



اَبُو سَيِّدِي تَيْكُو لُو كِي مَبَارَا  
UNIVERSITI  
TEKNOLOGI  
MARA

Fakulti  
Pengurusan  
dan Perniagaan

# INDUSTRIAL TRAINING REPORT

## MGT666



**ZMA BINA RESOURCES SDN BHD**  
*(29 AUGUST 2022 – 10 FEBRUARY 2023)*

**TITTLE: DETERMINANTS OF HOUSING PRICES  
IN MALAYSIA**

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## **ABSTRACT**

Internships provide a real-world experience for those who are seeking to explore or gain the relevant knowledge and skills required to enter a particular career field. Internships are relatively short term in nature with the primary focus on getting some experience on the job training and apply the skills we learned in the class and to the real world. The objective of internship is to give students the experience and know the real working environment situation which can help the students maintain and develop skills for their future. By joining internship, the students will expose to learn problem solving technique encountered during work, and to able to contribute valuable ideas to the organization. It also shapes positive attitude towards the field of employment options in the market. There are lot of skills, knowledge and experience need to gain before facing the real working environment during internship at the organization.

## TABLE OF CONTENT

| TITLE                                       | PAGES |
|---|-------|
| Abstract                                    | 2     |
| Table of Contents                           | 3     |
| Acknowledgement                             | 4     |
| 1.0 Student's Profile                       | 5-6   |
| 2.0 Company's Profile                       | 7-10  |
| 3.0 Training's Reflection                   | 10-12 |
| 4.0 Research Analysis (Panel Data Analysis) | 13-33 |
| 5.0 Discussion and Recommendation           | 34-36 |
| 6.0 Conclusion                              | 37    |
| References                                  | 38-40 |
| Appendices                                  | 41-42 |
| Ouriginal Report                            | 43    |

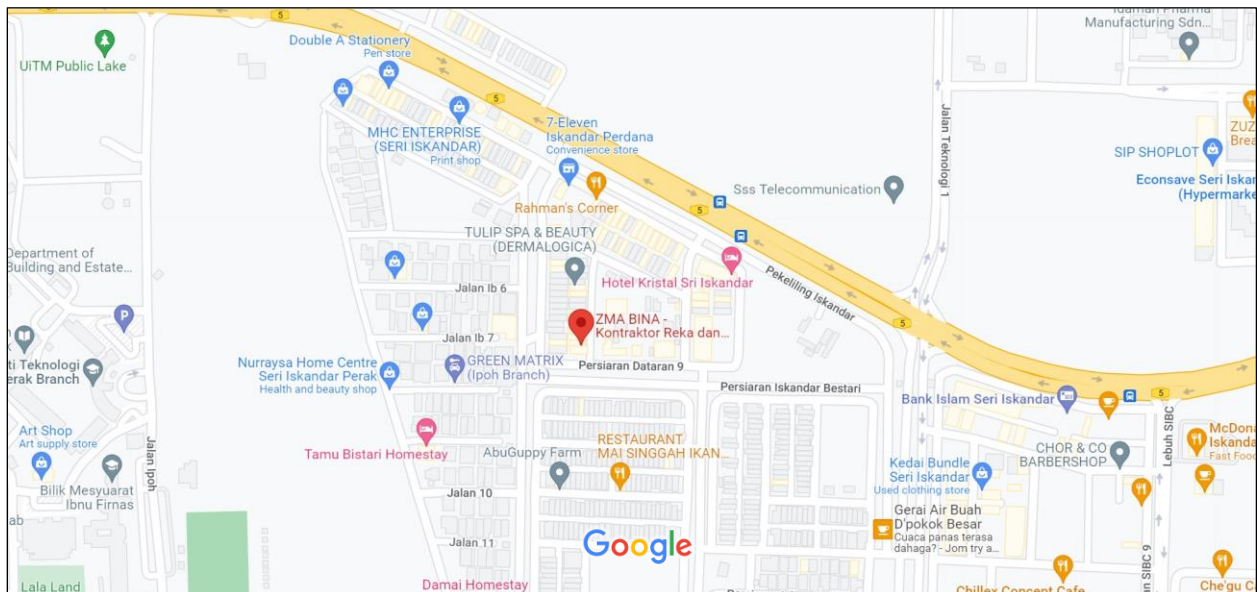
## 2.0 COMPANY'S PROFILE

### 2.1 Name

ZMA Bina Resources Sdn Bhd

### 2.2 Location

No. 50A, Tingkat 1, Persiaran Dataran 4, 32610 Seri Iskandar, Perak.



### 2.3 Background of the Company

ZMA Bina Resources Sdn Bhd was established in 2017 (1229585-K) which was registered under Sendirian Berhad. ZMA Bina is a construction company based in Seri Iskandar, Perak. The services that the company offer is design and build services with a unique architectural concept and style for each bungalow. The company are committed to providing the best quality of service and designing a home that suits it customer lifestyle. The managing director of this company is Ts Zulhamzi Bin Mokhtar, Khairun Anuar Bin Abd Rashid and Dr Nor Nazida Binti Awang. For Ts Zulhamzi, he is a graduate bachelor's degree (Honours) HBP, Architecture from Universiti Sains Malaysia (USM). He has worked on many projects such as concept design, real estate development and produce a unique design. In addition, he is also skilled in handling project management and operations. For Mr. Anuar, he has an extensive experience in the world of bungalow construction

and public projects. Moreover, he is very thorough in construction materials and control the quality of work on site. Then for Dr. Nazida, she has a PHD in Materials Engineering (Ceramics) from Universiti Sains Malaysia (USM). The experience that she has in organizational development and human resource operations is broad therefore she can create a complete and systematic system for the effectiveness of the company's implementation and on-site operations.

## **2.4 Vision, Mission, Objective and goal**

### **2.4.1 Vision**

Become the No. 1 bungalow designer and contractor in Perak.

### **2.4.2 Mission**

- To achieve zero defect and zero comment.
- To ensure customer satisfaction throughout the design and process of the construction.
- To ensure customer satisfaction with the services offered.
- To get signed projects worth RM 2 million every month.

### **2.4.3 Objective and Goal**

The create a home that will fulfill their dreams and expectations along with the company's tagline "*Dipercayai, Diyakini, Sukses*".

## 2.5 Organizational Structure

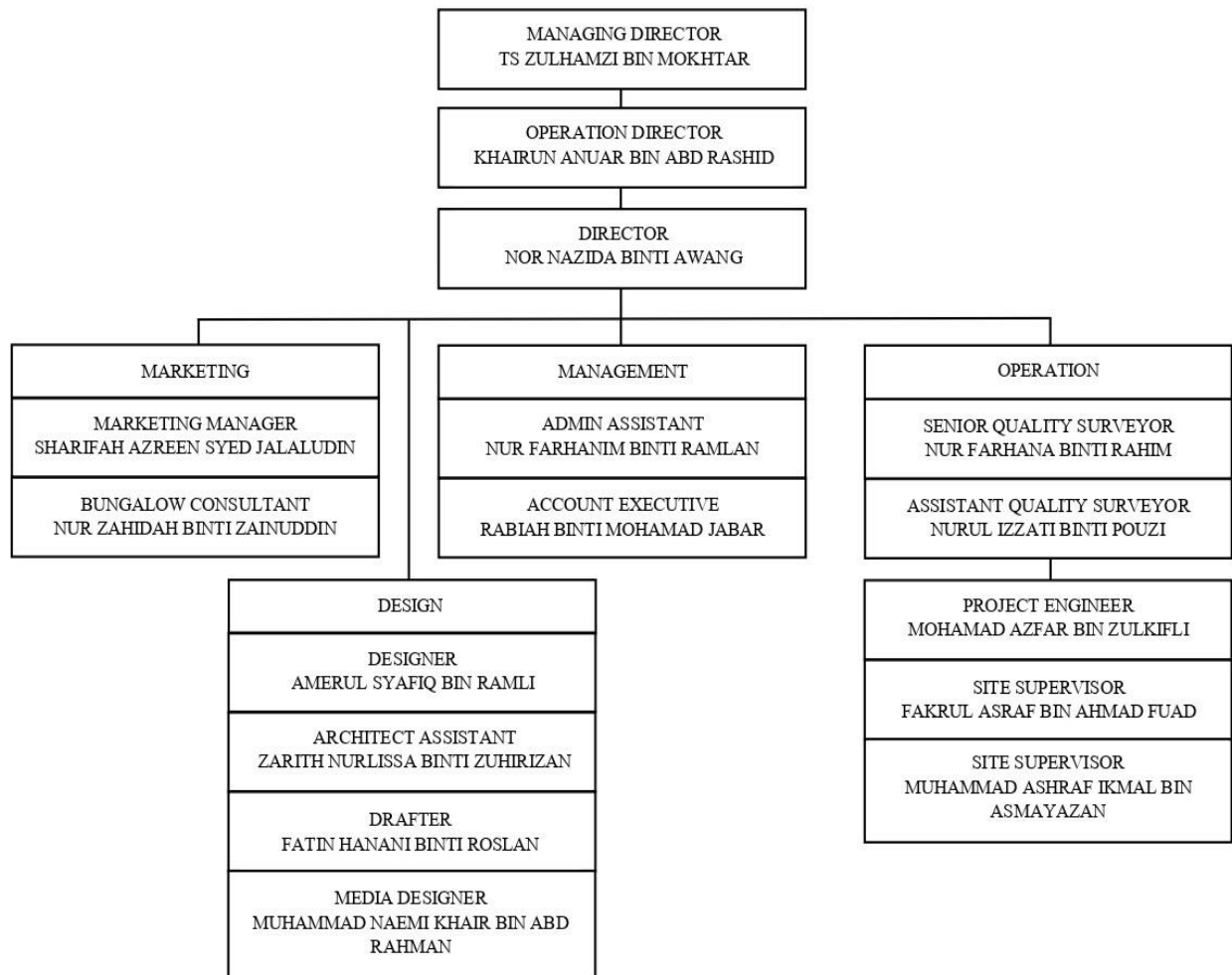


Figure 2.5: Organizational Structure of ZMA Bina Resources Sdn Bhd

## 2.6 Product or Services

### 2.6.1 Preconstruction Planning

A successful building project requires effective pre-construction services and planning. The ZMA Bina approach to pre-construction aims to be a dependable source of current, complete, and accurate information for both owner and the architect. This helps the project team to make educated and well-founded judgments about the cost and quality while taking into account not just the original investment but also the life cycle cost consequences.

### **2.6.2 Architectural Modelling**

As Architects push the frontiers of design and building materials and techniques, ZMA Bina sees increasingly complicated, organic structures develop around them, which pushes model makers to create realistic representations of these incredibly fluid shapes. This firm has great expertise in making conventional architectural models and by combining these traditional talents with their in-house additive printing technology, where they are able to manufacture ideas and site models to client stringent criteria regardless of the form's complexity.

### **2.6.3 Construction Management**

ZMA Bina construction management company offers its clients specialized advising services to optimize management and administrative procedures, as well as contract administration. Moreover, management professionals provide their clients with cost-effective solutions to challenges that impede the success of building projects from both the job site and the home office.

## **3.0 TRAINING'S REFLECTIONS**

### **3.1 Duration of Internship**

- Date of internship: 29 August 2022 – 10 February 2023
- Working days and time: Monday – Friday (8:30am–5:30pm), Saturday (8:30am–1:00pm)

### **3.2 Details of Internship**

#### **3.2.1 Administration Department**

- Filing the bank statement, document of application form for leave, half day leave and out of office hours and manage the application form of bank, commission, land, and house claim.

- Assigned to lawyer's office to get the cheque for client's interim, provide document of "*Pelarasan Perbelanjaan Harga Kontrak*", give document of "*Jadual Bayaran Berperingkat*" to be stamp chop as received.
- Handle the company's utility expenditures, which include electricity, water bills and road tax of motor vehicles of the company.
- Create a letter to submit company's document to audit firm.
- Handle a company's event "*Lets Hit Target Together*" at Ampang Bowling, Seri Iskandar.

### **3.2.2 Account Department**

- Stamps chop "paid" on the customer's invoice and calculate the total receipt and total mileage for project managers.
- Prepare financial statement analysis and sales analysis reports.
- Manage balance sheet statement and general ledger report in SQL Financing Accounting.
- Manage and key in director's claim, purchase invoice, supplier invoice, cash book entry and supplier payment entry in payment voucher for every month using SQL Financing Accounting.

## **3.3 Gains**

### **3.3.1 Benefit**

For this internship I gain allowance as much as RM300 each month. My company also provides a medical claim and a meal every Friday morning.

### **3.3.2 Knowledge**

This internship broadens my awareness of the working world by exposing me to a real-world work setting, allowing me to build a broader understanding via everyday encounters with coworkers, resulting in perspective exchange with opposing ideas. In this Account



department, I learnt how to handle and deal with work, as well as how to use new software, SQL Financing Accounting, to enter invoices from suppliers and clients.

### **3.3.3 Technical skills**

During the internship, I am able to enhance my communication skills. In the workplace, I will interact with the Quality Surveyor and Marketing departments about the client's invoices and data. This internship has also improved my technical skills. This is because of the responsibilities associated with computer-based such as Microsoft Excel, Microsoft Word, Microsoft Office, and SQL Financing Accounting software. Furthermore, through multitasking at work, I am able to improve my efficiency and abilities in completing my task.

### **3.3.4 Experience**

I gained fresh experience, notably in working as part of an office team to debate and solve problems. I can see the flow of the meeting discussion, which includes the opinion session, the work presentation session and team collaboration. This will assist me in improving my leadership, teamwork, and readiness to listen to the viewpoints of others and among other things.

## **4.0 RESEARCH ANALYSIS**

### **4.1 Introduction**

"My house, my paradise" is a typical Malaysian fable to demonstrate the significance of home to oneself. Humans require a home as a necessity. Aside from food and water, housing or house has been an important component of fundamental requirements since prehistoric times. Nowadays, a house may be used to gauge a person's wealth and quality of life. Therefore, many homeowners regard their home as a long-term investment. The standard factors for purchasing a new house include comfort and proximity to basic services such as schools, retail establishments, and so on. Another important factor that affects people's decision is the price of the house itself where the issue of rising housing prices has been a debatable topic for quite some time.

#### **4.1.1 Background of Study**

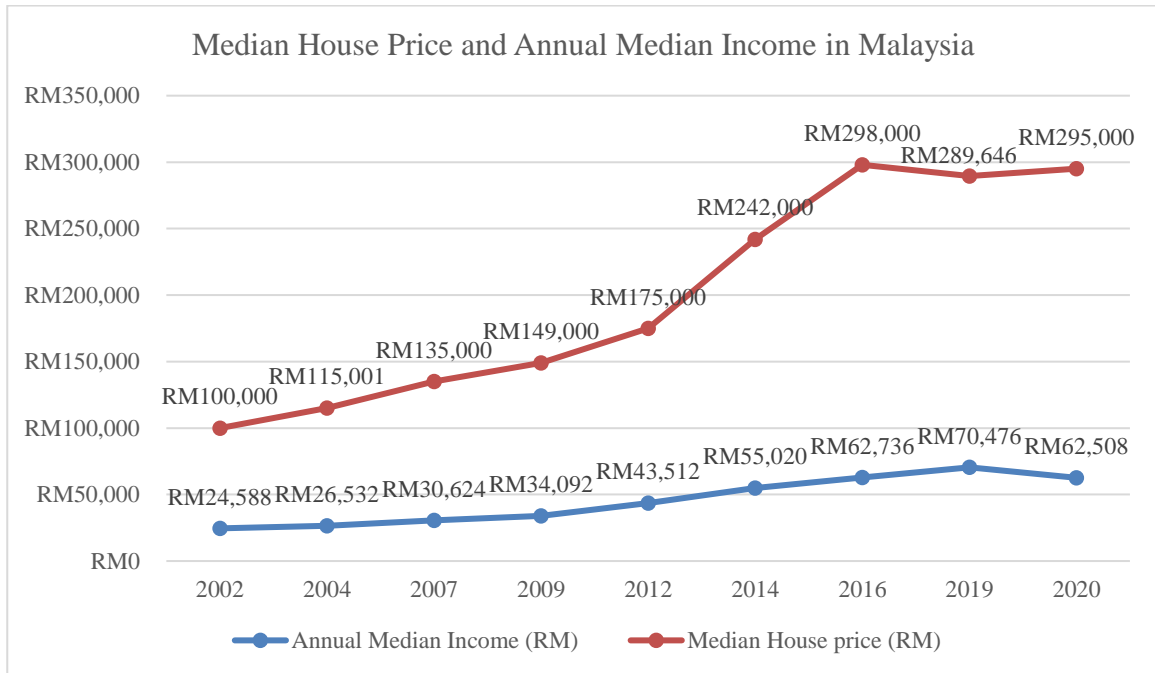
##### **4.1.1.1 Housing Prices in Malaysia**

Housing affordability has emerged as a main concern in major cities particularly in those in developing countries. While the definition of affordability varies by country, it is characterized as the ability to purchase a residential property or house that fits basic living necessities in terms of cost, quality, and location (Neve, 2017). The Central Bank of Malaysia considers a residence to be affordable if its cost does not exceed 30 percent of an individual's gross income. Everywhere in the world, the problem of rising housing price has hindered people to own a house. Few factors have been identified to this problem, mainly due to increase in material costs. For example, Hung (2022) stated during the economic recovery in 2021 after pandemic Covid-19 driven Malaysian Movement Control Order (MCO), crude oil prices have grown by more than 60 percent, which is important because oil is crucial to the building sector. Meanwhile, steel prices have reached an all-time high worldwide, including in Malaysia. Meanwhile, prices in China and Europe have more than doubled from the pandemic's lows. Thirdly, as the world economy recovers from the Covid-19 outbreak, copper prices have risen by more than a quarter since the beginning of the year.

The issue of affordability of housing in Malaysia also highlighted by Ling et. al., (2017). They found that there is a mismatch between supply and demand. Since 2012, new house supply has continually fallen short of satisfying household demand. Between 2014 and 2016, there was an average supply of 114,000 new housing units, which was much lower than the number of new households, which was 154,000. The serious supply-demand imbalance has led in an increase in the number of unsold residential properties in Malaysia, which reported 146,497 unsold units in the second quarter of 2017 compared to 130,690 unsold units in the first quartile of 2017. Almost 82 percent of these unsold homes were priced over RM250,000 in the second quarter of 2017. Secondly, there is a proclivity for new house releases in the unaffordable range. Between 2016 and the first quarter of 2017, only 35 percent of Malaysian families could afford homes worth more than RM250,000. However, just 24 percent of new home launches were in the affordable category, indicating a lack of affordable house and a tendency of constructing high-end residential units.

Furthermore, Neve (2017) mentioned that location is an important factor in deciding house pricing. Housing costs tend to be much higher in accordance with the socioeconomic class of potential purchasers if the location contains facilities such as a university, a theme park, or retail stores. Prices may be lower if the property is located outside of town, but the area's underdevelopment may not be as tempting to purchasers. Data obtained from the Department of Statistics-Malaysia (DOSM) confirms that the price of housing is far higher in urban areas, and especially in Malaysia's capital, Kuala Lumpur where the average of house price in 2020 is RM783,958.

#### 4.1.1.2 The Disparity Between Income and House Prices



Source: National Property Information Centre (NAPIC) and Department of Statistics Malaysia (DOSM).

Figure 1: Median House Prices and Median Income in Malaysia

Figure 1 shows a comparison trend between median house price and income. The median house price recorded a steady increase from 2002 until 2012 and a slight sharp increase to 2016 by but started to show a small decline in 2019 and rise again in 2020. Meanwhile, the median income shows an uptrend at a volatile rate from 2002 till 2012 but at a diminishing rate till 2016 and picked up again at 2019 and decline in 2020. Median house price rises rapidly by 70.3 percent from RM175,000 in 2012 to RM298,000 in 2016 while median income increases steadily by 44.2 percent from RM43,512 to RM62,736 in 2016. To compare, the total median house price has decreased by 2.8 percent from RM298,000 in 2016 to RM289,646 in 2019, but the annual median household income has increased by 12 percent from RM62,736 in 2016 to RM70,476 in 2019. Despite a lower median house price in 2019, house in general remain severely expensive even with increase in median income by RM7,740 to RM70,476. Furthermore, annual median income dropped to RM62,508 in 2020, a decline of 11.3 percent from previous year. This is supported by 2020 report from DOSM where the decrease in monthly household gross income was caused by

households or individuals who lost or reduced their income because of the Covid-19 outbreak. This decrease in income was driven not just by job loss, but also by reduced working hours and a rise in skill-related underemployment. In addition, spending made on transportation, food, insurance, and entertainment, it is difficult to find any savings at the end of the month. Nevertheless, between 2016 and 2019, home ownership increased modestly, with 76.9 percent of families owning their houses in 2019, up from 76.3 percent in 2016. House ownership in Malaysia can be regarded high at this percentage, especially when compared to other advanced nations such as Canada (66.3 percent), the United States (65.3 percent), the United Kingdom (65.2 percent), and South Korea (56.8 percent), especially as Malaysia does not have a universal home ownership policy (Department of Statistics Malaysia, 2019).

According to Hung (2022), house prices began to diverge from household wages in 2010. It was notably severe from 2010 to 2015, when home prices grew at a compound annual growth rate (CAGR) of 10.24 percent compared to a CAGR of 1.94 percent for GDP per capita. Apparently, houses in the market within this period were overpriced due mainly to a lax lending policy and a positive expectation of further capital appreciation. This led to a wave of investments and transactions in the property market propagated by a speculative herd instinct, which then caused further deviation of house prices from their fundamentals.

Moreover, Malaysians often consider property to be expensive, owing to the disproportionate increase of housing prices in comparison to income. In 2012, increase in median income by 25.45 percent is lower than a hike in median house price by 38.29 percent. The same trend could be seen in year 2014, where increase in median income was only 14.02 percent against 23.14 percent in house price. Although house prices continued to grow from 2015 onwards, there was a gradual slowdown of pace from 7.4 percent in 2015 to 1.2 percent in 2020 (Hung, 2022). While the implementation of various cooling measures to curb speculation since 2014 is said to be the main contributor to the slowdown, a global economic downturn that began in early 2018 due to the US-China trade tension, followed by the pandemic-induced recession of early 2020 have badly affected the local economy, resulting in slowing demand for property and a moderate house prices growth between 2018 to 2020 (Cheng, 2020).

#### **4.1.2 Problem Statement**

Having a shelter is a basic human right. Back in the days where owning a house is a simple matter, however today, owning a house is a privilege. While there is abundance of housing projects have been or being developed, finding a house to own, let alone to find a right one, is a challenge. The construction and occupation of decent housing have an impact on economic development through its impact on employment, savings, investment, and labour productivity. However, despite all these positive impacts, the housing issue, particularly in developing countries, has been the subject of ongoing debate in housing decision-making circles since the 1970s (Kabine, 2022). Even so, the significant number of unsold homes is still high due to a mismatch between the cost of new releases and the affordability of households. According to Lin et al. (2017), just 21 percent of new launches from 2016 to 1Q 2017 were for properties priced below RM250,000. This is insufficient to fit the income affordability profile of around 35 percent of Malaysian households. Next, the mismatch was compounded by the slower growth of median household wages at 9.6 percent in comparison to median housing prices at 15.6 percent. As a result, this made Malaysian house prices to become extremely unaffordable.

House prices in Malaysia have continued to rise substantially in recent years. This is backed with reports from Khazanah Research Institute and Bank Negara Malaysia that stated Malaysian property prices have become unaffordable. Furthermore, the government has devised various programs and ways to increase Malaysians' capacity to buy a home, including housing programmes to aid poor and middle-income households in acquiring homes. In the Twelfth Malaysia Plan (12th MP) The government aims to provide quality, affordable housing for Malaysians, especially the B40 and M40, with another 500,000 units of affordable homes to be built during the duration of the 12MP, as well as improve financing facilities, such as the Fund for Affordable Housing (Twelfth Malaysia Plan, 2021 – 2025 Report).

Nevertheless, the problem of rising house price and availability of affordable house remain unsolved despite many attempts of overcoming it. Therefore, this research is conducted to study the determinants of housing prices in Malaysia by using annual data of 30 years from 1991 until 2021. Specifically, it aims to get meaningful result by using gross domestic product, interest rate and unemployment as independent variables.

### **4.1.3 Research Objective**

#### **4.1.3.1 General Objective**

The general objective of this research is to study the determinants of housing price in Malaysia.

#### **4.1.3.2 Specific Objective**

1. To examine the relationship of gross domestic product, interest rate and unemployment with housing price in Malaysia.
2. To identify the existence of long-run relationship between the independent variables; gross domestic product, interest rate, and unemployment with housing prices in Malaysia.

### **4.1.4 Significant of Study**

1. To the government.

This study will aid in providing statistical results and information on certain macroeconomics variables impact on housing prices in Malaysia.

2. To the body of literature.

This study reviews existing research as well as new material to assist researchers in better understanding the determinants of housing prices.

3. To the public.

To provide information on factors determining housing prices in Malaysia and as far as housing prices are concerned to the public.

#### **4.1.5 Scope of Study**

The purpose of this research is to study the determinants of housing prices in Malaysia by using annual time series data for 30 years from 1991 to 2021. This study uses housing prices as dependent variable and gross domestic product, interest rate and unemployment as independent variable.

#### **4.1.6 Limitations of Study**

1. The outcome of this study is subjected to the particular technique used, the outcome will change if another technique is used and based on chosen independent variables.
2. The findings of this study solely represent Malaysian reality and cannot be generalized to the entire global housing market.



## **4.2 Literature Review**

### **4.2.1 Introduction**

Malaysian housing prices or property values have varied dramatically during the previous decade. This type of hesitation has a clear impact on persons looking to invest in or buy house in Malaysia. The current study intends to discuss on determinants of housing prices in Malaysia. The study had identified dependent variable, namely housing prices, and independent variables; gross domestic product (GDP), interest rate and unemployment rate for purposes of discussion.

*Dependent Variable*

### **4.2.2 Housing Prices**

Housing is an important sector in a developing country's economic performance since it meets the residential demands of its citizens. Housing is one of the most basic needs since it gives physical protection from the elements. Every sensible human being wants to possess a home, but this has never been simple for them due to limited or poor income, particularly in developing countries. In recent years, housing prices have been a major concern in Malaysia. Furthermore, the market demand for housing has increased, but Malaysian supply is still insufficient to meet market demand. Therefore, Levin (1997) stated that Malaysian house prices will rise due to a supply-demand imbalance. In addition, Su Ling et al. (2018) noted three major factors that led to Malaysian housing unaffordability: a mismatch between housing supply and demand; pricey new launches; and a rate of household income growth that could not keep up with the rise in home prices.

*Independent Variables*

### **4.2.3 Gross Domestic Product**

Gross domestic product (GDP) is a standard measure of the value added created by a country's production of goods and services in a specific period. As a result, it also evaluates the money generated by that output, as well as the total amount spent on final goods and services (Pillaiyan, 2015). The GDP plays a part in the elements that impact home prices, and it is known that if house

prices rise, the wealth effect is likely to induce an increase in consumer spending, which leads to higher aggregate demand and an increase in GDP and a higher rate of economic growth. This theory is aligned with the study of Kok et al. (2018) who argued that the effect of real GDP on house prices and transaction volumes persist comparably longer and stronger. In research on 24 nations, it was found that GDP growth is extremely significant, demonstrating that changes in income are positively related to changes in house price (Savva, 2018). This is supported by finding based in Malaysia and Singapore by Lee (2022) from 1979 to 2019 where there is a positive and significant relationship between GDP and housing prices. In addition, next researcher who conducted a study on factors determining housing prices in Pakistan from 2013 to 2020 discovered that the effect of the GDP on housing prices is positive and significant (Khan et. al., 2022). However, a study by Kabine (2022) on determinants of housing prices in Malaysia from 1991 to 2016 pointed an insignificant relationship in the short run. Moreover, Ma (2021) on determinants of house prices in China during period of 2000 to 2018 also stated that GDP has no significant influences on house prices. On the contrary, GDP showed a negative significant result using the Auto Regressive Distribution Lag (ARDL) regression in the long run on a study of internal and external determinants of housing price booms in Hong Kong from 1999 to 2018 (Hesary et al., 2019).

#### **4.2.4 Interest Rate**

The interest rate is often referred to as the lending rate charged by the bank to receive the loan. Generally, interest rate is referred to the lending rate charged by the bank to obtain the loan which borrowers can borrow money from lenders to make credit purchases. Increase in interest rate holds several crucial impacts on the economy. It enables savings more meaningful for the household and leads to discouraging investment and consumer demand, as high-interest rate leads to an increased cost of financing (Kabine, 2022). According to a study conducted in Malaysia, the interest rates is positively significant affecting housing prices (Abdul Latif et al., 2020). This study also stated that interest rates can have a delayed influence on housing prices. This is in line with Mokhtar et al. (2021) finding on macroeconomic determinants of Malaysian housing prices from 1989 till 2018. Interest rate is positively significant macroeconomic variable that explain the volatility of housing prices in Malaysia. A similar result also found by Lim et al. (2016) based in Malaysia for the period

of 2000 to 2016. Meanwhile, a different result was observed by Lee (2022) from 1979 to 2019 based on Malaysia and Singapore where there is an insignificant relationship. In addition, Kabine (2022) research in Malaysia from 1991 to 2016 found that both short and long run, interest rate has positive and significant effect to housing prices.

#### **4.2.5 Unemployment**

The unemployment indicates the amount of labour utilization as well as the incapacity of the proportion of employees actively looking for work to find one (Institute of Labour Market Information and Analysis, 2017). A growth in unemployment level may discourage individuals to purchase houses. A lower in unemployment may decrease affordability constraints due to the increased purchasing power associated with higher incomes. A high unemployment leads to a negative significant impact on housing prices (Ciarlone, 2015). This is found true in research by Reianu (2018) based on Canada from 2001 to 2011, revealed that the unemployment is negatively significant with the average home price. In addition, a similar result on determinants of housing prices in Hungary from 2001 to 2011 was also discovered (Horvath, 2019). Moreover, De Wit et al. (2013) concurred rising unemployment rate due to rising non-graduation rates has a negative impact on housing market price conditions because of negative impact on earnings. On the other hand, a previous study by Lee (2022) on determinants of housing prices in Malaysia and Singapore conducted from 1979 to 2019, the result shows no relationship between the unemployment and housing prices. In addition, according to Asal (2018) who conducted long-run drivers and short-term dynamics of Swedish real house prices from 1986 to 2016 revealed that unemployment are insignificant in determining housing prices in both short and long-run analyses.

## **4.3 Methodology & Data Analysis**

### **4.3.1 Introduction**

The overarching goal of this study is to discuss the determination of research design and data sourcing. The entire chapter explores and deliberates on the impact of applying the correct method to enhance the relationship between dependent and independent variables. Housing prices will be the dependent variables which will be evaluated against three independent variables: Gross Domestic Product (GDP), interest rate, and unemployment. To achieve the study's purpose, this chapter includes the research design, data collection process, hypothesis, methodology and data analysis methods to display the research outcomes.

### **4.3.2 Data Collection**

#### **4.3.2.1 Data Collection Process**

This study investigates the relationship between independent variables which is Gross Domestic Product (GDP), interest rate, and unemployment with relation to the housing price as dependent variable. The sample for this study uses 30 years of annual data, covering from year 1991 to 2021 for both dependent and independent variables. This study uses secondary data where the data is collected through sources such as journals, articles, historical data, past record, and even conference papers. Data of each variable was derived from the World Bank, Department of Statistics Malaysia (DOSM), and National Property Information Centre (NAPIC).

#### **4.3.2.2 Research Variable**

This part will explain about all the variables used to analyse and identify the relationship between the dependent and independent variables. The variables are listed below as shown in Table 3.1.2.

Table 3.1.2: Variables, Proxy, Unit and Sources of Data

| Variables                    | Proxy                  | Unit             | Sources           |
|------------------------------|------------------------|------------------|-------------------|
| Housing Price                | Housing Price Index    | Index            | NAPIC             |
| Gross Domestic Product (GDP) | Gross Domestic Product | Ringgit Malaysia | World Bank & DOSM |
| Interest Rate                | Lending Interest Rate  | Percent          | World Bank        |
| Unemployment                 | Unemployment Rate      | Percent          | World Bank & DOSM |

#### 4.3.2.3 Theoretical Framework

The theoretical framework is written as shown in figure 1.

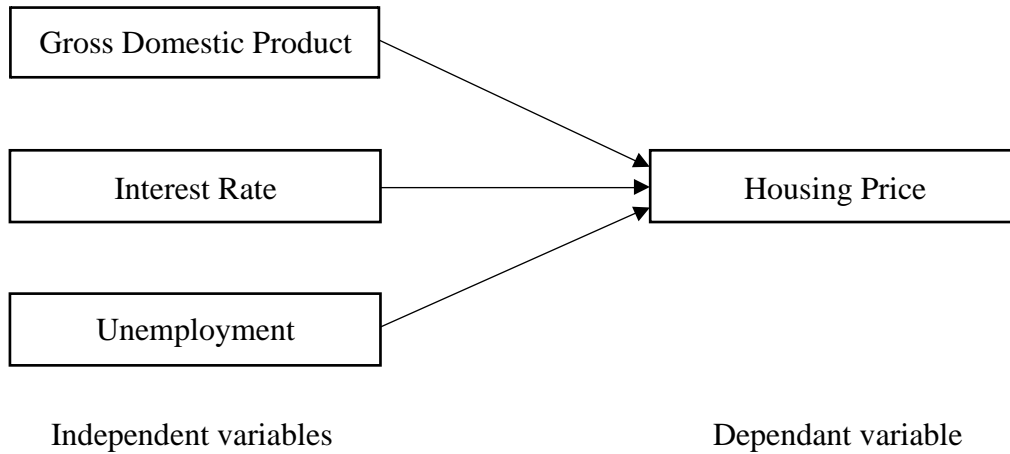


Figure 1: Theoretical Framework

#### 4.3.3 Hypothesis

H<sub>1</sub> : There is no significant relationship between Gross Domestic Product (GDP) and housing price.

H<sub>2</sub> : There is no significant relationship between interest rate and housing price.

H<sub>3</sub> : There is no significant relationship between unemployment and housing price.

#### 4.3.4 Methodology

The data of both independent and dependent variables are collected from World Bank, Department of Statistics Malaysia, National Property Information Centre (NAPIC). Aside from that, this study includes data processing to provide a picture of how this study will turn meaningless data into meaningful information by utilizing E-views 12 sampling techniques. Furthermore, this study will use Dynamic Ordinary Least Squares (DOLS) to identify the relationship between endogenous and exogenous variable, as well as the relevance of each individual exogenous variable on endogenous variables and the overall model's reliability. The tests conducted in this study such as correlation test, unit root test, cointegration test, long-run estimates, and granger causality test will be described in depth.

##### 4.3.4.1 General model:

For this study, the general model is as follows:

$$Y_t = \alpha_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \dots + \beta_n X_n t + \varepsilon_t$$

##### 4.3.4.2 Model of the study:

To further get a meaningful analysis for this study, the model of study is written as below:

$$\ln HPI_t = \alpha + \beta_1 \ln GDP_t + \beta_2 \ln INT_t + \beta_3 \ln UEM_t + \varepsilon_t$$

Where;

- |                                      |   |                        |
|--------------------------------------|---|------------------------|
| HPI                                  | = | Housing Price Index    |
| GDP                                  | = | Gross Domestic Product |
| INT                                  | = | Lending Interest Rate  |
| UEM                                  | = | Unemployment Rate      |
| $\beta_1, \beta_2, \beta_3, \beta_4$ | = | Coefficients           |
| $\varepsilon$                        | = | Error                  |
| $t$                                  | = | Time                   |

## **4.3.5 Data Analysis**

### **4.3.5.1 Correlation Test**

The correlation test is a bivariate study that determines the strength of connection and the direction of the link between two variables. The correlation coefficient has a value between +1 and -1 depending on the strength of the association. A value of  $\pm 1$  indicates a perfect degree of association between the two variables. As the correlation coefficient value approach towards 0.8 and above, the relationship between the two variables will be strong correlation. Correlation coefficients whose magnitude are between 0.5 and 0.7 indicate variables which can be considered as moderately correlation. When the correlation coefficient value approach towards 0, the relationship between the two variables will be weaker correlation. The sign of the coefficient denotes the direction of the relationship which is a + sign indicates a positive relationship and a – sign indicates a negative relationship.

### **4.3.5.2 Unit Root Test**

When addressing stationary and non-stationary time series, an alternative technique known as the unit root test has lately gained popularity. This test is significant since it aids in avoiding the issue of false regression. Harris (1995) argues that if a variable has a unit root, it is non-stationary, and unless it joins with other non-stationary series to establish a stable cointegration relationship, regression using the series might incorrectly infer the presence of a significant economic link. The two types of unit root testing are the Augmented Dickey Fuller (ADF) test and the Phillip-Perron test. A typical method for assessing the unit root null hypothesis is the augmented Dickey-Fuller (ADF) test. A hypothesis test is used in this test, with a null and alternate hypothesis used to produce the test statistic and p-value. The null hypothesis is based on the presence of a unit root. The p-value generated must be less than the significance level to reject the null hypothesis. As a result, it is possible to assume that the series is stationary.

Furthermore, Phillips and Perron introduced the nonparametric methods to deal with the problem autocorrelation while testing for a unit root (1988). As a result, it is known as the

Phillips-Perron test. It estimates the nonaugmented DF equation to test the unit root and then modifies the coefficient inferences to correct for autocorrelations. The Phillips-Perron test is a nonparametric adjustment to the t-test statistic that delivers more robust findings about nonspecific autocorrelation and heteroscedasticity in the test equation's disturbance process. This test is typically employed when there is a loss of degree of freedom owing to a small number of observations with higher-order autocorrelations. The null hypothesis for the Phillips-Perron test is that there is a unit root, with no unit root as the alternative. If the p-value above a specific threshold, the null hypothesis cannot be rejected, and the series looks to have a unit root.

#### **4.3.5.3 Cointegration Test**

Cointegration tests detect situations in which two or more non-stationary time series are integrated together in such a way that they cannot stray from equilibrium over time. The tests are designed to determine how sensitive two variables are to the same average price over a certain period. Gregory and Hansen (1996) used a residual-based cointegration test to look for structural breaks in the cointegrating connection between the variables considered. This method outperforms the Engle and Granger (1987) technique to testing for cointegration, which tends to under-reject the null of no cointegration if a cointegration connection changes at some (unknown) point during the sample period. The Gregory and Hansen test is an extension of the Engle and Granger technique in which the null hypothesis of no cointegration is tested against an alternative of cointegration with a single regime change at an unknown date using extensions of the usual ADF-, Z-, and Zt-test types. For this test, Lc statistic must be more than 0.2 where it indicates the series are cointegrated in null hypothesis. If the value is greater than 0.2, then it resulted as failed to reject the null hypothesis which led to existing in long run equilibrium.

#### **4.3.5.4 Long-run Estimates**

Estimating long-run effects, or level relationship, is critical in economics. Long-run relations are commonly related with the steady-state solution of a structural



macroeconomic model. Long-run equilibrium relationship can be estimated consistently by Dynamic Ordinary Least Squares (DOLS). DOLS is an estimator suggested to solve the finite sample bias of OLS caused by endogeneity issue when estimating regression models based on cointegrated variables. For long run estimates, If the absolute value of the t-statistic is larger than the 1, 5 or 10 percent critical threshold, the hypothesis decision is to reject the null hypothesis. Meanwhile, if the null hypothesis is rejected, the variable's linear combinations exhibit long-run stability but with structural break. This concept is significant to this study because it contributes to establishing the presence of a long-run equilibrium to which varied coverage over time leads.

#### **4.3.5.5 Granger Causality Test**

The structures of the causal relationships between variables which is relationship of independent variables toward dependent variable were analysed through the Granger causality approach. The Granger causality test is a statistical hypothesis test used to determine if one time series may be used to predict another. If the probability value is less than 0.01, 0.05, or 0.10, the hypothesis is rejected. Short-run causality denotes a causal link between variables in the short term. Short run causality is based on joint significance of first difference variable in the vector error correction equation using pairwise that can be calculate in granger causality.

## 4.4 Results and Findings

### 4.4.1 Introduction

As mentioned in the previous chapter, Dynamic Ordinary Least Square (DOLS) Regression has been chosen as the main method in this study to examine the housing price from 1991 to 2021 in Malaysia using three variables which are gross domestic product (GDP), interest rate and unemployment. This section includes estimated results for correlation test, unit root test, cointegration test, long- run estimation and Granger causality tests.

### 4.4.2 Correlation Test

Correlation test is statistical method that is used in this study to discover if there is a relationship between two variables, and how strong that relationship may be.

Table 4.1: Correlation Test

|      | LHPI       | LGDP       | LR         | LUEM       |
|------|------------|------------|------------|------------|
| LHPI | 1.000000   | 0.198743*  | 0.097528*  | -0.124840* |
| LGDP | 0.198743*  | 1.000000   | -0.897283* | 0.025517   |
| LR   | 0.097528*  | -0.897283* | 1.000000   | -0.215890* |
| LUEM | -0.124840* | 0.025517   | -0.215890* | 1.000000   |

*Notes: The asterisks \* imply significance at 5%*

Based on table 4.1, it shows the correlation test between gross domestic product (GDP), interest rate and unemployment as independent variables. The estimated values of correlation coefficients quantify the direction and strength of the linear association between the variables. The result between independent variables shows that there is no multicollinearity problem because it proves that strong correlation does not exist. Moreover, there is positive relationship between unemployment and GDP (0.02552) while opposite relationship between interest rate and GDP (-0.8973); also, unemployment and interest rate (-0.2159). From the result, the moderate correlation is between interest rate and GDP and weak correlation are between unemployment and GDP, also unemployment and interest rate.

### 4.4.3 Unit Root Test

Unit root test in time series has been used before applying cointegration and long-run estimation to determine if the variable's time series is stationary or non-stationary. The values in the following table are derived from the t-statistic.

Table 4.2: Unit Root Test

| Series | Level     |           | First Difference |              |
|--------|-----------|-----------|------------------|--------------|
|        | ADF       | PP        | ADF              | PP           |
| LHPI   | -1.493311 | -1.493311 | -4.558270***     | -4.512952*** |
| LGDP   | -2.496593 | -2.411101 | -6.923325***     | -7.149219*** |
| LR     | -2.601055 | -2.591664 | -5.114837***     | -6.872024*** |
| LUEM   | -2.521195 | -1.931669 | -4.840098***     | -6.836325*** |

Notes: The asterisks \*\*\*, \*\*, and \* imply significance at the 1%, 5%, and 10% levels, respectively.

Table 4.2 shows the results of the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root test for housing price, gross domestic product (GDP), interest rate and unemployment for first difference. All variables under consideration are non-stationary in their levels and become stationary when they are first differenced. The level of significance at first difference for ADF and PP statistics of all variables is 1 percent. The ADF values that are significant at first difference are -4.5583 for housing prices, -6.9233 for GDP, -5.1148 for interest rate and -4.8401 for unemployment. Furthermore, PP value that are significant at first difference is -4.5129 for housing prices, -7.1492 for GDP, -6.8720 for interest rate and -6.8363 for unemployment. Therefore, the null hypothesis is rejected implying all variables have no unit root and the study proceeds with further investigation.

#### 4.4.4 Cointegration Test

This test will determine the existence of long-run equilibrium. This test used Hansen Parameter Instability and HAC (Newey-west) to get the result. If the Lc statistic is 0.2 or above, it indicates the null hypothesis is failed to be rejected indicating the existence of the long-run equilibrium.

Table 4.4: Long-Run Estimation

|  |            |               |             |        |
|--|------------|---------------|-------------|--------|
| Cointegration Test - Hansen Parameter Instability  |            |               |             |        |
| Equation: UNTITLED   |            |               |             |        |
| Series: LHPI LGDP LR LUEM  |            |               |             |        |
| Null hypothesis: Series are cointegrated   |            |               |             |        |
| Cointegrating equation deterministic: C  |            |               |             |        |
| HAC score variance   |            |               |             |        |
|  | Stochastic | Deterministic | Excluded    |        |
| Lc statistic   | Trends (m) | Trends (k)    | Trends (p2) | Prob.* |
| 0.157752   | 3          | 0             | 0           | > 0.2  |
| *Hansen (1992b) Lc (m2=4, k=0) p-values, where m2=m-p2 is the number of stochastic trends in the asymptotic distribution |            |               |             |        |

Referring to table 4.4, Lc statistic is recorded at 0.1578, which is less than the probability value of 0.2, leading to the result of no cointegration. As a result, null hypothesis is rejected, which means there is no long-run equilibrium for the model of this study. Therefore, the Granger causality test must be employed to find the short-run equilibrium between GDP, interest rate, and unemployment as independent variables and housing prices as dependent variable.

#### 4.4.5 Long–Run Estimation

Due to no cointegration result from the previous test, long-run estimation cannot be identified. However, it is worth noting that according to table 4.3, the results for GDP, interest rate, and unemployment are all found to be insignificant.

Table 4.3: Cointegration Test

| Dependent Variable: LHPI   |             |                    |             |          |
|--|-------------|--------------------|-------------|----------|
| Method: Dynamic Least Squares (DOLS)   |             |                    |             |          |
| Sample (adjusted): 1994 2019   |             |                    |             |          |
| Included observations: 26 after adjustments  |             |                    |             |          |
| Cointegrating equation deterministic: C  |             |                    |             |          |
| Fixed leads and lags specification (lead=2, lag=2)                                     |             |                    |             |          |
| HAC standard errors & covariance (Bartlett kernel, Newey-West fixedbandwidth = 3.0000) |             |                    |             |          |
| Variable   | Coefficient | Std. Error         | t-Statistic | Prob.    |
| LGDP   | 0.659343    | 0.506588           | 1.301536    | 0.2343   |
| LR   | 0.229952    | 0.124216           | 1.851237    | 0.1066   |
| LUEM   | 1.241899    | 1.446885           | 0.858326    | 0.4191   |
| C  | -4.052624   | 7.334235           | -0.552563   | 0.5978   |
| R-squared  | 0.891005    | Mean dependent var |             | 4.926362 |
| Adjusted R-squared   | 0.610731    | S.D. dependent var |             | 0.281225 |
| S.E. of regression   | 0.175460    | Sum squared resid  |             | 0.215504 |

Nevertheless, the adjusted R-squared value is 0.6107, indicating that 61 percent of housing price can be explained by GDP, interest rate, and unemployment, while the remaining 39 percent may be explained by other unknown factors. Below are the long–run equation that is derived from the cointegration test:

$$\ln HPI_t = -4.052624 + 0.659343 \ln GDP_t + 0.229952 \ln INT_t + 1.241899 \ln UEM_t + \varepsilon_t$$

(1.301536)
(1.851237)
(0.858326)

#### 4.4.6 Granger Causality Tests

The Granger causality test has been used to examine whether there is a link between the dependent variable and the independent variables in the short-run. This test's significance is defined by the probability value.

Table 4.5: Granger Causality Tests

| Pairwise Granger Causality Tests |     |             |        |
|----------------------------------|-----|-------------|--------|
| Sample: 1991 2021                |     |             |        |
| Lags: 2                          |     |             |        |
| Null Hypothesis:                 | Obs | F-Statistic | Prob.  |
| LGDP does not Granger Cause LHPI | 29  | 0.44574     | 0.6455 |
| LHPI does not Granger Cause LGDP |     | 0.71212     | 0.5007 |
| LR does not Granger Cause LHPI   | 29  | 7.11475     | 0.0037 |
| LHPI does not Granger Cause LR   |     | 1.73532     | 0.1977 |
| LUEM does not Granger Cause LHPI | 29  | 5.38926     | 0.0117 |
| LHPI does not Granger Cause LUEM |     | 0.61038     | 0.5514 |

As indicated in table 4.5, interest rate is significant at 1 percent with the value of 0.0037. Thus, the null hypothesis is rejected, suggesting that interest rate has relationship with housing price in the short run. In addition, unemployment is similarly found to be statistically significant at 5 percent with the value of 0.0117. Thus, the null hypothesis is rejected, suggesting that unemployment has a short run relationship with housing price. In contrast, GDP demonstrates that the variable is insignificant at any significant level where the value is 0.6455. Thus, the null hypothesis is failed to be rejected, demonstrating that GDP has no relationship with housing price. To sum up, only interest rates and unemployment have short-run relationship with housing price, but GDP has none.

## **5.0 DISCUSSION AND RECOMMENDATION**

### **5.1 Introduction**

This chapter will provide an overall outline from the beginning of analysis until the summary of data analysis and major findings. The findings will determine whether there is a relationship between independent variables; gross domestic product (GDP), interest rate and unemployment with housing prices in Malaysia. In addition, recommendation for will be suggested in this part, followed by conclusion of this study.

### **5.2 Discussion**

According to the estimated results, the gross domestic product (GDP) has an insignificant influence on housing prices in short-run equilibrium. This finding is corroborated by previous studies by Kabine (2022) and Ma (2021). The insignificant relationship between GDP and housing prices may have been contributed by income factor. This is because the wage growth in Malaysia does not keep pace with economic development. According to Bank Negara Malaysia (2017) in its report, a slower growth in household income relative to housing prices may lead the household to be unable to afford acquiring a house. Moreover, sustained strong economic growth may over encourage residential development, resulting in excessive residential construction, or, in other words, an oversupply that contributes to a supply-demand imbalance in Malaysia's housing market. Thus, GDP has no impact on the rising housing prices.

Next, interest rate was found to be statistically significant with housing prices. This is in line with Kabine (2022) and Mokhtar et al. (2021) where the interest rates have a positive significant impact on housing prices in the short run that explain the volatility of housing prices in Malaysia. The predicted sign differs from the outcome because when interest rates are higher, developers would borrow at a greater cost or borrow less from banks (Wu, 2013). Due to a lack of funding, this will reduce the supply of houses on the market (Liew, 2013). As a result, the housing prices increase.

Then, in the short-run unemployment has a statistically significant influence on housing prices. The finding is supported by the study of Horvath (2019) and Reianu (2018) which stated the unemployment has significant negative relationship with the average housing price. The

relationship between unemployment and housing prices are inverse because those who are unemployed cannot afford to purchase a house since they are unable to earn income. An excess supply of houses will lead to a drop in its price. Therefore, to avoid abundance of unsold houses, housing prices will decrease to match the current demand. As a result, the higher the unemployment, it will lead to decrease in housing prices.

### **5.3 Conclusion**

This study essentially evaluated some literature on housing prices as well as tested some actual data to verify the hypothesis. The purpose of this research is to study the determinants of housing prices in Malaysia by using annual time series data for 30 years from 1991 to 2021. The sources of data that have been used in this study is World Bank, Department of Statistics Malaysia (DOSM), and National Property Information Centre (NAPIC). This research achieves its objective in identifying the relationship and the most significant independent variables. At the end of the study, it is learned that some of the variables tested in this study do affect the housing prices significantly, while some are not. The findings show that GDP has no short run relationship with housing price, while interest rate and unemployment have short run relationship with housing price. Moreover, it was also revealed that no long-run relationship exists between the independent variables and housing prices.

### **5.4 Recommendation**

Property is a basic requirement for many Malaysians, yet few can afford it. Government needs to increase consumer credit, where the house demand will dry up, resulting in a reduction in residential investment. On the other hand, policymakers in Malaysia should restrict the rising movement of the bank's interest rate because it is favourably associated to house prices. Thus, Malaysian authorities (central bank) should interfere at all times to reduce interest rates in the banking sector in order to have a favourable influence on housing price control through reserve requirements, open market operations, and overnight lending rate policy. Other than that, the authorities need to have strict control on the housing developers by increasing the difficulty in getting loans to fund their projects. The leniency in this process has led them to build more



“unaffordable” house which eventually would be bought by foreigners who gain from rent and re-selling the properties. Future researchers may experiment with various data types, such as panel data, to achieve more diverse results. Furthermore, researchers can use different method other than Dynamic Ordinary Least Squares (DOLS).

## **6.0 CONCLUSION**

Industrial Training is a good opportunity for every student to become acquainted with the working environment and the real organizational culture. Industrial training is a process aimed to develop students' knowledge, experience, and drive. Furthermore, students can strengthen their existing talents, not simply those obtained while studying at Universiti Teknologi Mara (UITM). In other words, industrial training exposes students to real-world job situations.

ZMA Bina Resources Sdn Bhd is the company that accepted me for industrial training. During the 24 weeks of this industrial training, I was assigned to the administration and accounting department, where I prepared documents and keyed in business data. A little of what I learned at UITM will help me prepare for the supervisor's duties. This organization's employees and staff are also not overbearing in offering instruction, guidance, and extremely constructive suggestions from time to time.

Before entering the real working environment, I gained a wide range of information and experience during my internship at ZMA Bina Resources Sdn Bhd. All my education and professional experiences have been extremely beneficial in helping me to enhance certain abilities such as communication, multitasking, and time management. This organization also taught me how to have strong work ethics by completing duties on time and being prompt. The staff in this company follow strong work ethics, such as teamwork, providing good services to clients, and respecting colleagues' judgments. These types of ethics are ideal for becoming jobs for every student, allowing them to practice in a real-world working setting and become more disciplined.

In conclusion, I am pleased to have chosen this organization and been given the opportunity to intern at ZMA Bina Resources Sdn Bhd since this firm is ideal for interns looking for work experience because it may provide additional benefits before applying to a real-world setting. Furthermore, I am not only obtaining more information and experiences, but I am also making more wonderful memories for my studies throughout my internship.

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## APPENDICES



Figure 1: Office of ZMA Bina Resources Sdn Bhd



Figure 2: Handover the key to the client

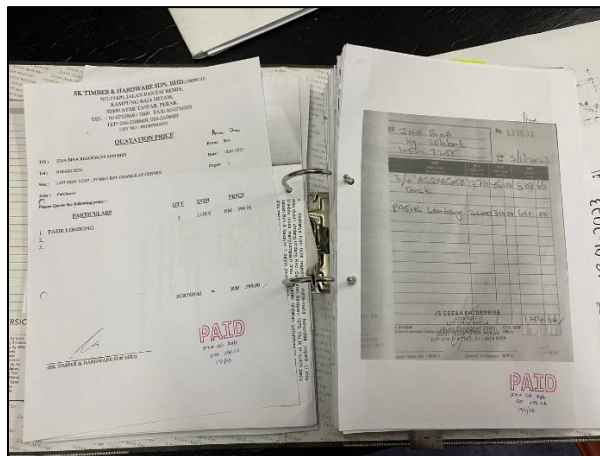


Figure 3: Invoice of Hardware

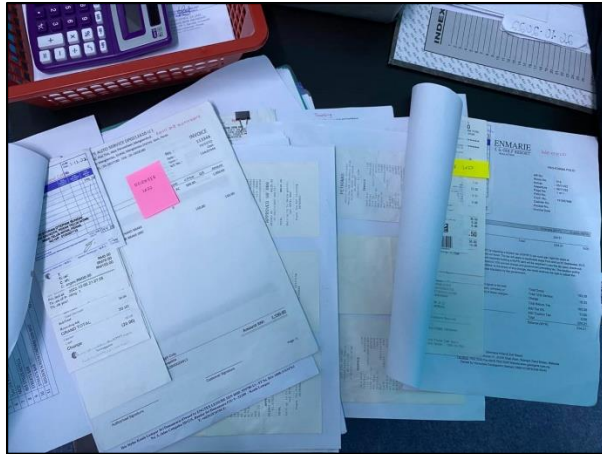


Figure 4: Director's Claim

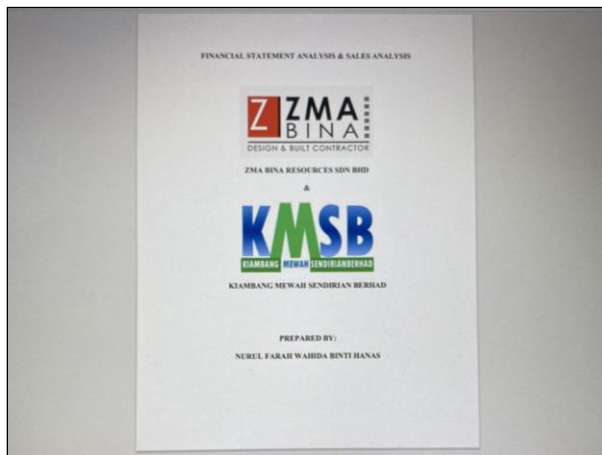


Figure 5: Financial Statement & Sales Analysis

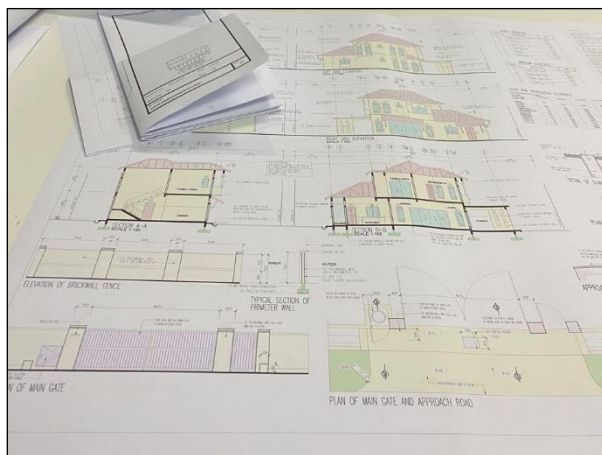


Figure 6: House Plan

# ORIGINAL REPORT



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