

## **Firm's Structure and Profitability: An Empirical Evidence from Malaysia Construction Sector**

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### **ABSTRACT**

This study investigates the effect of firm's internal characteristics on profitability of construction sector in Malaysia for 10 years. A panel data of 38 public listed companies from year 2006 to 2015 has been used. Firm's profitability as measured by return on asset (ROA) was analyzed against four variables which are firm size, firm age, debt ratio and directors' ownership. The results were generated using Ordinary Least Square (OLS) method. The empirical finding based on the random effect model (RE) suggests that firm size and debt ratio appear as the important factor affecting profitability. On the other hand, directors' ownership and firm age has no significant effect on profitability. The finding further reveals that an increase in firm size will increase ROA while an increase in debt ratio will reduce ROA.

**Keywords-** Directors' Ownership, Profitability, Return on Asset (ROA), Construction Sector

## **Struktur dan Keuntungan Firma: Bukti Empirik dari Sektor Pembinaan Malaysia**

### **ABSTRAK**

Tujuan kajian ini dijalankan adalah untuk mengkaji kesan ciri dalaman syarikat terhadap keuntungan sektor pembinaan di Malaysia untuk 10 tahun. Sebanyak 38 data dari syarikat panel awam digunakan bermula dari tahun 2006 hingga 2015. Keuntungan firma diukur dan dianalisis dengan melihat pulangan atas aset (ROA) terhadap empat pembolehubah iaitu saiz firma, umur teguh, nisbah hutang dan pemilikan pengarah. Analisis dibuat dengan menggunakan kaedah Ordinary Least Square (OLS). Penemuan empirikal berdasarkan model kesan rawak (RE) menunjukkan bahawa saiz firma dan nisbah hutang merupakan faktor penting yang mempengaruhi keuntungan. Sebaliknya, pemilikan pengarah dan umur firma tidak memberi

kesan yang signifikan ke atas keuntungan. Dapatan kajian mendapat bahawa peningkatan saiz firma akan meningkatkan ROA sementara peningkatan nisbah hutang akan mengurangkan ROA.

*Kata kunci:* Pemilikan Pengarah, Keuntungan, Pulangan atas Aset (ROA), Sektor Pembinaan

## **INTRODUCTION**

The relationship between firm structure and performance cannot be ignored. A firm depends on the improvement in performance in order to sustain in the market. The examples of performance include efficiency, profitability as well as growth and in this research we decide to choose profitability to represent firm performance. The firm structure is defined as the overall system in the workplace that explaining the rules and regulations, roles and responsibility of worker and how they are controlled and coordinated. In other word, the firm structure can be measured by firm size, firm age, ownership structure, and debt ratio. We are interested to conduct a study on construction sector because this sector is vital for Malaysia to achieve a developed country status by 2020. According to Khan, Liew and Ghazali, (2014) the construction sector has been playing a significant role in aggregate economy of the country that enable to support the gross domestic product (GDP) and sosio-economic development in Malaysia. This sector can give contribution through Gross Domestic Product (GDP), Gross Net Income (GNI) and Gross Fixed Capital Formation (GFCF), creation of job opportunities, generation of income and re-distribution, as well as strategic tool to achieve sustainable development. More than half of GFCF comprises of construction output (Olanrewaju & Aziz, 2015). Outputs of construction sector are home, offices, shopping mall, roads, and factories. Looking at these crucial roles of construction sector in growth development in Malaysia, it is necessary to give attention and focus on this sector.

The construction sector in Malaysia generally falls into three sectors namely residential construction, non-residential construction, and civil construction. The residential construction includes the condominiums and houses construction whereas the non-residential is construction of all building other than residential like industrial and commercial buildings. Other category is civil construction or civil engineering which refers to the construction of public infrastructure such as bridges, railway, school and highways. Malaysia tends to develop this sector since its independence on 1957 after realizing its significance. The transformation of the economy structure intensively involves in reaching year 2020. The government is responsible to outline an economic road map to ensure the country is transformed to developed country and being recognized. Target of country by 2020 is to sustain the robust growth and specifically this entails average growth of 6.0% in GDP annually during the Tenth Plan Period. The economy sectors are the important player in order to realize this target especially the construction sector that active and features obviously in terms of policy formulation and implementations.

### **Problem Statement**

Construction sector in Malaysia, is in the growth phase and show the better performance year-by-year. Nevertheless, some facts state that the construction company facing the problem in term of profitability. Based on the article titled "Malaysia's construction sector to keep growing," (2016) the 47 listed construction companies brought a different performance in year 2015. They

only generated RM3.6 billion of profit before tax and it is generally satisfactory, with only a handful boasting margins on earnings before interest and tax, depreciation, amortization (EBITDA). It shows only marginally more than half of them recording a better year on year performance. In addition, Master Builders Association Malaysia (MBAM); (as stated in Wahida, 2014) belief that the weaken ringgit has been a distress to many construction firms. This is due to the cost of production will be higher than usual. The president of MBAM said that the profit margin for construction sector just begin to tight and would have be more tough for some construction firms with the weakening of ringgit (Wahida,2014). The situation was, where they had tender company project when the ringgit is stronger but once the ringgit was falling, they are in difficult when it comes to accepting the grant.

The falling in ringgit resulting in the increasing of production cost as raw material price is more expensive and lead to higher price of finished goods, then the volume of sales may have affected as well. Based on the annual report for year 2015 of one of construction company, they suffered a loss on the current year that caused by the lower business volume as well as the fixed expenses incurred. Therefore, this research is interested to investigate whether firm structure as represented by firm size, firm age, capital structure and ownership structure affect profitability of Malaysia construction companies from year 2006 until 2015. The study also aims to see the most significant variables that provide contribution towards profit.

### **Scope of study**

This research focuses on the construction sectors in Malaysia. The data like ROA, firm size, firm age, ownership structure, and capital structure will be obtained from 38 construction companies that were listed on the main market of Bursa Malaysia covering 10 years of financial statement beginning 2006 to 2015.

## **LITERATURE REVIEW**

The relationship of firm size, firm age, ownership structure and capital structure are usually related to the firm's profitability. Review on previous researches will provide a more complete view and better understanding on this topic.

### **Profitability**

According to Ang (1997), profitability is the measurement for company performance because it indicates the earnings that companies are able to produce in future through their main activities which are operating and investing activities. Agus, (2001) explains that profitability is the company's capacity to achieve incomes related to revenue, total assets and capital of the company. Therefore, the profitability is important to both long term and short term investors before initiating an investment in a particular company. Investors would make an analysis regarding profit of company so that they are able to minimize the risk and get high return or dividend.

### **Firm Size and Profitability**

Firm size is an important variable to determine the profitability of the organization. The idea known as economies of scale which can be found in the traditional neo classical perspective of the firm. Firm size is the amount and variety of production and services firm provides along with to its customers. Haliland Hassan, (2012) did a study on 143 companies listed on the Istanbul Stock Exchange from year 2005 to 2011 and found that bigger firms earn a higher return. Other than that, John and Adebayo, (2013) also found the positive relationship between firm size and profitability of companies listed on the Nigerian Stock Exchange market from 2005 until 2012. Velnampy and Nimalathasan, (2010) investigate the relationship between firm size and profitability of all branches of Bank of Ceylon and Commercial Bank in Sri Lanka over the period of 10 years from 1997 until 2006 and discovered that larger bank size will result in a higher profitability. Based on the fixed effect model result, Vinasithamby Sritharan, (2015) shows that firm size is positively related to profitability of Sri Lankan hotels and travel sector firms. (Ilaboya and Ohiokha, (2016) also support the previous findings where there is a significant and positive relationship between size and profitability of Nigerian listed companies. On the other hand, a negative relationship has also been established between firm size and profitability. It means that smaller firm will earn a higher return than a bigger firm. Goddard, Tavakoli and Wilson, (2005) focused on 4 European countries from 1993 until 2004 and found a negative relationship between firm size and profitability of manufacturing and service sector. According to Becker, Kaen, Etebari and Bauman, (2010), small firm has a greater earnings. The research focused on the firms operating in manufacturing sector in USA using the data of years 1987 until 2002.

### **Firm Age and Profitability**

Firm age also influence the organizational structure. The older the firm will make it more stable in nature. When the firm is more stable it will give many advantages such as developing more business activities, and earn greater profit from the business. The relationship between firm age and profitability can be in a positive or negative way. Coad, Segarra, and Teruel, (2013) reported a positive relationship between firm age and profitability of firm. The study used a sample of Spanish firms from year 1998 until 2006 and found the profit of the firm increase with the increase in the firm age. It also can be proved by Basti, Bayyurt and Akin, (2011) who conducted a comparative performance analysis of foreign and domestic manufacturing companies in Turkey using the sample of 160 listed firms covering the period from 2003 to 2006. However, the relationship of the firm age and profitability can also be proven otherwise; the older the firm, may reflect lower level of productivity and profitability. Doğan, (2013) used return on assets running a multiple regression on data from 200 listed companies between years 2008 to 2011 and found a negative relationship between firm age and profitability.

### **Ownership Structure and Profitability**

The main objective of a corporation is to maximize shareholder's wealth through expanded firm profitability. Salvatore, (2005) pointed out that assets management, financing and investment decision are the wealth of company and shareholder. The purpose is to maximize growth rate and the profit of the company because the position of the company can be maintained by maximizing profit and growth rate. There is various measurement of ownership had been applied on determining a firm's profitability. Sugiarto, (2009), used managerial share ownership and

institutional ownership as proxy for ownership structure, in which the company having a going public status, the management is separated into two; becoming institutional ownership and managerial ownership functions. Sugiarto, (2009) defines institutional ownership as companies of insurance, investment and banks that have proportion of share in the firm. However, it excludes the institutions that have special relationship with the firm or affiliated firm such as subsidiaries. According to John and Servaes, (1998), larger institution ownership will result in higher profit. It also can be proved by Fauzi and Locke, (2012) who found the positive results which are the larger the board of directors, institutional ownership and board committees will result in the better firm performance using companies listed in New Zealand. Irsa and Naveed, (2016) investigating financial performance of companies listed on the Philippine Stock Exchange (PSE) over the period of 2009 to 2014 show a different result which is the larger institutional ownership will lead to lower firm's profitability. Besides that, other researchers also use government ownership structure. For example, Irsa and Tariq, (2016) discovered that the government ownership is significant and negatively related to the firm profitability. Tran, Nonneman, and Jorissen, (2014) also indicates government ownership, reduces the firm profitability.

### **Capital Structure and Profitability**

Eugene and Houston, (2007) defined the capital structure as the composition of the company's capital which is seen from its particular source, showing the portion of the company's capital coming from debt sources (creditors) and at the same time also showing portion of capital from the owners of the capital itself. Capital structure is very important in order to achieve the company's goal. Capital structure is divided into two which is debt and equity.

Miller's and Modigliani, (1958) work had been an inspiration for many researchers for years. Researchers are trying to analyze and find the existence of an optimal capital structure. Optimal capital structure can be defined as "the capital structure at which the weighted average cost of capital is minimum and thereby the maximum value of the firm." The difference of opinion between researchers can be observed about the effect of debt on profitability.

Abor, (2005) did a study on the effect of capital structure on profitability of the Ghana stock exchange listed firms and found that smaller shareholding will cost return on equity and total assets to improve the short term debt. The same result can also be found in Gill, Biger, and Mathur, (2011) whom investigating a sample of 272 service and manufacturing firms listed on New York. Another research on capital structure, equity ownership and firm performance also found the positive results, and proved that debt ratio positively affect the profitability of the firm where firm in high debt ratio will have a high profit. In contrast, a negative effect of debt on profitability was also confirmed. Shubita and Alswalhah, (2012) used a sample of 39 Amman Stock Exchange based companies and analyzed the role of debt in profitability. The result indicated significant but negative relationship between short-term debt, long-term debt, total debt, and return on equity (ROE). Kebewar, (2013) performed a study on French companies totaling to 2325 trade sector companies over a period of eight years between 1999 to 2006 and found that debt have negative effect on profitability.

Based on the review of the previous researches, we formulate the following hypotheses:

Hypothesis 1: Firm size affects profitability

Hypothesis 2: Firm age affects profitability

Hypothesis 3: Ownership structure affects profitability

Hypothesis 4: Capital structure affects profitability

## **RESEARCH METHODOLOGY**

The methodology provides a brief description of the model, estimation method, data source, and measurement of the variables. This study will explain more about the profitability of Malaysia construction companies and it might be influenced firm structure like firm size, firm age, ownership structure and capital structure. A panel data method will be employed in this study.

### **Population and sample set of the study**

The target population for this study is the construction firms listed on the main market of Malaysia Stock Exchange; the Bursa Malaysia. Based on the equity section in Bursa Malaysia website as at October 2016, there were 46 listed construction companies. The following conditions must be met for the companies to be selected as sample:

- The companies should be listed before 2006 and still operating in the year 2015
- The annual report of the company must be available in the website.

After the screening process, eight companies were excluded, some of them were newly listed companies and for some companies, the financial reports were not available in the website. Finally, our sample consists only 38 companies representing 83% of the total population.

### **Measurement of Variables**

The dependent variable in this study is profitability while the independent variable is firm structure which is represented by firm size (SIZE), firm age (AGE), ownership structure (OWN), and capital structure or Debt Ratio (DEBT). The next section will explain the measurement of each variable.

### **Return on Asset (ROA)**

There are various measurement of profitability, for example Angela, Komala and Nugroho, (2013) used return on equity (ROE) and claimed that it is one of the important indicators that are often used by investors to assess the profitability of the company before investing. Shaskia, (2012) used ROA that is calculated as net profit divided by total assets. Mahmoud Abu-Tapanjeh, (2006) employed both ROE and return on investment (ROI) as the dependent variables for firm structure of Amman Stock Exchange. Salim and Yadav, (2012) took up four dependent variables which are ROE, ROA, Tobin Q and earnings per share (EPS) for the case of Malaysian companies. ROA or also known as ROI which is return on investment for the company, measuring the performance of the company to generate income based on their total assets (Ichsani & Suhardi, 2015). This study measures firm profitability by Return on Assets (ROA) and it is calculated as net profit divided by total assets:

$$ROA = \text{Net Profit} / \text{Total Assets}$$

### **Firm Size**

Previous researchers measure the firm size in a different way such as total sale, market capitalization, total assets and other measurements. Vijaykumar and Tamizhselvan (2010) used the sales and total assets while Vjih and Yang, (2013) used the sales, total assets, and market

value of equity to measure the firm size. In this research, firm size is represented by taking up the total sales of the company for the current year.

### **Firm Age**

Firm age also have a different measure. Mahmoud Abu-Tapanjeh, (2006) and Shumway, (2001) defines firm age as the number of years of establishment of the company even though some researcher (for example (Loderer & Waelchli, 2009) believe that listing age, should define the age of the company and listing age is more economical since listing is a defining moment in the company's life. We decided to follow measurement used by Mahmoud Abu-Tapanjeh, (2006) and Shumway, (2001).

### **Ownership Structure**

Mahmoud Abu-Tapanjeh, (2006) measured the ownership structure by Government Ownership, Non- government ownership, and director's ownership. This research will take directors ownership as proxy for ownership structure. Board of directors is a group of individuals that are elected as, or elected to act as, representatives of the stockholders to establish corporate management related policies and to make decisions on major company issues. Every public company must have a board of directors. Some private and non-profit companies also have a board of director. The director ownership means the person who has the ownership's title in the company, they hold the company's shares. The director ownership is calculated as follow:

*Director Ownership = Total shares held by directors / total company shares*

### **Capital Structure**

Capital structure is source of financing that raised up by company like debt or fund from shareholders. Capital structure for this research is represented by debt ratio. Debt ratio is calculated as percentage of debt over total assets:

*Debt Ratio = Total debt / Total Asset*

All the data for dependent and independent variables are obtained from the annual report of the selected companies from the year 2006 to 2015.

### **Data Analysis**

This research has modified the mathematical model that has been employed by Aman, (2011) as per below:

$$ROA_{i,t} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 AGE_{i,t} + \beta_3 OWN_{i,t} + \beta_4 DEBT_{i,t} + \mu_{i,t}$$

Where,

$\beta_0$  = Constant term

ROA = Return on Asset

SIZE = Firm Size (companies sales for the current year)

AGE = Firm Age (number of years of establishment)

OWN = Ownership structure (Director Ownership)

DEBT = Capital structure (Debt Ratio)

$\mu_{i,t}$  = Error term

### **Descriptive Statistic**

Statistical software Eviews9 is used to compute all the data gathered. Descriptive statistic is used to describe the basic features of the data in a study. It presents quantitative descriptions in a manageable form.

### **Correlation coefficient**

Correlation coefficient is to measure the degree of two variables movements. The range of value is -1.0 to 1.0. If the result is greater than 1.0 or lower than -1.0, a mistake has been make. A correlation of -1.0 indicates a perfect negative correlation, while a correlation of 1.0 indicates a perfect positive correlation.

### **Regression analysis**

In order to get the best result, this research employs three regressions which are Pooled effect model, Fixed Effect Model and Random Effect Model. In order to select the most preferable result from those three methods, the diagnostic tests then will be applied which are likelihood ratio (LR), Lagrange multiplier (LM) and Hausman test.

### **Likelihood Ratio**

Likelihood ratio is conducted to differentiate between Pool and Fixed Effect Model. The hypothesis is as follows:

H<sub>0</sub>: Pool Effect Model is appropriate model

H<sub>1</sub>: Fixed Effect Model is appropriate model

### **Lagrange Multiplier**

Lagrange Method is employed to differentiate between Pool Effect Model and Random Effect Model. The hypothesis is as follows:

H<sub>0</sub>: Pool Effect Model is appropriate model

H<sub>1</sub>: Random Effect Model is appropriate model

### **Hausman Test**

Hausman Test is employed to differentiate between Random Effect Model and Fixed Effect Model. The hypothesis is as follows:

H<sub>0</sub>: Random Effect Model is appropriate model

H<sub>1</sub>: Fixed Effect Model is appropriate model

## **FINDINGS AND DISCUSSION**

### **Descriptive statistical analysis**

**Table 1: Descriptive statistical analysis of ROA and firm structure**

	<b>ROA</b>	<b>Size</b>	<b>Age</b>	<b>Own</b>	<b>Debt</b>
Mean	4.1	5.8	23	12.65	62.81
Maximum	1105	60	55	61.73	1040
Minimum	-301	0	3	0	2.1

Std. Dev.	63.44	9.22	13	14.67	95.51
<b>Observations</b>	<b>387</b>	<b>387</b>	<b>387</b>	<b>387</b>	<b>387</b>

Table 1 presents the descriptive statistics for the ROA and firm structure (firm size, firm age, ownership structure and debt ratio) of the selected companies. The statistical data reveals the ROA varies as low as -301% to the highest value at 1040%. Along the 10 years period, there is a company suffers a pretty bad loss on 2006 and the company achieved a rare profit on 2007 with small value of assets. Minimum value for ownership structure is 0, reflecting that some companies directors do not have any equity shares and some of them more than half is denominated by director ownership as the maximum value is 61.73%. The youngest firm in our sample has 3 years of establishment since 2006 and the oldest is 55 years. This shows variety of company background both new and well established. The mean of debt ratio is 62.81% implies that companies in construction sector relies heavily on debt capital.

### Correlation Analysis

**Table 2: Correlation Matrix**

Variables	Log ROA	Log Size	Age	Own	Log Debt
<b>Log ROA</b>	1.000000				
<b>Log Size</b>	0.384266	1.000000			
<b>Age</b>	0.151060	0.245475	1.000000		
<b>Own</b>	0.089769	0.061796	0.041461	1.000000	
<b>Log Debt</b>	-0.213798	0.088142	0.228222	0.066320	1.000000

Table 2 presents correlation analysis for ROA and the firm structure. The data suggests that all independent variables except for debt ratio are positive and weakly correlated with ROA. The high profit of the company is contributed from the large value of revenue earns, the longer period the company in the market and the higher percentage of ownership held by its own director. Debt ratio is weakly and negatively correlated to ROA, means that more debt is risky for the company and lead to poorer profit due to higher cost of borrowing. All independent variables are correlated to each other and fortunately, values of correlation matrix among independent variables are less than  $r=0.80$ , thus it can be concluded that there is no of multi-collinearity problem.

### Regression results

This research employs three regression methods to examine the effect of firm structure on profitability. Table 3 shows the statistical results of Pool, Fixed and Random effect model.

**Table 3: Regression Results of Pool, Fixed and Random Effect Model**

	<b>POOL</b>	<b>FIXED</b>	<b>RANDOM</b>
<b>Variables</b>	Coefficient (std. error)	Coefficient (std. error)	Coefficient (std. error)
<b>Log size</b>	0.964957**	1.036241**	0.976379**

	(0.110144)	(0.230551)	(0.160434)
	-0.001251	0.009545	0.001152
<b>Age</b>	(0.005447)	(0.020751)	(0.009161)
	0.009974*	-0.018222	-3.79E-05
<b>Own</b>	(0.004558)	(0.011181)	(0.007001)
	-1.200324**	-1.627375**	-1.454386**
<b>Log debt</b>	(0.229532)	(0.332247)	(0.281868)
	-6.341117	-6.122955	-5.943400
<b>C</b>	(0.939975)	(1.933005)	(1.355813)
<b>R<sup>2</sup></b>	0.219329	0.482717	0.138809
<b>Adjusted R<sup>2</sup></b>	0.211133	0.419376	0.129768
<b>F-statistic</b>	26.76045	7.620957	15.35270
<b>Prob(Fstatistic)</b>	0.0000	0.0000	0.0000

Note: \* and \*\* Significant at 5% and 1% levels respectively.

In order to select the best regression that fits with our data, we have conducted three model specification tests namely Likelihood Ratio, Lagrange Multiplier, and Hausman test. The results are shown in the following table:

**Table 4: Model specification test results**

Model Specification Test	Result	Decision
Likelihood Ratio	Significant	Accept H <sub>1</sub> : Fixed Effect Model is appropriate model
Lagrange Multiplier	Significant	Accept H <sub>1</sub> : Random Effect Model is appropriate model
Hausman Test	Not significant	Failed to reject H <sub>0</sub> : Random Effect Model is appropriate model

Based on the above results, Lagrange Multiplier and Hausman Test suggest that the Random Effect Model is most preferable for this research. Therefore, in the next section we will interpret the regression result of Random Effect Model.

### Ordinary Least Square (OLS) Random Effect Model

Based on table 3, (Random Effect Model) the R<sup>2</sup> is about 14%. It indicates that 14% variations of firm's ROA can be explained by the variations in independent variables which are firm size, firm age, ownership structure and capital structure (debt ratio) while another 86% were explained by other factors that are not included in this study. F-statistic describes the overall fitness of the model. The test statistics is F (15.35) with p-value (0.0000) which is less than alpha,  $\alpha$  (0.05), indicating that the overall model is significant.

The following equation model has been generated for this study:

$$ROA = -5.9434 + 0.9764SIZE_1 + 0.001152AGE_2 - 3.79OWN_3 - 1.4543Debt_4$$

The equation model reveals that firm size (total sales) and capital structure as represented by debt ratio is significantly affecting firm's return on assets at 1% significant level. Therefore,

hypothesis 1 and 4 is supported. On the other hand, hypothesis 2 and 3 was not supported because firm age and ownership structure (director ownership) is not significant. Furthermore the result indicates that firm size affect ROA in a positive direction. Firm with higher sales will generate higher return for the business. Whereas debt ratio affect ROA negatively, implies that company with higher debt capital will earn a lower profit. This may due to the burden of interest expenses.

## **CONCLUSION AND RECOMMENDATION**

This study aims to investigate whether firm structure which represented by the firm size, firm age, director ownership and debt ratio will affect profitability of construction companies in Malaysia. The model specification tests suggest the Random effect model to estimate the effect of firm structure on profitability. There are two significant variables which are firm size and debt ratio. The most significant variable that influencing the profit is debt ratio at coefficient value of -1.4544; higher than coefficient value of firm size which is at 0.9794. This implies that debt ratio must be considered as the most important factor in determining the companies' profit. The debt as one of the sources of financing for large company like construction firm cannot be denied. However, the firm will face the problem of decreasing in profit if the debt is not well managed. The revenue will decrease when the company have to pay high interest expenses. In addition, if the company cannot meet the obligation, it will be worsening and risk of bankruptcy will be high. Therefore we would like to suggest the construction firms with high debt capital to use it efficiently to avoid cash flow crisis and lower rate of return. Total sales have been proved in this research as a reason of a better profitability. The company has a chance of getting high income if they are talented in selling many homes under their construction, get the tender or entitle for big projects that available in Malaysia.

This study makes significant contribution to the management of construction company where it assists them in identifying which factor they must concern to generate better profitability. Besides, results of this study will also aid as a reference for researchers who undertaking a related field.

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