend the engineers to look for other opportunity at different firms or companies in order looking for a better pay.

Fresh engineers are categorized as newbies in an organization or firm. This is due to their lack of experience which determines their starting salary or wage. Even in the Jobstreet or other local manpower agencies, the starting salary offered as low for fresh engineers. In a world where engineering graduates are growing by large numbers every single year. The "Fresher" scenario seems far worse than manageable (Wrik Bhattacharyya, 2021). Fresh engineers must compete with the current market demand flow, which decides their basic salary. And they must digest the fact that they must be underpaid due to these circumstances. Furthermore, fresh engineers are unable to demand for a fair salary as they are new for the industry and a sector.

Meanwhile, some experienced engineers are also facing the underpayment salary issue as well. This is because some engineers do get promoted due to their skill set and others due to level of experience in a selected sector. Due to this pandemic season, experienced engineers usually will stick at one workplace as they were enjoying in a comfort zone. This will lead them to stay longer in a company or organization. Due to this, being underpaid would not be an obstacle to them. Some experienced engineers would remain underpaid due to aging factor. Aging will influence daily work performance, therefore even though experienced, engineers will not mind getting lower salary just to save their job position in an organization. Some engineers were promoted even without any paper qualification. The demand for your skill set will determine your pay grade (Engineer Cals, 2021)

Thus, it is proven that most Malaysian who works as either fresh or experienced engineers being underpaid due to these circumstances. This issue needs to be highlighted and examined to get to know more the factor or reason which would jeopardize the local engineers who are well educated or experienced in respective field.

1.2 Problem Statement

The case of underpaying employers towards fresh engineers had been increasing over the past ten years, in contrast to other areas in the country. According to the 2018 annual report released by Bank Negara Malaysia (BNM), Malaysians are not getting the wage enough for the level of productivity they are producing.

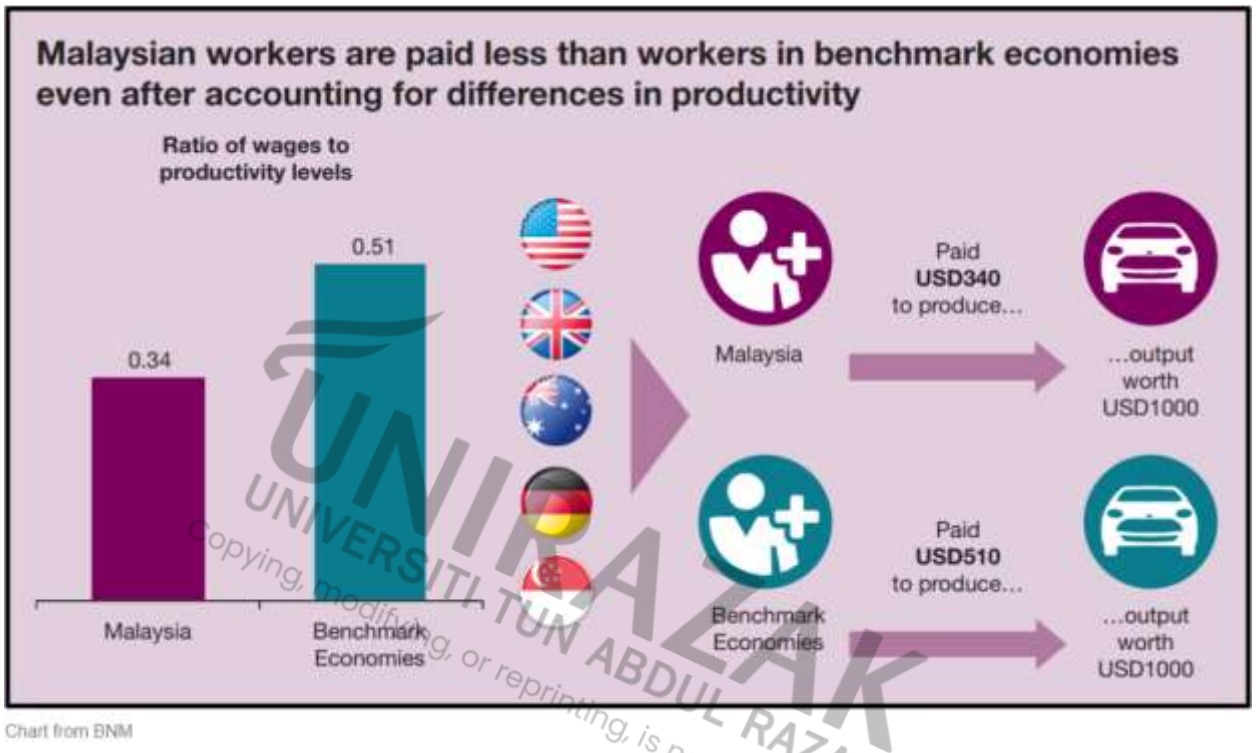


Figure 1.0: Ratio of wages to productivity levels
Source: Bank Negara Malaysia

Fresh and experienced engineers are on the list as well. Though, there is some attempt to lure the fresh graduates by the firms and employers by offering better salary payment and initiatives being brought up in line with the government policies. But however, not all fresh engineers are being affected on this move.

For the past a decade, the underpayment issue among engineers either fresh or experienced had been revolving throughout the nation. Fresh graduates had been offered a sum of salary which has set by the employers. Even, the outsource manpower agencies also had fix and set the salary for an entry level position for a fresh graduate which is minimum.

Meanwhile for the experienced engineers, they are not earning enough in relation to the amount of value that they produce. Reasons on the research for and the consequences has focused on objective measure of income, working experience and employment skill set.

Underpaid engineers will have a lack of engagement , or worse, active disengagement and reaching consequences such as poor performance (An employee are motivated to give their best at work once they are valued and appreciated), low morale (Absenteeism, illness and mental health issue, among other detrimental factors are the contribution of low morale), lack of allegiance (Unwillingness to contribute more time or energy in completing a task to achieve the company's goal) and turnover (Employees tend to seek better opportunities regularly).

Addressing this particularly to the employer to contribute of understanding of this phenomenon. The private sector and government need to take step forward in analyzing the factors and should come out with a solution that benefits both fresh and experienced engineers in this scenario.

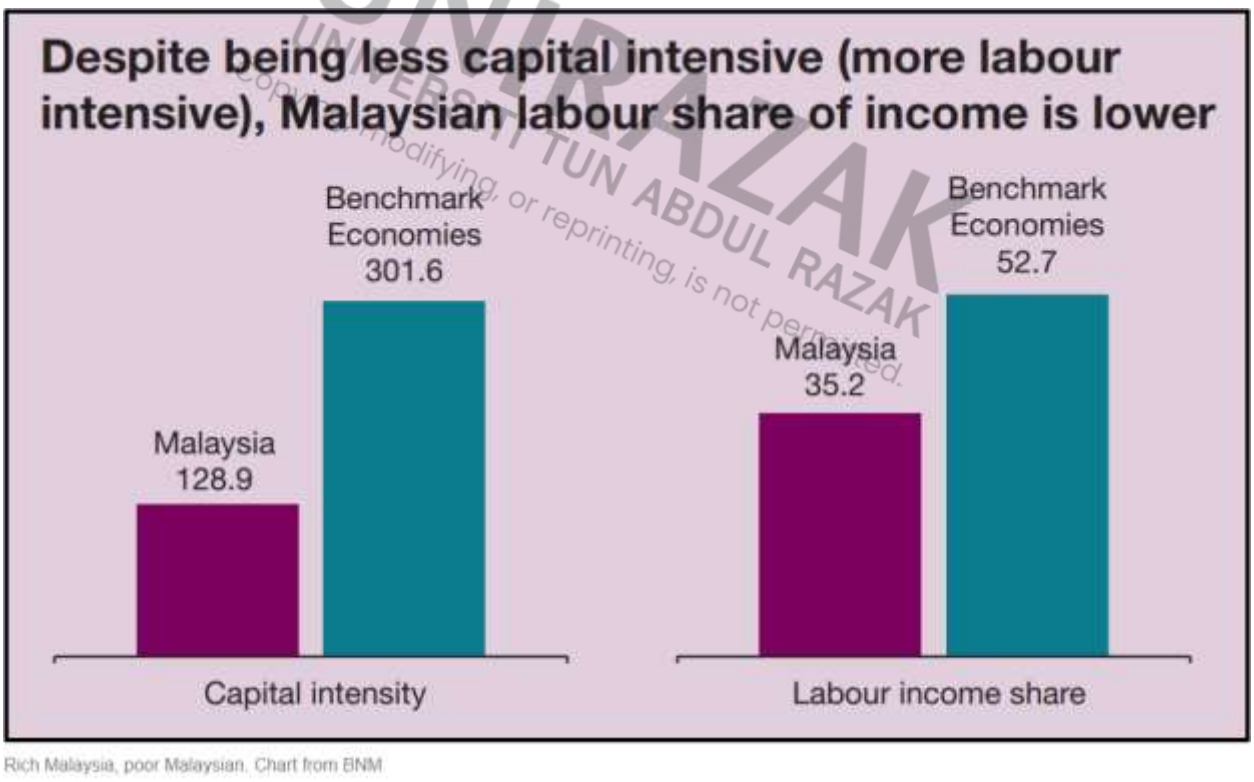


Figure 1.1: Chart on variances between capital intensity and labour income share
Source: Bank Negara Malaysia

The aim of this research is to investigate effective strategies to ensure that fresh and experienced engineers are getting paid fairly and accordingly. Significant factors will be justified through surveys and interviews and conduct experiments to measure the effectiveness of different strategies. This research aims for better understanding on the fundamental reason for being underpaid engineer despite being graduated and experienced. Qualitative method will be used to gain in-depth insight and feedbacks from fresh and experienced engineers from various industries. The date will be contextualized with a review of recent literature on the strategy and statistical analysis.

1.3 Research Objective

- To justify the relationship between oversupplied graduate and underpaid salary
- To validate the relationship between limited job opportunity and underpaid salary
- To corroborate the relationship between unavailability of employment according to skill sets and underpaid salary
- To validate the relationship between cost of living and underpaid salary
- To examine the most significant aspect that influence the underpaid salary

1.4 Research Question

- Is there any relationship between oversupplied graduate and underpaid salary?
- Is there any relationship between limited job opportunity and underpaid salary?
- Is there any relationship between unavailability of employment according to skill sets and underpaid salary?
- Is there any relationship between cost of living and underpaid salary?
- What is the significant aspect that influence the underpaid salary?

1.5 Significance of the Study

The purpose of this research is to determine the significant factors of fresh and experienced engineers of being underpaid. This study is to give information by emphasizing the information on the reasons on the underpaid engineers' issue in Malaysia. The outcome of this study will help to recognize and rectify the issue regarding fresh and experienced engineers being underpaid in the country.

1.5.1 Significance for organization

An organization plays a vital role in deciding the salary or wage payment accordingly for the fresh or experienced engineers. This study will reveal the possibilities of the issue and would be an eye opener for the employers to evaluate the salary payment either for engineers based on their academic qualification and experience. Underpaid employees' turnover faster, and typically underperforms; even worse, their potentially toxic attitudes can spread throughout an entire company (TERRA Staffing Group, 2019). Furthermore, this study discusses about the consequences of this issue.

1.5.2 Significance for employees

The organization apprehension towards rectifying the underpaid issue in their respective firms or companies, will not only help the mentality of the employees themselves, but in fact will contribute more for the organization by driving thru to success in the business. Employees on the other hand will have a positive perspective towards the company's gesture to adjust or increase the salary rate accordingly for the fresh and experienced engineers.

1.5.3 Significance for future research

Based on this study, future researchers can utilize the findings to carry out other study related the underpayment salary or wage among fresh and experienced engineers. Moreover, the future researcher can come out with other elements for every aspect in this study.

1.6 The Organisation of Study

1.6.1 Chapter 1

This chapter discussed on the contents related on the topic analysis, general background of the study, problem statement, research objective and research questions. Besides that, significance of the study is discussed in this chapter as well.

1.6.2 Chapter 2

In this chapter, the focus will be on literature review of the study. The explanation will begin with the theoretical foundation function until to conduct the research accordingly. Moreover, the researcher justifies the definition and previous research related to the Direct Variable (Underpaid engineers) and Indirect Variables (oversupplied graduate, limited job opportunity, unavailability of employment according to skill sets and cost of living). In addition, information is given regarding the aspects used in measuring the indirect variables which consists of increase of universities, economy instability, skills mismatch, and national income factor). The researcher also comes out with the theoretical framework in this study and hypotheses for this research.

1.6.3 Chapter 3

This chapter clarifies the methods taken by the researcher to measure the dependent and independent variables. Plus, this chapter also designated the research design, population, and sampling technique. A set survey of questionnaire will be used as the primary method to collect data.

1.6.4 Chapter 4

This chapter presents the results of the study and the data analysis. Data analysis helps in the interpretation of data and help take a decision or answer the research question.

1.6.5 Chapter 5

This chapter presents the results of research findings. The principal outcomes of a research project; what the project suggested, revealed, or indicated.

1.6.6 Chapter 6

This chapter ended with conclusion, limitations, and recommendations.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, further explanation, and justification on the reason of being underpaid and the effects. This section also reviews several and information done in the past on similar studies and variables. In addition, a theoretical framework is created further to explain the factors of the underpaid fresh and experienced engineers. Fresh and experienced engineers are underpaid due to excessive supply of engineering students, unavailability of employment according their skill sets, limited job creation for youths and cost of living. In general, a fair wage to fresh or experienced engineer will lead the employers in retaining employees, supporting recruitment, improve morale and avoid litigation.

2.2 Theoretical Foundation

Courtney Watson (2020) defines a theoretical foundation is a formal, peer-reviewed theoretical model (or models) that can be used to explain the issue that is driving a research. This is usually beginning dissertation with a nagging question, or an observation that something has been overlooked.

On the question on how much and on which basis salary/wages should be paid to the employees for services rendered, had been a subject matter of concern and debate among economist for a long time. This has led to the emergence of several salary/wage theories on how the salary/wages are determined. Some of the important theories are discussed in this chapter.

2.2.1 Wages fund theory

Developed by Adam Smith (1723-1790) and the theory was based on the basic assumption that employees are paid salary out of pre-determined fund of wealth. The demand for labor and rate of salary depends on the size of the salary fund, according to Adam Smith. Moreover, salary for labor class unable raised by trade unions thus, the efforts of trade unions to raise salary are futile.

2.2.2 Subsistence theory

Propounded by David Ricardo (1772-1823), whereby "The laborers are paid to enable them to subsist and perpetuate the race without increase or diminution". Also known as 'subsistence wages. The number of employees will decrease because of starvation death, malnutrition, and disease. The theory is also called as 'Iron Law of Wages' because since salary rage tends to be at, subsistence level at all cases. It is said that employees might indulge in enjoyment and consequently their numbers would increase, when they are paid more than the subsistence level. Directly, this will result in a low rate of salaries.

2.2.3 The Surplus Value Theory of Wages

Developed by Karl Marx (1849-1883) and is based on the basic assumption that like other article, labor is also an article which could be purchased on payment of its price. At subsistence level which less than in proportion to time labor takes to produce items, and the surplus goes to the owner. Time and effort that needed to produce determined the price of any product, according to him. And he also stressed that labor is an article or commodity which can be purchased on payment of a price. The surplus goes to the management to meet other expenses and the laborer is not paid in proportion to the time spent.

2.2.4 Residual Claimant Theory

The theory is developed by Francis A. Walker (1840-1897) and there are four factors of production or business activity, viz, land, capital, and entrepreneurship. Worker is the residual claimant. Possibility of increase in salary through greater efficiency of employees and in this sense, it is an optimistic theory whereby the subsistence theory and wage fund theory were pessimistic theories. Walker also added that after the other factors of production have have been paid, salary is the residue leftover.

2.2.5 Marginal Productivity Theory

Propounded by Phillips Henry Wick steed (England) and Joh Bates Clark (US). Salaries is determined based on the production contributed by the last worker which is called 'marginal production', according to this theory. Every worker of same skill and efficiency in a given category will receive a salary equal to the value of the marginal product of that type of labor, under the condition of perfect competition. The value of the amount by which output would be increased by employing one more worker with the appropriate addition of other factors of production is the definition of the value of marginal net product of labor.

2.2.6 The Bargaining Theory of Wages

Founder of this theory is John Davidson, and the fixation of salaries depends on the bargaining power of workers/trade unions and of employers, according to him. Then salaries tend to be high if workers are stronger in bargaining process. This theory also explained that there is an upper limit and lower limit of salary rates and the actual rates between these limits are determined by the bargaining power of the employers and the workers. Joh Davidson also argued that the salaries and hours of work were ultimately determined by the relative bargaining strength of the employers and the workers.

2.2.7 Behavioral Theories of Wages

Some behavioral scientists have also developed theories of salaries, based on research studies and action program conducted. Elements like employee's acceptance to wage level, the prevalent internal wage structure, employee's consideration on money or wages and salaries as motivators. Industrial psychologists and sociologist like, Marsh and Simon, Robert Dubin and Eliot Jacques have expressed their views of salaries and wages, based on research studies and action programs conducted by them.

2.3 Empirical Research

2.3.1 Underpayment Salary/Wage

Underpayment is a big issue right now, with more pressure than ever being placed on businesses to correctly pay their staff (Employsure, 2021). This is to ensure that the employees are not being paid deliberately without strong reasons or this will lead to a major consequence. An underpayment is defined as a scenario whereby an employee is not being paid their minimum entitlements for the job they do. These entitlements consist of overtime rates, penalty rates, payment for annual leave and extra allowances.

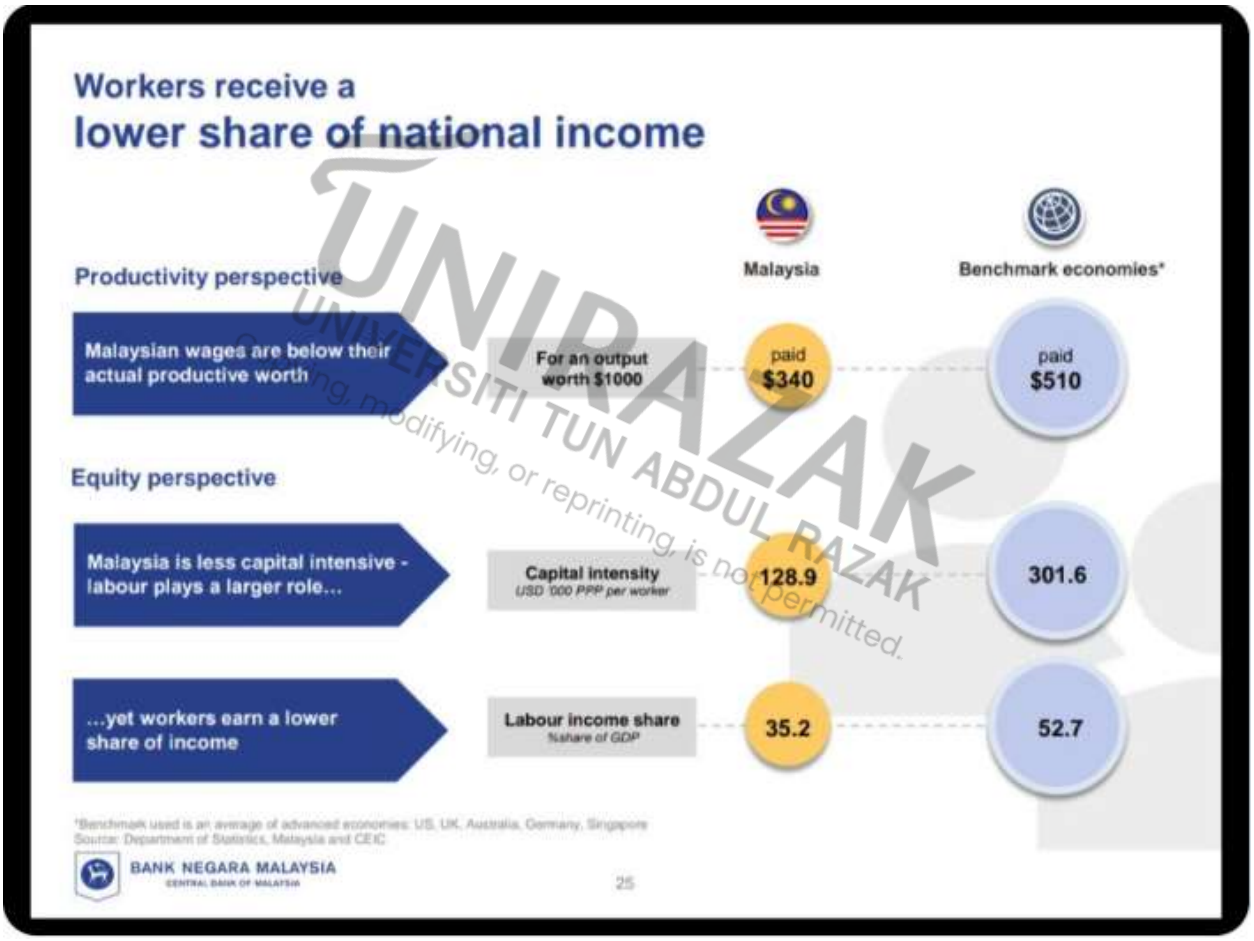


Figure 2.0: Productivity perspective and equity perspective in Malaysia

Source: Bank Negara Malaysia

Most common reason of employees getting underpaid is because of employee's fear of asking for a rise, lack of understanding of what constitutes fair pay for their position, failure to align job responsibilities with compensation, unpaid wages/salaries, and discrimination against workers. (Barrera & Associates, 2021).

Apart of fresh and experienced engineers, there are other field of occupation who are considered underpaid too. As example is public school teacher, registered nurse, farm worker, childcare professional and paramedic. (Peter Jones, 2021).

Underpayments occur due to administrative oversights, payroll errors, lack of knowledge and familiarity with the applicable workplace legislation, and sometimes they are intentional (Employsure, 2021). It is not surprising when Bank Negara posted that compared with our regional peers, our country's workforce was overworked and underpaid. There is a perception gap for high level executives, who thinks that their organization could be more productive even many entry and mid-level workers deemed so too (New Straits Times, 2021).

According to a local newspaper, it stated that the average salary for entry level employee in Malaysia remains for the past a decade, with graduates earning between RM1000-RM1500. It is only 35.9 per cent of our gross domestic product (GDP). Meanwhile, the GDP in Singapore and Germany are 40.2 and 59.4 respectively. This also shows the capability of Singapore in growing the GDP successfully.

2.3.2 Oversupplied Graduates

Oversupplied graduates are a situation whereby the demand of graduates is lesser than the supply of graduates which is more. This will lead to a situation where fresh graduates need to compete for an employment.

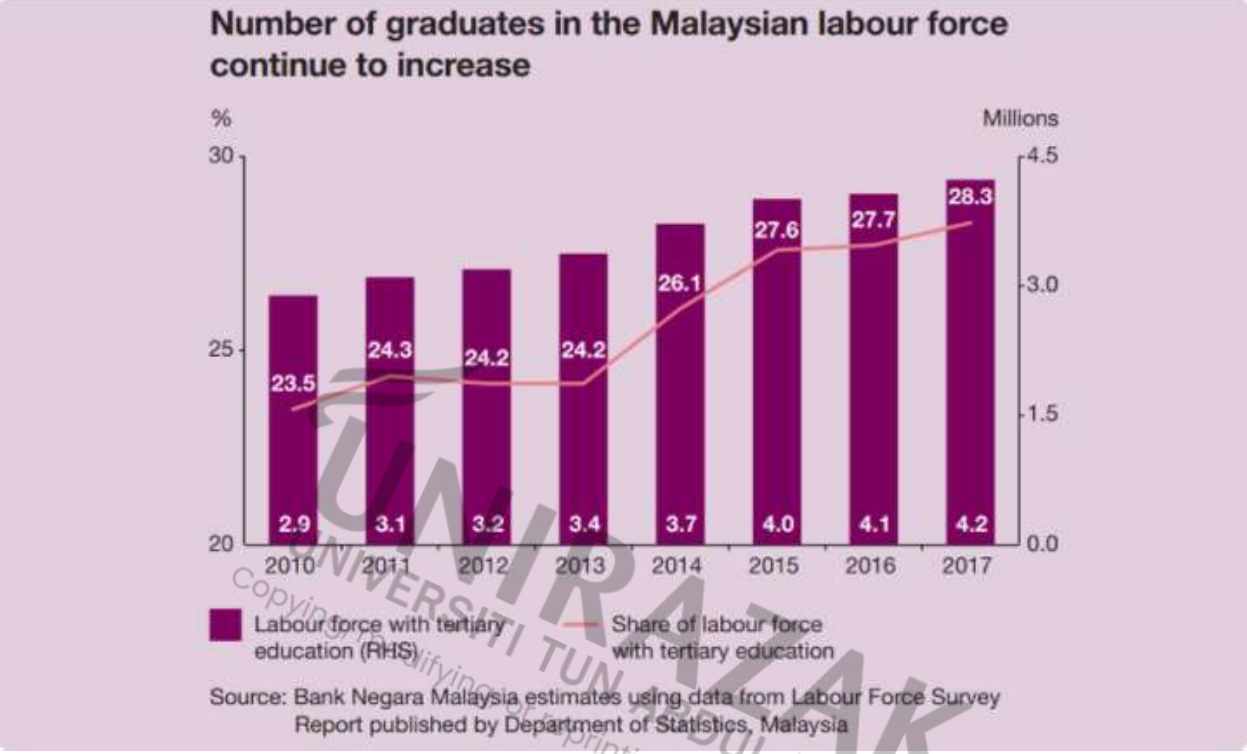


Figure 2.1: The increase of numbers of graduates in Malaysia

Source: Bank Negara Malaysia

A recent survey shows that fresh graduates are joining the employment market with an average pay of RM2,500 a month and many are struggling to make ends meet. Industry insiders and observers say it is now an employers' market and employees, especially new recruits, have very little power in demanding the pay they want (Tan Choe Choe, 2014). There is an oversupply of fresh graduates now. It's especially so since the middle of last year. The basic reason is that when the government increased the retirement age of the private sector to 60, the vacancies that would have been made available from people retiring are not going to be there for the next five years. The fresh grads are basically not able to demand, according to Malaysian Employers Federation executive director, Datuk Shamsuddin Bardan.

The entry of fresh graduates to the labor market is tough as they must compete with those already in the labor market (who are) people with experience. Employability of fresh graduate impacted due to the retirement age extension. If a business can expand, where they will need to expand their labor force, then only we are able to see marginal effects from the extension of retirement age. According to the World Bank, the fact is that Malaysia has been experiencing depressed wages from year 2000 and 2010. This would include entry-level grads as well because the entry-level salaries have been stagnant for more than a decade. Bigger firms, like multinationals, will generally be paying much higher. But the bulk of it, the SMEs, will still be paying about RM2,200 to RM2,500.

The debate about relevant skills, skills mismatch and labor market-appropriate degrees is as common in Asia as it is in the West, where the proportion of the population that are graduates is generally higher. But the picture is more complex, as the region includes highly developed countries like Japan and South Korea, service economies hoping to move up the technology value chain like Singapore, middle-income countries like Thailand and Malaysia, and agricultural economies such as Laos and Cambodia (Yojana Sharma, 2014).

The increasing difficulty for college graduates in the job market is caused by multiple factors, including distorted job expectations toward openings at the public sector and SOEs, structural labor mismatch across sectors and regions, and a larger mismatch between the national education system and labor demand. Becoming a public servant has become the most popular choice for college graduates, as these jobs are stable, well-paid, and powerful. The number of students taking the public servant entrance exam has grown by a factor of 10 over the past decade, outpacing the growth of college graduates which tripled during the same period (Yifan Hu, 2013).

2.3.3 Limited Job Opportunity

Entry level for fresh graduates in the job market is very competitive due to the limited job opportunity offered by MNCs. Due to instability of economy, the job opportunities are very inadequate, and this will cause unemployment among fresh graduates as well.

Figure 2.2: Unemployment rate from 1999 to 2020

Malaysia's unemployment is relatively low and stable at around three percent which means the population is experiencing close to full employment. The country reached its lowest level of unemployment in 2014, with a rate of 2.85 percent. Malaysia's vibrant economy is considered one of the strongest in South-east Asia. Together with years of political stability, it has been supporting such a low unemployment rate and good growth rates each year.

Industry has been a strong contributor to GDP and currently provides around 30 percent of employment opportunities. But even more - about 50 percent - of GDP is generated by the services sector. Given the country's strong and growing economy, average GDP per capita is growing at increasing rates as well.

However, despite these positive statistics, news reports state that the number of job seekers and those unemployed – the three percent - are generally young people, both graduates and non-graduates, who have had trouble entering the job market. Because of this, the Malaysian

government is encouraging companies to open employment opportunities specifically to young adults. The favorable economic climate should help. Yet, there have also been some complaints about underemployment and gender discrimination within the country (Aaron O'Neill, 2022).

The pandemic Covid-19 plays an important role in creating more problem for the lack of job opportunities. To save and maintain the finance liquidity, employers will minimize the size of the organization. This will indirectly be an obstacle to increase the job vacancies and will lead to unemployment among graduates. The COVID-19 pandemic is an opportunity for researchers to define and describe how precarious work creates physical, relational, behavioral, psychological, economic, and emotional vulnerabilities that worsen outcomes from crises like the COVID-19 pandemic (e.g., unemployment, psychological distress). For example, longitudinal studies can examine how precarious work creates vulnerabilities in different domains, which in turn predict outcomes of the COVID-19 pandemic, including unemployment and mental health.

This may include larger scale cohort studies that examine how the COVID-19 crisis has created a generation of precarity among people undergoing the school-to-work transition. Researchers can also study how governmental and nonprofit interventions reduce vulnerability and buffer the relations between precarious work and various outcomes. For example, direct cash assistance is becoming increasingly popular as an efficient way to help people in poverty (Evans & Popova, 2014). However, dominant social narratives (e.g., the myth of meritocracy, the American dream) blame people with poor quality work for their situations. Psychologists have a critical role in (a) documenting false social narratives, (b) studying interventions to provide accurate counter narratives (e.g., people who receive direct cash assistance do not spend money on alcohol or drugs; most people who need assistance are working; Evans & Popova, 2014), and (c) studying how to effectively change attitudes among the public to create support for effective interventions (J Vocat Behav, 2020).

Instability of country's economy also contributes on the limited job opportunities. Economic instability then occurs when the factors that influence an economy are out of balance. When an economy becomes unstable, there is inflation, which is a decrease in the value of money. This leads to higher prices, higher unemployment rates, and general angst among consumers and businesses that are trying to survive financially. In other words, people are not happy. They no longer invest, and they cannot afford to buy much, either. This causes the economy to slow down even more (Patricia Jankowski, 2021).

2.3.4 Unavailability of Employment According to Skill Sets

Skills mismatch is a discrepancy between the skills that are sought by employers and the skills that are possessed by individuals. Simply put, it is a mismatch between skills and jobs. This means that education and training are not providing the skills demanded in the labor market, or that the economy does not create jobs that correspond to the skills of individuals (International Labor Organization, 2020).

This skills mismatch is differentiated into four groups, listed as skills gap, skills shortage, skills obsolescence, and over/under skilling. Over/under skilling can be defined as an employee simultaneously overqualified and under skilled and often occurs when the field of education does not correspond to the field of occupation.

Skills obsolescence often comes together with technological advancement and digitalization but also happens when skills are not being regularly practiced and obsolete after some time. This would result of changing demands in the labor market. Next, different types of mismatch may exist. This is for instance; an employee can be simultaneously overqualified and under skilled whereby occurs the field of education does not correspond to the field of occupation.

Skill mismatch is a broad term that relates to various forms of imbalance in the labor market, including horizontal mismatches, vertical mismatches, and skills obsolescence. Horizontal Mismatch - Also known as a field of study mismatch, a horizontal mismatch is when someone works in an occupation that differs from what they studied in college. For example, you have a marketing degree but are working as a journalist. Vertical Mismatch - With this kind of mismatch, someone has a level of education or skill above or below the job requirement. Consider the underqualified individual who is working in management but has no leadership skills. Or the overqualified individual who holds a landscape architecture degree but is mowing lawns. Skill Obsolescence - While skill obsolescence comes in many forms, it essentially marks a depreciation of skills due to a physical or knowledge deficit. And the risk of skill obsolescence is higher for older workers.

Individuals who rely on physical strength to carry out their job responsibilities can experience obsolescence because of an injury or aging. Furthermore, studies show that training intensity decreases as workers age. So, when an employee fails to keep up with technology advancements, they can lose relevance in their job. Changes and developments in the marketplace can also cause skill obsolescence. For instance, if employment in an occupation starts to shrink, employees are sometimes forced to find new lines of work (Sarah Knight, 2021).

Mismatches of skills exist for several reason and some common causes are: when job postings poorly describe the requirement of a position, when employers failed to identify skill mismatches during hiring process, when technology and advancements and market developments overtake the skills and make it obsolete and when highly specialized field's experienced employee start to retire or quit.

It is no secret that the unemployment rate has remained high during the recession and the recovery because of a mismatch between the jobs needed for the 21st century and the 20th century skills currently available in the workforce. There are a variety of events occurring that are fostering change, but the change is occurring at too slow a pace. As our economy continues its' growth out of the consumption/housing-led boom from the last decade and moves into an economy based on higher levels of knowledge, three entities will have to work together to make the change occur at a more rapid pace (Michaels Seeaver, 2012).

2.3.5 Cost of Living

The cost of living is the amount of money needed to cover basic expenses such as housing, food, taxes, and healthcare in a certain place and time period. The cost of living is often used to compare how expensive it is to live in one city versus another. The cost of living is tied to wages. If expenses are higher in a city, such as New York, for example, salary levels must be higher so that people can afford to live in that city (Caroline Banton, 2021)

Malaysia's low cost of living and high quality of life means that many expats choose to relocate here. The Malaysian government has encouraged foreigners to retire in Malaysia, as a fixed income can go a long way here. The capital Kuala Lumpur also pulls in huge numbers of working expats looking for an adventure. In fact, you'll find expat communities of retirees, digital nomads and people employed locally, in all of the larger cities (Wise, 2017).

Comparing basic cost of living	1 bedroom flat in city centre (monthly rent)	Lunch for 2 (3 courses, mid range restaurant)	Transportation (monthly pass)
Kuala Lumpur, Malaysia	MYR 2,590	MYR 70	MYR 125
Penang, Malaysia	MYR 1,104	MYR 65	MYR 110
London, UK	MYR 9,274	MYR 309	MYR 720
New York City, USA	MYR 12,926	MYR 324	MYR 502
Sydney, Australia	MYR 8,492	MYR 261	MYR 527

Table 2.0: Comparison on cost of living between cities

In summary, single individuals need at least RM1,870 per month to achieve an acceptable standard of living. Meanwhile, married couples need RM4,420 to RM6,620 per month depending on the number of children they have. For older couples, they need a total of RM3,090 each month. The EPF and SWRC's initiative in issuing the budget can be considered a good move as it can serve as a guide to the cost-of-living costs in Malaysia and help Malaysians make smarter choices in spending. In addition, the budget is also very useful to policymakers in formulating policies such as setting minimum wage rates and other financial-related policies (John Graham, 2020).

Figure 2.3: Categorized basic income for cost of living

Bank Negara Malaysia (BNM) had previously defined the living wage as the level of income needed for a household to afford a minimum acceptable standard of living. In 2018, the central bank had estimated that the living wage in Kuala Lumpur for a single adult was RM2,700, while for a couple without a child it would be RM4,500, and for a couple with two children, it would be RM6,500. BNM estimated that more than a quarter of households in Kuala Lumpur were earning below the living wage (Ainaa Aiman, 2021)

Due to the cost of living, employees are unable to raise their basic pay it is based to the location. Some salaries are not enough for make living for engineers as they are stuck in a rural area. This plays a major role in deciding the actual pay for an engineer either fresh or experienced. In instance, the basic salary of an engineer in Kuala Lumpur and Kedah would have a big difference. This is because of the cost of living in Kuala Lumpur is much higher whereby engineers would earn more higher to make living there. In other hand, engineers in Kedah will not make a good basic salary as they are placed in a low cost of living environment. The location plays a fundamental role in deciding the wage payment for an engineer.

2.4 Proposed Conceptual Framework

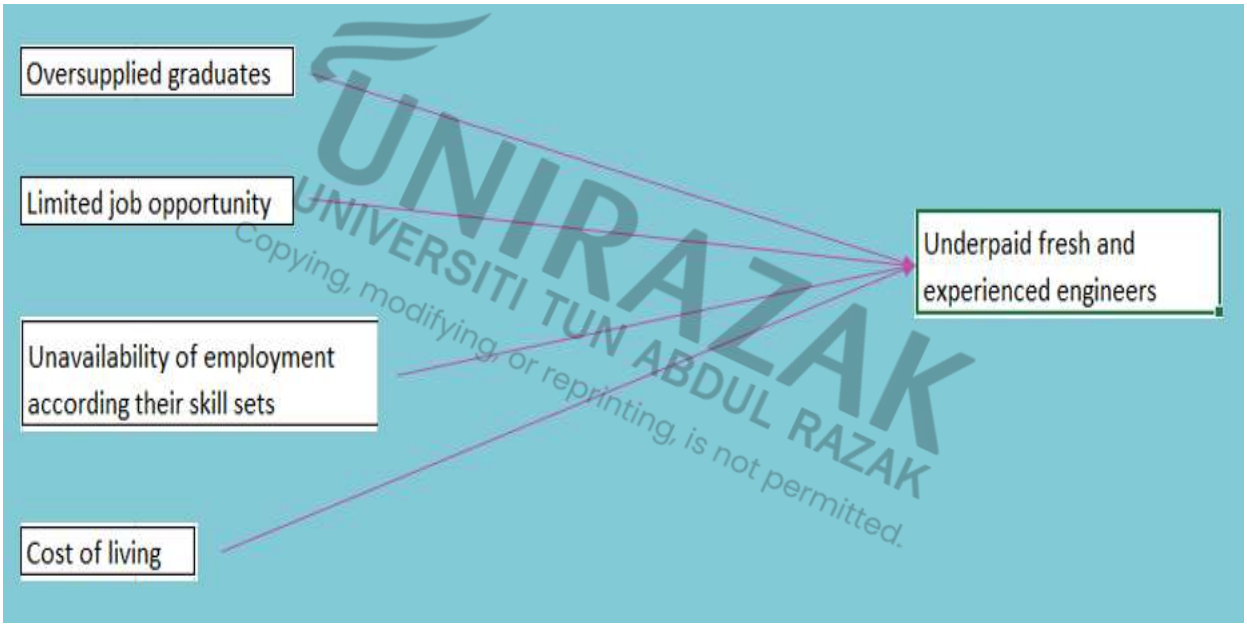


Figure 2.4: Theoretical Framework

2.5 Hypothesis Development

H1: There is a significant relationship between oversupplied graduates and underpaid fresh and experienced engineers.

H2: There is a significant relationship between limited job opportunity and underpaid fresh and experienced engineers.

H3: There is a significant relationship between unavailability of employment according to their skill sets and underpaid fresh and experienced engineers.

H4: There is a significant relationship between cost of living and underpaid fresh and experienced engineers.

2.6 Summary of Chapter 2

Oversupplied graduates, limited job opportunity, unavailability of employment according their skill sets, and cost of living are discussed and identified as perspectives on underpaid engineers in Malaysia. The methodology for the research subject will be addressed on the next chapter.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter delivers an in-depth explanation of the methodologies used to determine the significant factors on the underpaid engineers in Malaysia. This would cover on the research design, population, sampling strategy, data collecting method, operationalization & measurement, and the independent variables. Moreover, it also consists of data analysis and pointedly the conclusion. This study aims to identify the prominent factors on being underpaid engineers in Malaysia.

3.2 Research Design

Research design is a strategy to collect the data, analyses, and measure the components of the study. There are six elements in the research design: the purpose of the study, type of investigation, the extent of researcher interference, study setting, time horizon, and unit of analysis. This research is descriptive research that describes the characteristics of a population or phenomenon. The researchers' interference with the normal flow of work is minimal since this study is done in a natural context, such as the workplace. The researcher usually interferes minimally with the regular flow of work.

Since this research was performed within the engineering related industries, non-contrived setting amended, plus researcher has performed a correlation analysis of research whereby the objective of the research is to test a specific hypothesis and relationship between variables examined from the research. To explore on the relationship between the variables, a correlation study was conducted. The findings of the results of conclusive and will be use in decision making. This research data uses primary data by distributing a set of survey questionnaires given to a specific number of respondents.

3.3 Study Population and Sampling Procedure

The study population is the subset of the target population available for the study and the study sample is the sample chosen from the study population, according to Amitav Banerjee & Suprakash Chaudhury (2010). The characteristic of this research population is the engineers in the engineering industries in Malaysia. In addition, the total population for this research is 80,000 and only 100 respondents needed for the research.

This number of populations includes engineers from all engineering field throughout the country. Probability and non-probability are the sampling techniques. Since there is population frame involved, probability sampling might be used in this research. Probability sampling is a method of sampling in which each person in the population has a non-zero chance of being chosen. Under probability sampling, there have simple random sampling, stratified random, cluster sampling, and systematic.

In addition, simple random sampling chosen to conduct in this study. Any individual in the population has an equal possibility of being selected for this research. This means that simple random sampling is the better sampling method since it has the most insignificant bias. A random table generator is using to generate the sample. There is a concern on the sampling technique is used as it is the most time-consuming technique.

3.4 Data Collection Method

Researcher uses the questionnaire as the research instrument to obtain data from targeted respondents in a consistent manner in this study. As it takes few minutes to complete the questionnaire by respondents, the researcher will compile all the questionnaire from the respondents in a short period of time. The data collection will begin in the month of April 2022. Primary and secondary data used as resource to obtain the data.

3.4.1 Primary Data

Primary data is defined as first-hand data collection and come from the original sources from resource to help the researcher get more information needed and answer the research

question. The questionnaire survey form is a quantitative technique. The questionnaire will be chosen for this study because it is a convenient method to get information from the respondents. Moreover, the data was collected directly from the target sample.

3.4.2 Secondary Data

Secondary data is data recorded and gathered from previous research such as journals, websites, articles, and other databases. Secondary data can be separated over some time since it is made accessible to readers. Journal and articles are regularly used as reference materials for this study. It helps the researcher get more information and shows a strong indication that the source is precise and based on the facts. Besides that, the researcher also gets secondary sources from Google scholar and Scopus journals to extend access to more journals.

3.5 Operationalisation and Measurement

The study compiles data and information by using questionnaire. The research adopted a 5-point Likert scale method to determine the respondent's feedback on the questions. A Likert scale is a scale used to measure surveys taken directly from the respondent on a single factor. The questionnaire will be divided into Section A, Section B, Section C, Section D and Section E. For Section A, the question items are related to age, gender, employment status, length of service and gross income. Meanwhile in Section B, the questions items are related to underpay salary. In Section C, the question items are related to oversupplied graduates. Next for Section D, the question items are related to limited job opportunities. Then, for Section E, the question items are related to unavailability of employment according to their skill sets. Finally, for Section F, the question items are related to cost of living.

Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

Five-point Likert Scale

PART AND DESCRIPTION	SCALE
Part A Demographic Characteristic Age, Gender, Employment Status, Length of service & Gross income	Nominal
Part B Underpaid salary	Likert Scale 1-Strongly disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly agree
Part C Oversupplied graduates	Likert Scale 1-Strongly disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly agree
Part D Limited job opportunity	Likert Scale 1-Strongly disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly agree
Part E Unavailability of employment according to their skill sets	Likert Scale 1-Strongly disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly agree
Part F Cost of Living	Likert Scale 1-Strongly disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly agree

Table 3.0: Measurement of variables

3.6 Data Technique Analysis

The application of logic to understand a subject is referred to as analysis. The data analysis technique may include classifying a coherent pattern and summarizing the pertinent information revealed by the study. The data analysis process starts, after all the data from the respondents had been collected. The data will be coded before being analyzed, after the questionnaires have been collected. For data analysis, the Statistical Package for Social Science (SPPSS) 25 for Windows will be used. The researcher will use this program to run Reliability Analysis, Descriptive Analysis, Frequency Distribution Analysis, Correlation, and Multiple Regression.

3.6.1 Reliability Analysis

A reliability test is carried out to determine whether the data obtained from the survey is reliable for the analysis. The reliability of measures indicates the extent to which it is without error and ensures consistent measurement across time and the various items in the instrument. Cronbach's alpha test is used to determine if multiple-question surveys using the Likert scale are accurate. Some variables are very complex to evaluate. As a result, the Cronbach's alpha test presents whether the test scheme is evaluating the variable accurately.

Cronbach' Alpha	Internal Consistency
< 0.6	Poor
0.6 to < 0.7	Moderate
0.7 to < 0.8	Good
0.8 to < 0.9	Very Good
≥ 0.9	Excellent

Table 3.1: Interpretation of Cronbach's Alpha

3.6.2 Descriptive Statistical Analysis

Descriptive analysis is used to summarize, explain, and examine the main features of a collected data quantitatively, which could be the presentation of the population or a sample of it.

Level	Mean Score
Low	1.00 – 2.33
Moderate	2.34 – 3.67
High	3.68 – 5.00

Table 3.2: Mean Score Level

3.6.3 Pearson's Correlation Coefficient

Pearson's correlation is applicable for studying and verifying the connection between two quantitative and continuous variables. Perfect positive correlation is recorded by a result of 1.0 (plus 1), whereas perfect negative correlation is recorded by a result of -1.0 (minus 1). This indicates that the two variables are linked to each other.

R	Strength of Relationship
<0.20	Almost negligible
0.20 – 0.39	Low correlations, definite but small relationship
0.40 – 0.69	Moderate correlation with substantial relationship
0.70 – 0.89	High correlation; marked relationship
>0.90	Very high correlation; very dependable relationship

Table 3.3: Correlation Strength

3.6.4 Multiple Regression Analysis

A multiple regression expresses the link between the independent factors affecting or influencing the dependent variable. In addition, it indicates the most important effect of the independent variable on the independent variables.

3.7 Summary of Chapter 3

Dependent and independent variables measurement method are described in this chapter by researcher. The study design, population and sampling procedure are mentioned as well. The most common method of collecting data by preparing a set of questionnaires.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

In this chapter, the data and information obtained from the data collection will be analyzed and presented in a convertible way for easy understanding. Section 4.1 outlines the respondent characteristics from the distributed and collected questionnaire. Section 4.2 explained the numerous aspects of the questionnaire layout. Section 4.3, 4.4 and 4.5 explained the numerous tests in the research. Section 4.6 outlines the hypothesis testing result based on the numerous tests. Frequency tables are presented to show the weightage of each answer for each variable and questions. It followed by different groups and histogram and showing of the distribution result. The tabulation is also presented to show the relations between the variable and the collected data result.

4.1 Respondent Characteristic

Demographic characteristic is the first section of the questionnaire components. Demographic characteristic included gender, age, income status, length of services and employment status are as follows:

Table 4.0 Respondent Characteristics

Demographic Characteristic	Frequency (N)	Percentage (%)
Gender		
Male	87	82.1
Female	19	17.9
Age		
20 - 30	32	30.2
31 - 40	44	41.5
41 - 50	28	26.4
51 and above	2	1.9
Income Status		
1000 - 3000	24	22.6
3001 - 4500	25	23.6
4501 - 6000	26	24.5
6000 and above	31	29.2
Length of Services		
Below 5 years	26	24.5
5 – 10 years	28	26.4
11 – 15 years	25	23.6
15 and above	27	25.5
Employment Status		
Full-time	20	18.9
Permanent	86	81.1

Table 4.0 shows the respondent's profile that had been participated in the data collection process. A total of 106 respondents participated in this study, the division of male respondent accounted majority of the sample, which are **87 (82.1%)** while female respondent accounted **19 (17.9%)**. Result is accordance to the questionnaire that had been distributed to employees, staffs and workers who are connected and related to Industrial and Government sectors which mainly directed to those in Engineering field.

In terms of age group, there are **32 (30.2%)** respondents aged between 20 to 30, **44 (41.5%)** respondents aged between 31 to 40, **28 (26.4%)** respondents aged between 41 to 50 and **2 (1.9%)** respondents aged 51 and above respectively. It shows that that majority of the respondents are from 31 to 40 age group and the minority respondents are from 51 and above age group.

In referring to the income status of the respondents, the income status of RM1000 to RM3000 consists of **24 (22.6%)** respondents, **25 (23.6%)** respondents with income status of RM3001 to RM4500, **26 (24.5%)** respondents with income status between from RM4501 to RM6000 and followed by **31 (29.2%)** respondents with the income status of RM6000 and above.

This indicates that there is gap between the lower-income earners and the upper-income earners due to position and working experiences.

Due to the research methodology (Stratified Sampling) for this study, there are specific and equivalent information regarding on the respondent's employment status and working experiences. Referring to the employment status, there are two division of the category, which is full-time and permanent positions. For the length of services, four groups are divided in the demographic characteristics. **26 (24.5%)** respondents fall under five years and below working experience, **28 (26.4%)** respondents are from five to ten years working experience, **25 (23.6%)** respondents belong from eleven to fifteen years working experience and **27 (25.5%)** respondents fall under fifteen and above working experience.

4.2 Descriptive Studies

4.2.1 Underpaid Salary

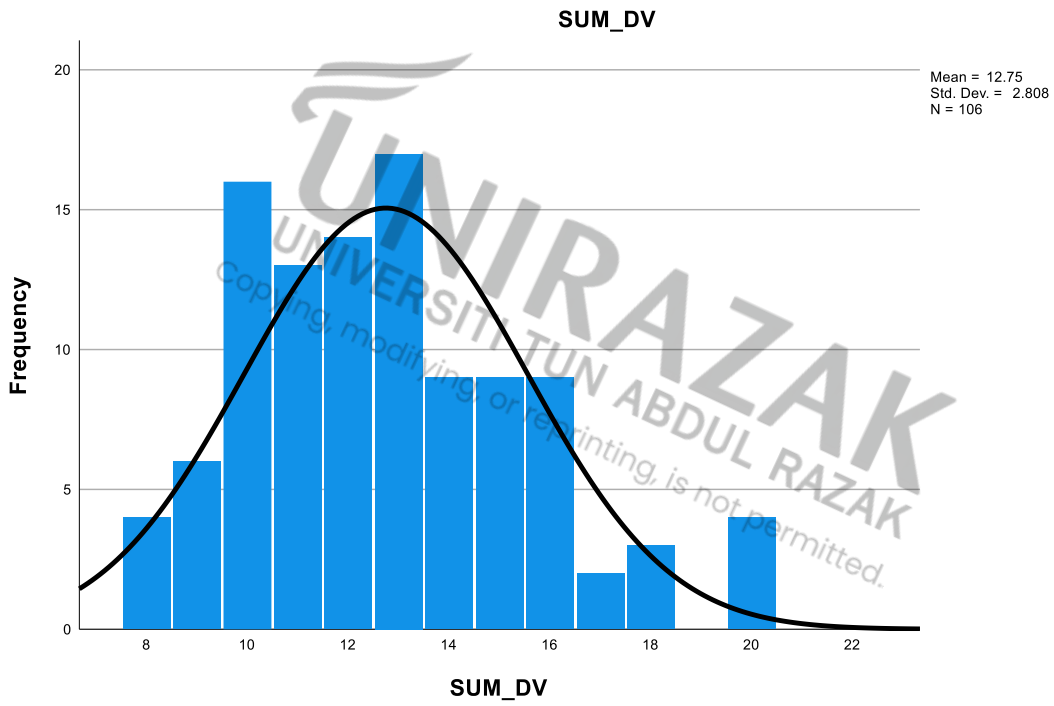
Table 4.1 Itemized Questions for Underpaid Salary, in Absolute Number and Row Percentage

No	Statements	1	2	3	4	5
B1	Engineers in Malaysia are paid based on experience.	2(1.9%)	13(12.3%)	33(31.1%)	**34(32.1%)**	24(22.6%)
B2	Engineers are paid well in Malaysia	17(16.0%)	33(31.1%)	**39(36.8%)**	11(10.4%)	6(5.7%)
B3	Average salaries for an engineer are in the lower to mid-range	1(0.9%)	14(13.2%)	30(28.3%)	**37(34.9%)**	24(22.6%)
B4	The salary and job load matches the engineers in Malaysia regardless of the experience	14(13.2%)	29(27.4%)	**30(28.3%)**	20(18.9%)	13(12.3%)

*Note: 1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree

Table 4.1 shows the respondent's result derived from the underpaid salary questionnaires statement. Based on statement one indication, 32.1% or 34 respondents agree that engineers in Malaysia are paid based on experience, 36.8% or 39 respondents whereas neutral that engineers are paid well in Malaysia (statement two), 34.9% or 37 respondents agree that average salaries for an engineer are in the lower to mid-range (statement three) and 28.3% or 30 respondents whereas neutral that the salary and job load matches the engineers in Malaysia regardless of the experience (statement four).

Figure 4.1 Distribution of Summation of Underpaid Salary



Mean = 12.75, Standard Deviation = 2.808, N = 106

Figure 4.1 shows the result of the distribution of dependent variable of the underpaid salary. The mean score of the underpaid salary variable is 12.75 while the median score is 12.5. The graph's skewness is 0.613 and the graph's kurtosis is 0.78.

4.2.2 Oversupplied Graduates

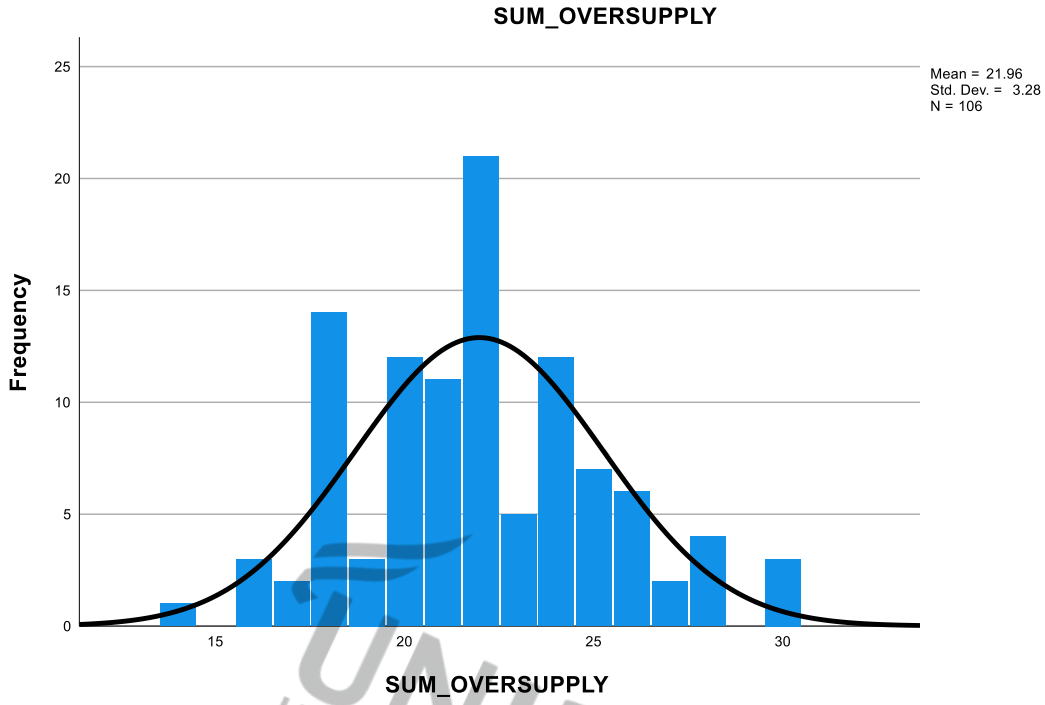
Table 4.2 Itemized Questions for Oversupplied Graduates, in Absolute Numbers and Row Percentage

No	Statements	1	2	3	4	5
C1	Low salaries and static pay scales over the past 20 years are the main reasons for the shortage of engineers and that is why engineering is chosen	5(4.7%)	11(10.4%)	34(32.1%)	**40(37.7%)**	16(15.1%)
C2	Engineering is a good course to be chosen as career path for students	5(4.7%)	10(9.4%)	25(23.6%)	**40(37.7%)**	26(24.5%)
C3	Engineers in demand in Malaysia	3(2.8%)	10(9.4%)	36(34.0%)	**37(34.9%)**	20(18.9%)
C4	Future job satisfaction is the reason for students to choose engineering	3(2.8%)	7(6.6%)	31(29.2%)	**49(46.2%)**	16(15.1%)
C5	Oversupplied engineering graduates leaves many jobless	5(4.7%)	8(7.5%)	29(27.4%)	**41(38.7%)**	23(21.7%)
C6	Oversupplied engineering graduate leaves many to choose other job opportunity	2(1.9%)	3(2.8%)	25(23.6%)	**46(43.4%)**	30(28.3%)

*Note: 1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree

Table 4.2 shows the respondent's result derived from the oversupplied graduates questionnaires statement. Based on statement one indication, 37.7% or 40 respondents agree that low salaries and static pay scales over the past 20 years are the main reasons for the shortage of engineers and that is why engineering is chosen (statement two), 37.7% or 40 respondents agree that engineering is a good course to be chosen as career path for students (statement three), 34.9% or 37 respondents agree that engineers in demand in Malaysia (statement four), 38.7% or 41 respondents agree that oversupplied engineering graduates leaves many jobless (statement five) and 43.4% or 46 respondents agree that oversupplied engineering graduate leaves many to choose other job opportunity (statement six).

Figure 4.2 Distribution of Summation of Oversupplied Graduates



Mean = 21.96, Standard Deviation = 3.28, N = 106

Figure 4.2 shows the result of the distribution of independent variable of the oversupplied graduates. The mean score of the underpaid salary variable is 21.96 while the median score is 22.00. The graph's skewness is 0.263 and the graph's kurtosis is -0.90.

4.2.3 Limited Job Opportunity

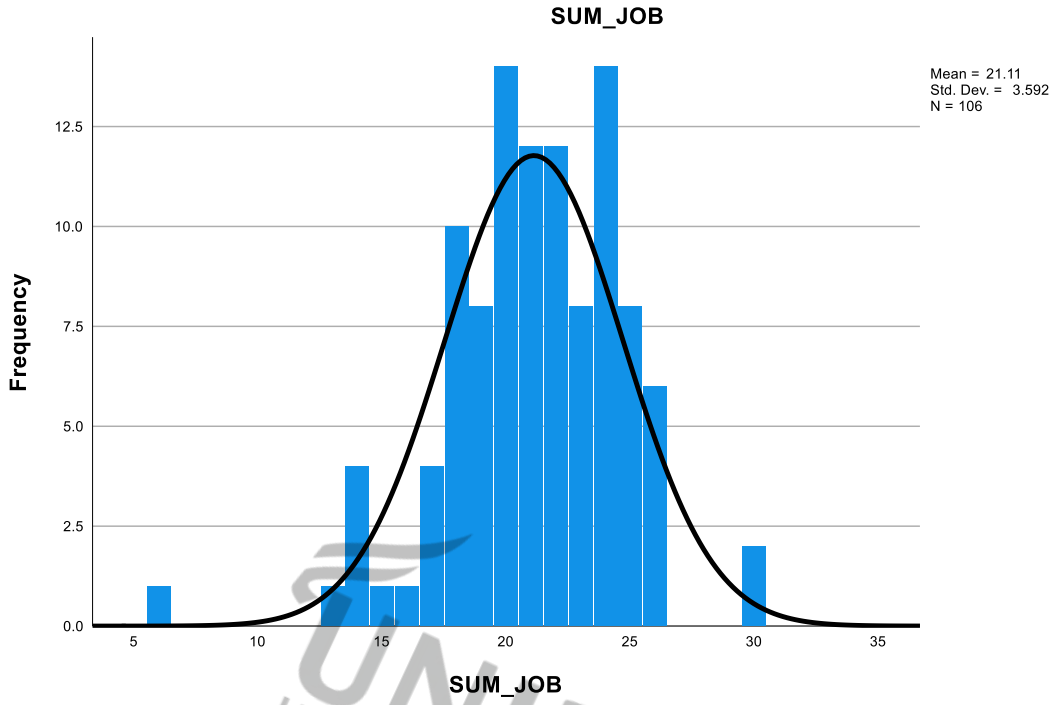
Table 4.3 Itemized Questions for Limited Job opportunity, in Absolute Numbers and Row Percentage

No	Statements	1	2	3	4	5
D1	Limited job opportunity in both private and government sector is due to many graduating in engineering scope annually	1(0.9%)	10(9.4%)	26(24.5%)	**51(48.1%)**	18(17.0%)
D2	Compared to Malaysian, many foreigners are being hired in engineering field	7(6.6%)	10(9.4%)	26(24.5%)	**43(40.6%)**	20(18.9%)
D3	Engineering is listed in top 50 most demanding jobs in Malaysia	2(1.9%)	6(5.7%)	30(28.3%)	**42(39.6%)**	26(24.5%)
D4	Limited job offer is leading the employers to underpay the employees	5(4.7%)	9(8.5%)	27(25.5%)	**46(43.4%)**	19(17.9%)
D5	Engineers get promoted easily in Malaysia	18(17.0%)	24(22.6%)	**42(39.6%)**	16(15.1%)	6(5.7%)
D6	Engineering competition is higher compared to other jobs	5(4.7%)	5(4.7%)	26(24.5%)	**46(43.4%)**	24(22.6%)

*Note: 1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree

Table 4.3 shows the respondent's result derived from the limited job opportunity questionnaires statement. Based on statement one indication, 48.1% or 51 respondents agree that limited job opportunity in both private and government sector is due to many graduating in engineering scope annually, 40.6% or 43 respondents agree that compared to Malaysian, many foreigners are being hired in engineering field (statement two), 39.6% or 42 respondents agree that engineering is listed in top 50 most demanding jobs in Malaysia (statement three), 43.4% or 46 respondents agree that limited job offer is leading the employers to underpay the employees (statement four), 39.6% or 42 respondents whereas neutral that engineers get promoted easily in Malaysia (statement five) and 43.4% or 46 respondents agree that engineering competition is higher compared to other jobs (statement six).

Figure 4.3 Distribution of Summation of Limited Job Opportunity



Mean = 21.11, Standard Deviation = 3.592, N = 106

Figure 4.3 shows the result of the distribution of independent variable of the limited job opportunity. The mean score of the underpaid salary variable is 21.11 while the median score is 21.00. The graph's skewness is -0.731 and the graph's kurtosis is 2.358.

4.2.4 Unavailability of Employment According Skillsets

Table 4.4 Itemized Questions for Unavailability of Employment According Skillsets, in Absolute Numbers and Row Percentage

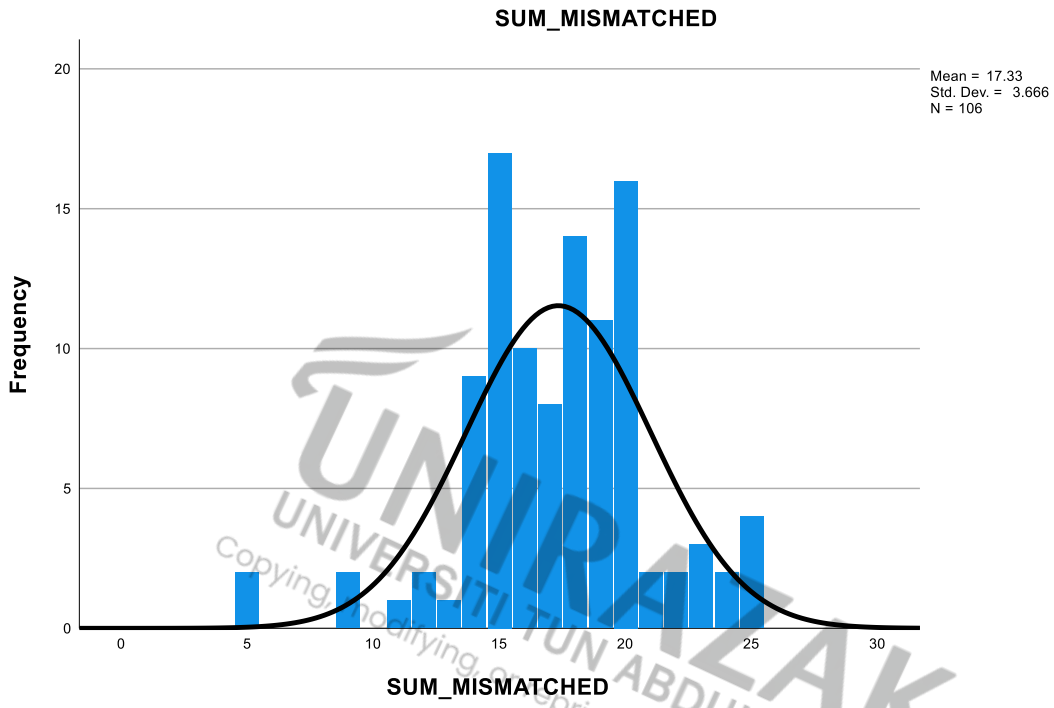
No	Statements	1	2	3	4	5
E1	Engineers are not getting job as what they studied in Malaysia	5(4.7%)	8(7.5%)	30(28.3%)	**42(39.6%)**	21(19.8%)
E2	Employers did not pay attention to the educational background before hiring	12(11.3%)	22(20.8%)	**35(33.0%)**	25(23.6%)	12(11.3%)
E3	Engineers are given job scope as per education background in most companies	6(5.7%)	19(17.9%)	33(31.1%)	**40(37.7%)**	8(7.5%)
E4	Graduates are not given enough industrial training to perform the real jobs based on Malaysian university or college scope	8(7.5%)	5(4.7%)	22(20.8%)	**48(45.3%)**	23(21.7%)
E5	Many engineering graduates chooses to work in other field such as procurement and customer services for the start due to not given opportunity more than 6 months	2(1.9%)	8(7.5%)	26(24.5%)	**48(45.3%)**	22(20.8%)

*Note: 1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree

Table 4.4 shows the respondent's result derived from the unavailability of employment according skillsets questionnaires statement. Based on statement one indication, 39.6% or 42 respondents agree that engineers are not getting job as what they studied in Malaysia, 33.0% or 35 respondents whereas neutral that employers did not pay attention to the educational background before hiring (statement two), 37.7% or 40 respondents agree that engineers are given job scope as per education background in most companies (statement three), 45.3% or 48 respondents agree that graduates are not given enough industrial training to perform the real jobs based on Malaysian university or college scope (statement four) and 45.3% or 48 respondents agree that many engineering graduates

chooses to work in other field such as procurement and customer services for the start due to not given opportunity more than 6 months (statement five).

Figure 4.4 Distribution of Summation of Unavailability of Employment According Skillsets



Mean = 17.33, Standard Deviation = 3.666, N = 106

Figure 4.4 shows the result of the distribution of independent variable of the availability of employment according to skillsets. The mean score of the variable is 17.33 while the median score is 18.00. The graph's skewness is -0.494 and the graph's kurtosis is 1.610.

4.2.5 Cost of Living

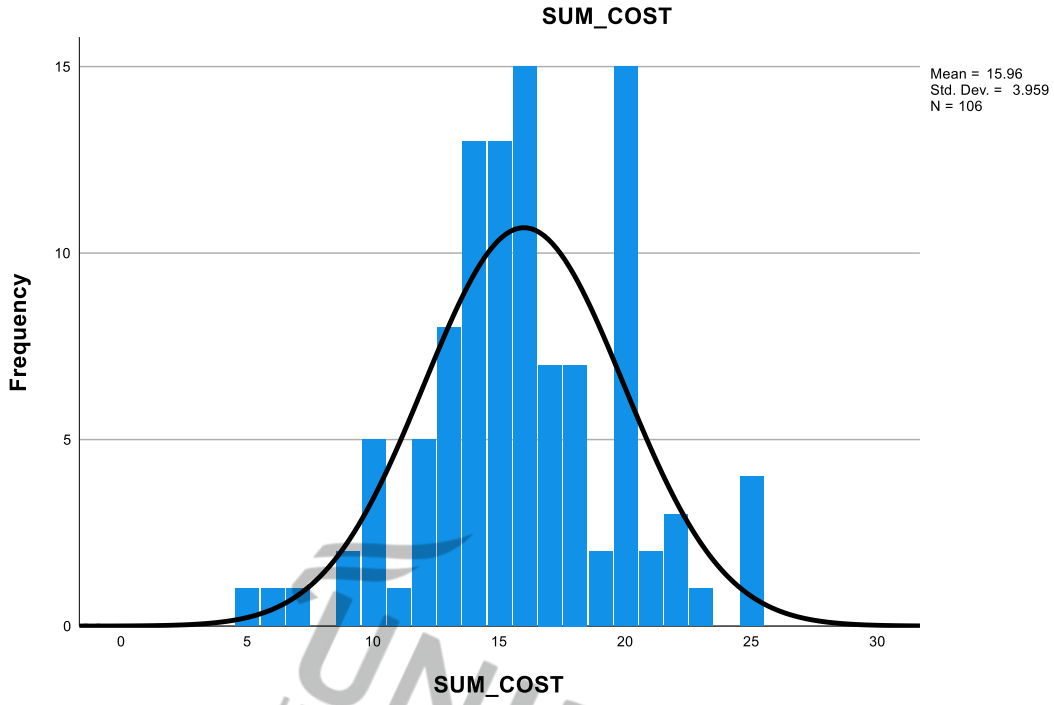
Table 4.5 Itemized Questions for Cost of Living, in Absolute Numbers and Row Percentage

No	Statements	1	2	3	4	5
F1	Engineers could not demand higher salaries in Malaysia based on the location.	3(2.8%)	9(8.5%)	22(20.8%)	**45(42.5%)**	27(25.5%)
F2	Engineers pay is enough to cover living cost in Malaysia	13(12.3%)	27(25.5%)	**33(31.1%)**	23(21.7%)	10(9.4%)
F3	Engineers are paid accordingly in private sectors	6(5.7%)	24(22.6%)	**36(34.0%)**	29(27.4%)	11(10.4%)
F4	Experienced engineers are paid more and enough to cover cost of living.	8(7.5%)	18(17.0%)	31(29.2%)	**37(34.9%)**	12(11.3%)
F5	Fresh graduate engineers are paid higher nowadays as they demand on cost of living especially in main cities in Malaysia	15(14.2%)	**30(28.3%)**	26(24.5%)	24(22.6%)	11(10.4%)

*Note: 1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree

Table 4.5 shows the respondent's result derived from the cost-of-living questionnaires statement. Based on statement one indication, 42.5% or 45 respondents agree that engineers could not demand higher salaries in Malaysia based on the location, 31.1% or 33 respondents whereas neutral that engineers pay is enough to cover living cost in Malaysia (statement two), 34.0% or 36 respondents whereas neutral that engineers are paid accordingly in private sectors (statement three), 34.9% or 37 respondents agree that experienced engineers are paid more and enough to cover cost of living (statement four) and 28.3% or 30 respondents disagree that fresh graduate engineers are paid higher nowadays as they demand on cost of living especially in main cities in Malaysia (statement five).

Figure 4.5 Distribution of Summation of Cost of Living



Mean = 15.96, Standard Deviation = 3.959, N = 106

Figure 4.5 shows the result of the distribution of independent variable of the cost of living. The mean score of the variable is 15.96 while the median score is 16.00. The graph's skewness is -0.029 and the graph's kurtosis is 0.324.

4.2.6 One-way ANOVA

Table 4.6 One Way ANOVA of Oversupplied Graduates, Limited Job Opportunity, Unavailability of Employment According to Skillsets, Cost of Living and Underpaid salary with selected variables

Variables	Mean				
	Oversupplied graduates	Limited job opportunity	Unavailability of employment according to skillsets	Cost of living	Underpaid salary
Gender					
Male	22.23	21.26	17.53	16.15	13.1
Female	20.26	20.42	16.42	15.11	11.11
Age					
20 - 30	22.09	21.19	17.75	15.19	13.03
31 - 40	21.82	21.25	17.14	16.61	12.75
41 - 50	21.93	20.71	17.14	15.79	12.46
51 and above	23.5	22.5	17.5	16.5	12
Income Status					
1000 - 3000	23.17	22.92	19.08	16.38	13.62
3001 - 4500	21.52	21.36	16.76	15.68	12.84
4501 - 6000	21.96	20.19	16.58	14.88	12.19
6001 and above	21.39	20.29	17.06	16.77	12.45
Employment Status					
Full-time	22.1	21.7	17.3	16	12.9
Permanent	21.93	20.98	17.34	15.95	12.71

Table 4.6 shows the result of One-Way ANOVA of respondent's characteristics with the selected variable of oversupplied graduates, limited job opportunity, unavailability of employment according to skillsets, cost of living and underpaid salary. The result found that respondents who are categorizing under oversupplied graduates achieve the following mean score.In terms of male (22.23) and female (20.26), age 20 - 30 (22.09), age 31 to 40 (21.82), age 41 to 50 (21.93), age 51 and above (23.5), income status from RM1000 to RM3000 (23.17), RM3001 to RM4500 (21.52),

RM4501 to RM6000 (21.96), income status above RM6001 (21.39), employment status full-time (22.1) and permanent position (21.93).

Meanwhile, the result found that respondents who are categorizing under limited job opportunity achieve the following mean score. In terms of male (21.26) and female (20.42), age 20 - 30 (21.19), age 31 to 40 (21.25), age 41 to 50 (20.71), age 51 and above (22.5), income status from RM1000 to RM3000 (22.92), RM3001 to RM4500 (21.36), RM4501 to RM6000 (20.19), income status above RM6001 (20.29), employment status full-time (21.7) and permanent position (20.98).

And the result found that respondents who are categorizing under unavailability of employment according to skillsets achieve the following mean score. In terms of male (17.53) and female (16.42), age 20 - 30 (17.75), age 31 to 40 (17.14), age 41 to 50 (17.14), age 51 and above (17.5), income status from RM1000 to RM3000 (19.08), RM3001 to RM4500 (16.76), RM4501 to RM6000 (16.58), income status above RM6001 (17.06), employment status full-time (17.3) and permanent position (17.34).

Then, the result found that respondents who are categorizing under cost of living achieve the following mean score. In terms of male (16.15) and female (15.11), age 20 - 30 (15.19), age 31 to 40 (16.61), age 41 to 50 (15.79), age 51 and above (16.5), income status from RM1000 to RM3000 (16.38), RM3001 to RM4500 (15.68), RM4501 to RM6000 (14.88), income status above RM6001 (16.77), employment status full-time (16) and permanent position (15.95).

Finally, the result found that respondents who are categorizing under underpaid salary achieve the following mean score. In terms of male (13.1) and female (11.11), age 20 - 30 (13.03), age 31 to 40 (12.75), age 41 to 50 (12.46), age 51 and above (12), income status from RM1000 to RM3000 (13.62), RM3001 to RM4500 (12.84), RM4501 to RM6000 (12.19), income status above RM6001 (12.45), employment status full-time (12.9) and permanent position (12.71).

4.3 Reliability Test

Table 4.7 Correlating Reliability of Underpaid Salary with Selected Variables

Variables	Cronbach's Alpha (r)
Oversupplied Graduates	0.736
Limited Job Opportunity	0.729
Unavailability of Employment according to Skillsets	0.749
Cost of Living	0.794
Underpaid Salary	0.754

p = 0.01

According to Sekaran and Roger written in the book "Research Methods for Business" stated, reliability is a measurement that established in testing both consistency and stability. Cronbach's Alpha is "a reliability coefficient that indicates how well the items in a set are positively correlated to one another." In general, the value of Cronbach's Alpha range at 0.06 considered as poor, Cronbach's Alpha value ranged at 0.07 considered acceptable, while Cronbach's Alpha value greater than 0.08 considered as good. The closer to the value of one Cronbach's Alpha, resulted in higher internal consistency reliability. (Sekaran and Bougie, 2013)

Table 4.7 shows the numerous variable results with respective Cronbach's Alpha (r) value. Based on the result above shows cost of living scored the highest value with r=0.794, followed by the unavailability of employment according to skillsets with r=0.749, oversupplied graduates with r=0.736 and limited job opportunity with r=0.729. Meanwhile, underpaid salary scored at r=0.754. Therefore, the reliability is satisfactory and acceptable for all the variables.

4.4 Pearson Product-Moment Correlation Coefficient Test

Table 4.8 Pearson Product-Moment Correlation Coefficients Test

No	Variable	1	2	3	4	5
1	Oversupplied graduates	1				
2	Limited job opportunity	0.579**	1			
3	Unavailability of employment according to skillsets	0.551**	0.574**	1		
4	Cost of living	0.314**	0.365**	0.278**	1	
5	Underpaid salary	0.449**	0.404**	0.383**	0.535**	1

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

Note: *** = $p < 0.001$, ** = $p < 0.01$, * = $p < 0.05$

Pearson Product-Moment Correlation Coefficient is a measure of the degree of linear relationship between two variables. The relationship can be range from -1.0 to +1.0. -1.0 indicates the perfect negative relationship, while +1.0 indicates the perfect positive relationship and 0 indicated no relationship between two variables. A variable correlate with itself will always have a relationship coefficient of +1.0.

Table 4.8 shows the relationship coefficient between independent variables and dependent variable itself, including oversupplied graduates, limited job opportunity, unavailability of employment according to skillsets and cost of living, followed with dependent variable of underpaid salary.

Among all the variables tested shows positive relationship. The strongest relationship of independent variable with dependent variable is between cost of living with underpaid salary (0.535), followed by oversupplied graduates with underpaid salary (0.449), limited job opportunity with underpaid salary (0.404) and lastly, unavailability of employment according to skillsets with underpaid salary (0.383).

This indicates that Malaysian engineering wage/salary system is strongly concern on the cost of living which determine underpaid salary scenario for fresh and experienced engineers. Oversupplied graduates and limited job opportunity factors come after cost of living whereas unavailability of employment according to skillsets derived from the underpaid salary comes in the last.

4.5 Multi Regression Test

Table 4.9 Summaries of Multiple Regression Analyses for Underpaid Salary with Selected Variables

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.410	1.609		0.877	0.383
Oversupplied graduates	0.191	0.087	0.223	2.195	0.030
Limited job opportunity	0.048	0.082	0.061	0.581	0.563
Unavailability of employment according to skillsets	0.084	0.077	0.110	1.089	0.279
Cost of living	0.293	0.060	0.412	4.879	0.000

R square = 0.363, df = 4, F = 15.988, p = 0.000

Table 4.9 shows the summaries table for multiple regression analyses for underpaid engineers in Malaysia. Four variables significantly contributed towards the dependent variable (underpaid salary) namely oversupplied graduates, limited job opportunity, unavailability of employment according to skillsets and cost of living. Of the four variables, all the variables show a positive significant relationship with the dependent variable (underpaid salary).

The F statistic for the overall goodness of fit of the model is 15.988, which is significant at P<0.000. After excluding the non-significant variables, the final regression model produced by "Enter" method for the Underpaid variable is:

Underpaid = 1.410 + Oversupply (0.191) + Cost of Living (0.293)

This model explains 36% of the variance in underpaid salary. This indicates that 36% of the dependent variable (underpaid salary) was explained by the linear combination of the two-predictor variables. Among the two-predictor variables, cost of living was found to contribute more significantly toward one's underpay perception.

It can be explained more as the cost of living in rural and city area are far different. This also influence and have impact on fresh or experienced engineers being underpaid. Engineers either fresh or experienced are unable to demand for high salary as their workplace is in a low living cost area or state. For instance, East Malaysia states like Terengganu and Kelantan own a very low living lifestyle compared to West Malaysia states like Penang and Kuala Lumpur which is much more advanced in terms of facilities and hospitality.

4.6 Hypothesis Testing

Table 4.10 Result of Hypothesis Testing

Hypothesis	Statement	Findings	Result
H_1	There is significant relationship between the summed score of oversupplied graduates and underpaid fresh and experienced engineers	β=0.030 $p<0.05$	Hypothesis Accepted
H_2	There is no significant relationship between the summed score of limited job opportunity and underpaid fresh and experienced engineers	β =0.563 $p> 0.05$	Hypothesis Rejected
H_3	There is no significant relationship between the summed score of unavailability of employment according to skillsets and underpaid fresh and experienced engineers	β =0.279 $p> 0.05$	Hypothesis Rejected
H_4	There is significant relationship between the summed score of cost of living and underpaid fresh and experienced engineers	β=0.000 $p< 0.05$	Hypothesis Accepted

Table 4.10 shows the summary result of the hypothesis testing for this study. In the hypothesis testing, the p value of the hypothesis is significant, where p value < 0.05. For the entire above stated hypothesis, H1, H2, H3 and H4 were rejected. This indicated that oversupplied graduates, limited job opportunity, unavailability of employment according to skillsets and cost of living are not significant with the underpaid fresh and experienced engineers in Malaysia.

4.7 Summary of Chapter 4

In this chapter, there will be six different sections explaining the different aspect of the study. It compromises the Respondent characteristics, Descriptive studies, Reliability test, Pearson Product-Moment Correlation Test, Multiple Regression Test and Hypothesis testing. In descriptive studies, five sub sections such as underpaid fresh and experienced engineers, oversupplied graduates, limited job opportunity, unavailability of employment according to skillsets, cost of living and One Way ANOVA will be discussed.

CHAPTER 5

RESEARCH FINDINGS

5.0 Introduction

In this chapter, a summary of all the results of all the research conducted will be presented. Data presentation in chapter four will be further explained to clarify the analysis of the research questions, multiple tests, and the hypothesis testing.

5.1 Answering Research Questions

In the four variables that are tested in this study to find out its impact on Underpaid fresh and experienced engineers, result shows that all the four variables tested with the numerous tests conducted have significant impact on underpaid fresh and experienced engineers, where all the variables have positive relationships. This has answered the fifth research question of *"What is the significant aspect that influence the underpaid issue?"*

Among all, the cost of living has the greatest impact (r=0.535), followed by oversupplied graduates (r=0.449), limited job opportunity (r=0.404) and unavailability of employment according to skillsets (r=0.383) respectively. This has answered the first to fourth research questions. For the first research question, *"Is there any relationship between oversupplied graduate and underpaid issue?*" (First Research Question) followed by *"Is there any relationship between limited job opportunity and underpaid issue?"* (Second Research Question), *"Is there any relationship between unavailability of employment according to skillsets and underpaid issue?"* (Third Research Question) and *"Is there any relationship between cost of living and underpaid issue?"* (Fourth Research Question).

5.2 Pearson Product-Moment Correlation Coefficient Findings

Figure 5.0 Pearson Product-Moment Correlation Coefficients Model

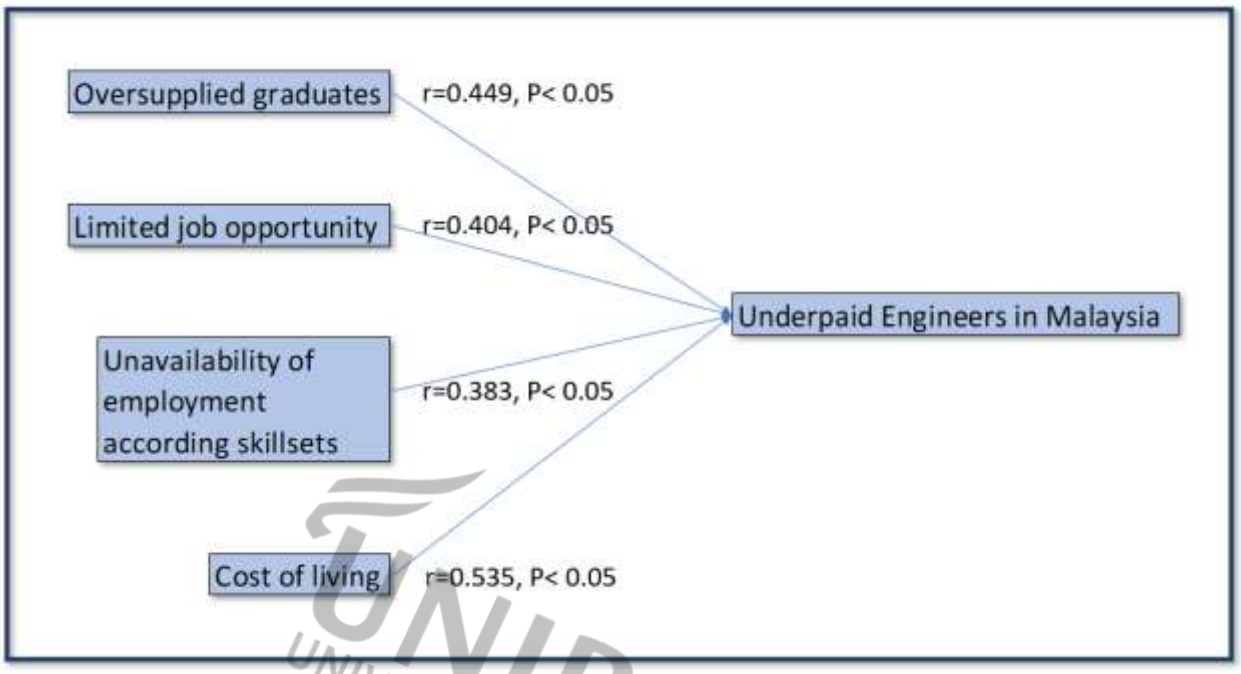


Figure 5.0 shows the result of the variable being tested through the Pearson Product-Moment Correlation Coefficient. The result shows a positive relationship of the variable that has strongest to least relationship with Underpaid Engineers in Malaysia. The strongest relationship is cost of living, followed oversupplied graduates, limited job opportunity and unavailability of employment according to skillsets.

5.3 Multi Regression Test Findings

Figure 5.1 Multiple Regression Test Model

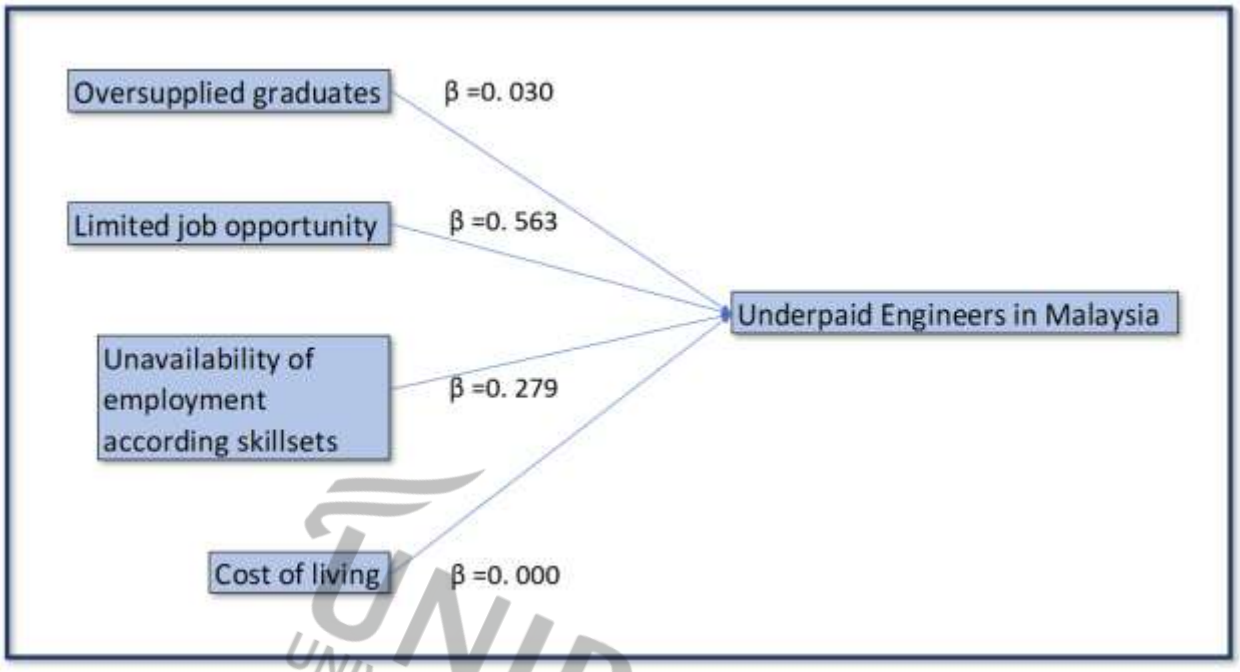


Figure 5.1 shows the result that being tested using the multiple regression test. The result shows there is a significant relationship between the independent variables except the limited job opportunity (β =0.563) and unavailability employment according to skillsets (β =0.279) variable is not significant towards the dependent variable (underpaid engineers) due to the exceeding of significant level. Among the four variables, there are only two variables being accepted with the significant level less than 0.05 ($p<0.05$), which is oversupplied graduates (β=0.030) and cost of living (β=0.000).

5.4 Summary of Chapter 5

In this chapter, there will be three different sections explaining the different aspect of the study. It compromises the answering research questions, findings of Pearson product-moment correlation coefficient and findings of multiple regression test.

CHAPTER 6

CONCLUSIONS, LIMITATIONS AND RECOMMENDATION

6.1 Conclusion

The aim of this research is to investigate effective strategies to ensure that fresh and experienced engineers are getting paid fairly and accordingly in Malaysia. Few studies had been conducted in Chapter Two: Literature Review had found the significant benefits of underpaid engineers in Malaysia. Furthermore, this research study also investigated how these determinants (oversupplied graduates, limited job opportunity, unavailability of employment according to skillsets and cost of living) contributed towards underpayment issue among engineers. In addition, despite of looking into the determinants of the variable, demographic is also part of the research contents. Due to the sampling methodology used, specific demographic profile such as employment status and working experience need to be included as part of the research design. One way ANOVA was conducted in Chapter Four: Data Presentation and Analysis found that, most of the mean score of demographics characteristic towards the independent variable (oversupplied graduates, limited job opportunity, unavailability of employment according to skillsets and cost of living) and dependent variable (underpaid salary) achieved the mean score of +/-3.

Furthermore, there are numerous tests had been conducted to find out the relationship of each determinant toward the dependent variable. As in, Person Product-Moment Correlation Coefficient test, found all the determinants had a significant relationship towards underpaid engineers in Malaysia. While Multiple Regression Test is also conducted, found that cost of living achieved the highest score and the strongest predictor of underpaid engineers in Malaysia, then followed by oversupplied graduates as the second predictor. While limited job opportunity and unavailability of employment according to skillsets as the variables that had significant value and relationship towards underpaid engineers in Malaysia. Hence, it can be found that underpaid salaries among engineers' examination and investigation of the numerous factors to ensure the end-result is benefitting the fresh and experienced engineers in Malaysia.

In the nutshell, this research study did not represent the whole engineer's underpayment issue in Malaysia in general. In fact, other sector or different engineering fields may have different perception towards payment of wage or salary, should be investigated. Therefore, it can be concluded that fresh or experienced engineers are still facing the underpayment issue, despite technology advancement and development growth of employment in Malaysia. Fair wages will always remain a contentious and disputable subject if there is no comprehensive solution.

6.2 Limitations

This research will be carried out using a stratified sampling method in targeting the research respondents accordingly. According to Sekaran and Roger written in "Research Methods for Business" found that, stratified sampling method is the most efficient sampling designs that target and differentiated the information that is needed regarding numerous strata within the population. Therefore, the research results collected might not be entirely balance in terms of the respondent's demographic. (Sekaran and Bougie, 2013)

Furthermore, without any funding involvement during the research and budget constrain, initially the research aims in target 100 respondents from the different industry; at the end the number of target respondents increased to 106. In fact, the questionnaire is on a basis of self-administered or physical distribution through the targeted respondents, thus the result might not be accurately representing the research topic.

At the same, the time constraints had made the research process to be shortened up. There are 135 questionnaires being distributed and are successfully received. Therefore, the analysis and results concluded in this research is further narrowed down to the specific respondents that involved with engineering fields. Moreover, the time constraints had limited the research to further coverage the entire Malaysia, targeting respondents in Kedah, Penang & Kuala Lumpur.

Finally, there is also some limitation for the respondents, while answering the research questionnaires. As in, some of the respondents do not have sufficient knowledge and understanding about the research topic and research field of the questionnaire. Therefore, some of the respondents might provide a wrong interpretation and assumptions in answering the research questionnaires. As mentioned, there are cases such as outliers that had been removed from the data. In fact, there

are several aspects that influence the quality of respondent's answer such as honesty, patience and knowledge, which is overwhelming: hence, it's limiting the accuracy of the questionnaire and the research findings.

6.3 Recommendation

6.3.1 Managerial Implication

Based on the primary and secondary information gathered from the research study towards the determinants that influence underpaid engineers in Malaysia, some managerial implication and recommendation of researcher are given, where it might be helpful to the current research involving underpayment issue that occurs in the country among fresh and experienced engineers. The Government, the Employer and the Employee play a part and crucial role in tackling the underpayment issue among engineers either fresh or experienced.

The Government must take the step forward to analyze and investigate the whole scenario and the impact of underpaid engineers in the country. They should be serious in its reforms for New Malaysia — by looking at the income levels through enhancement of policy effectiveness. BNM's proposal on comprehensive reforms to raise incomes by generating quality labor demand, reducing labor mismatches, reinforcing wage-productivity links, and creating a conducive labor environment is certainly worth looking into. Investment from foreign countries like Europe and United States could create more job opportunity for the incoming fresh graduates annually. The Government also need to standardize the cost of living of employees in urban or rural area.

Employer, on the other hand, need to align with the Government policies in providing fair salary and wages for the engineers no matter fresh or experienced ones. To begin with, wages should be based on productivity. Both are interrelated and should be observed by the employer to determine fair wages for the employees. However, it seems that most employers only look at the productivity as part of the profitability, and not to improve the life of the employees.

Meanwhile, employees themselves do play a part to avoid being underpaid. This is because for the fresh graduates, they need to compete among themselves to obtain an employment status due to high and oversupplied graduates annually with limited jobs offered in the market. The

employees should upgrade their skillsets by attending extra trainings or workshops which could improve their value at workplace, and this also will encourage the employers to offer a better pay.

6.3.2 Future Research

Despite the limitations discussed in the previous section, it had found out that time and cost constraints become one of the challenges for this research study. In fact, this research study is only conducted within the Kedah, Penang, and Kuala Lumpur. Further research could be done on the similar research within the mentioned areas, with the increasing number of respondents to obtain more valid and reliable data for the data analysis. In addition, this research topic is also recommended for the future researchers with similar interest to further extend to other states or places of Malaysia, possible to cover the whole Malaysia whereby time and cost factors are allowed.

Furthermore, this research topic also recommended for the future researchers to extend the research scope out of the current sample (underpaid engineers) to other sectors that is currently facing the same underpaying salary issue for engineers. This could benefit the future researcher with further understanding and analyzing of the data obtained. And further research can also be done by using different sampling methodology with different demographic elements as part of the research contents to obtain optimum results, which further enhance the current research result.

Finally, there are also various determinants that future researchers could investigate when conducting the research, such as the critical success and failure of determining the factors and solution on underpaid engineers in the country, which could enhance the researcher, write up. Future researchers can also consider other determinants, which is not examined in this study and further persuading the topic higher level of qualifications.

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APPENDICES

APPENDIX A: QUESTIONNAIRES

GRADUATE SCHOOL OF BUSINESS

MASTER OF BUSINESS ADMINISTRATION

TITLE: UNDERPAID ENGINEERS IN MALAYSIA: A STUDY ON THE COMPARISON BETWEEN FRESH GRADUATE ENGINEERS AND EXPERIENCED ENGINEERS

Dear respondent,

I am conducting this survey to examine on the underpaid engineers in Malaysia which I categorized between fresh graduate engineers and experienced engineers. Your involvement is vital and important for the success of the study. All the responses and feedback will be kept confidential and shall not be traceable to any other individual respondent. There will be no correct or incorrect answers for the following questions. You will be questioned related to underpayment issue. Kindly do spare some time from your busy schedule to participate and complete the questionnaire as your contribution will add value to this study. Sincere co-operation is needed to complete this questionnaire. The data and feedback collected from this survey will be applied for academic and research purpose only. Thank you for your participation.

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SECTION A: Demographics Characteristics

Please tick your answer.

1) Gender Male ( ) Female ( )

2) Age

20 – 30	( )	41-50	( )
31 – 40	( )	51- Above	( )

3) Employment Status

Permanent	( )	Part- Time	( )
Full- Time	( )		

4) Length of Services

Below 5 year	( )	11 - 15 years	( )
5 – 10 years	( )	Above 15 years	( )

5) Gross salary Income

RM 1,000 – RM 3,000	( )	RM 4,5001 – RM 6,000	( )
RM 3,001 - RM 4,500	( )	More than RM 6,000	( )

Please tick the appropriate answer. You may choose only One (1) answer for each question.

Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

Section B: Underpaid salary

Underpaid salary						
		1	2	3	4	5
B1	Engineers in Malaysia is paid based on experience.					
B2	Engineers are paid well in Malaysia.					
B3	Average salaries for an Engineer are in the lower to mid-range					
B4	The Salary and Job Load matches the engineers in Malaysia regardless of the experience.					

Section C: Oversupplied graduates

Oversupplied graduates						
		1	2	3	4	5
C1	Low salaries and static pay scales over the past 20 years are the main reasons for the shortage of engineers and that is why engineering is chosen.					
C2	Engineering is a good course to be chosen as a career path for students.					
C3	Engineers in demand in Malaysia.					
C4	Future Job satisfaction is why students chooses Engineering.					
C5	Oversupplied Engineering graduates leaves many jobless					

C6	Oversupplied Engineering graduates leaves many to choose other job opportunity					

Section D: Limited job opportunity

Limited job opportunity						
		1	2	3	4	5
D1	Limited Job Opportunity in both private and government sector is due to many graduating in engineering scope each year					
D2	Compare to Malaysian, Many Foreigners is being hired in Engineering field					
D3	Engineering is listed in top 50 most demanding jobs in Malaysia					
D4	Limited Job offer is leading the employers to underpay the employees					
D5	Engineers gets promoted easily in Malaysia					
D6	Engineering competition is higher compare to other Jobs					

Section E: Unavailability of employment according to skill set

Unavailability of employment according to skill set						
		1	2	3	4	5
E1	Engineers are not getting job as what they studied in Malaysia					
E2	Employers did not pay attention to the educational background before hiring					
E3	Engineers are given job scope as per education background in most companies					

E4	Graduates are not given enough industrial training to perform the real jobs based on Malaysian University/Colleges scope.					
E5	Many Engineering graduates chooses to work in other field such as procurement and Customer services for the start due to not given opportunity more than 6 months					

Section F: Cost of Living

Cost of Living						
		1	2	3	4	5
E1	Engineers could not demand for higher salary in Malaysia based on the location					
E2	Engineers pay is enough to cover living cost in Malaysia					
E3	Engineers are paid accordingly in Private sectors					
E4	Experienced Engineers are paid more and enough to cover cost of Living					
E5	Fresh Graduates Engineers is paid higher nowadays as they demand about cost of Living especially if it involves in the main City in Malaysia					

APPROVAL PAGE

TITLE OF PROJECT PAPER: **UNDERPAID ENGINEERS IN MALAYSIA: A STUDY ON THE COMPARISON BETWEEN FRESH GRADUATE ENGINEERS AND EXPERIENCED ENGINEERS**

NAME OF AUTHOR : MAHESWARAN GOVINDASAMY

The undersigned certify that the above candidate has fulfilled the conditions of the project paper prepared in partial fulfilment for the degree of Master of Business Administration.

SUPERVISOR

Signature : _____

Name :

Date :

ENDORSED BY

_____

Dean

Graduate School of Business