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**"SUSTAINING THE SOCIAL SCIENCES IN 4<sup>th</sup>  
INDUSTRIAL REVOLUTION"**  
*"TOUCHING LIVES, BRIDGING SOCIETIES"*

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# PROCEEDINGS OF THE 3<sup>rd</sup> USM-INTERNATIONAL CONFERENCE ON SOCIAL SCIENCES (USM- ICSS)

SUSTAINING THE SOCIAL SCIENCES IN 4<sup>th</sup> INDUSTRIAL REVOLUTION  
*TOUCHING LIVES, BRIDGING SOCIETIES*

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## **Editors**

Intan Hashimah Mohd. Hashim  
Mohd Taufik Mohammad  
Nor Asmat Ismail  
Siti Rahyla Rahmat  
Noor Alyani Nor Azazi  
Maslina Mohammed Shaed  
Boo Harn Shian

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# The Impact of Tax Revenue Shocks on Economic Growth in Nigeria

Abdulkarim Yusuf<sup>a</sup> & Saidatulakmal Mohd.<sup>b</sup>

<sup>ab</sup>School of Social Sciences, Universiti Sains Malaysia (USM)

E-mail: [abdulkarimyusuf01@gmail.com](mailto:abdulkarimyusuf01@gmail.com)

## Abstract

The study investigates the impact of tax revenue shocks on sustainable economic growth in Nigeria during the period 1980-2017 making use of annual time series data. The results of the Augmented Dickey-Fuller and Phillips-Perron unit root tests revealed that the variables included in the model are a mixture of I(1) and I(0) series. The Zivot-Andrews structural break unit root test indicated revenue shocks date of 2014, 2015, 2011 and 2003 for PPT, CIT, PIT and CED while the control variables exhibited structural break dates of 1999, 2011, 2015 and 2005 for GCE, GRE, GDD and PED respectively. The study employs the ARDL bounds testing approach to examine the long and short run relationship between the variables of interest. The bounds test results confirmed the existence of long-run relationships among the variables of interest. The empirical results revealed that PPT had a negative impact on growth that was not significant while PIT displayed a significant negative influence on growth in the short and long run period. CIT and CED show signs of a significant positive effect on growth in both the short and long run. For the control variables, GCE had a significant negative effect while GRE parade evidence of a significant positive influence on economic growth in both the short and long run period. GDD, PED and FCS all exhibited signs of a significant negative effect on growth both in the short and long run period. The structural break dummy variable showed a positive impact on growth that was significant only in the short run. The study therefore recommends improved efficiency in tax collection and administration, diversification of revenue base, fiscal policy adjustment that reduces unproductive expenditure and reduction in government deficit financing.

**Keywords:** Tax Revenue; Economic Growth; Nigeria; Bounds Test; Structural Break

## 1. Introduction

Adam Smith (1776) stated that little use is required to carry a state to the highest degree of opulence- but peace, easy taxes and a tolerable administration of justice. It is striking that Smith single out taxation alongside peace and justice as the key to a successful society. This insight is today more important to the present day Nigeria than ever. Nigeria's economy continue to face turbulent times, with just exiting from one of the worst recession in modern history in 2017, fragile Gross Domestic Product (GDP) growth rate, increasing government recurrent expenditure and debt burden, there is a pressing need to sustainably strengthen the economy, build infrastructure, reduce extreme poverty and most of all create jobs (Nimenibo et al, 2018). Virtually all countries in the world strive to increase their revenue base so as to improve their economy as represented by the growth in their GDP. Taxation provides countries with stable and predictable fiscal environment,

thus enabling them to accumulate funds needed to invest in development, poverty reduction and deliver public services. It offers an antidote to aid dependence in developing countries and provide fiscal reliance and sustainability that is needed to promote growth (Lagarde, 2015).

Taxation in developing countries is a strategic tool that makes it possible to finance the provision of public goods such as infrastructure, education, health and justice, which are essential for growth. But beyond that, taxation affects individual savings, work and education decisions, production, job creation, investment and business innovation, as well as the choice of savings instruments and assets by investors (OECD, 2009). All the decisions are affected not only by the level of taxes, but also by the way in which different fiscal instruments are designed and combined to generate government revenue (Gbato, 2017). Taxes constitute an important component of government revenue and the tax-to-GDP ratio is a key barometer that indicates the ability of the government to invest in various development initiatives (Nangih et al, 2018). According to the International Monetary Fund (IMF, 2017), a minimum ratio is associated with a significant acceleration of growth and development. The Fund believes this threshold lies around the 15% mark. Despite the importance of such factors, Nigeria registers such low tax collections that are barely able to sufficiently finance the carrying out of governance and meet the infrastructural development needs that is essential to delivering an enabling environment for business and the population (Nangih et al, 2018). Poor contribution of tax revenue to federally collected revenue in Nigeria and the ratio of tax revenue to GDP are alarming (Ofurun et al., (2018). Whereas other African countries have their tax revenue constituting significant portion of their total revenue and GDP, Nigeria being the giant of Africa consistently maintained one of the lowest tax-to-GDP ratio in the world when compared with other countries. The tax-to-GDP ratios in eight African countries namely Tunisia, Morocco, South Africa, Senegal, Mauritius, Cote d'Ivoire, Rwanda and Ghana ranges from 16.1% to 31.3%, in 2014 (Ofurun et al., 2018). However, in Nigeria, tax revenue as a percentage of GDP was 5.2% in 2014 and has continued to hover around an abysmal 6% since 2016, which is far below the estimated tipping point of 15 percent of GDP (Federal Inland Revenue Service, 2018).

While decrying the low tax-to-GDP ratio in Nigeria, Maiye and Ogochukwu (2018) identified narrow tax base, unorganized informal sector, poor tax administrative machinery as well as lopsidedness of the tax system as factors contributing to the low tax to GDP ratio in Nigeria. For a nation of nearly 200 million people, not many Nigerians pay taxes. There are many high net worth individuals, self-employed, professionals and companies that are able to evade full tax payment due to the historical inability of the tax authorities to assess their true income (Osinbajo, 2017). Undoubtedly, a small tax base places huge burden on honest and compliant tax payers. Furthermore, the revenue potentials of the informal sector of the economy have not been properly identified and harnessed. Income generated by the operators in the sector in many cases, is not officially captured into the tax net of the state (James and Moses, 2012). For many in formal employment, taxes are typically deducted from monthly salaries making tax evasion more tricky (Kazeem, 2017). But for many local business owners or artisans, with government unable to track their incomes, tax evasion is possible and likely rampant. The inclusion of the informal sector, through a broader tax system, will help to stimulate economic growth and development, create employment and stabilise the economy (Charles et al, 2018).

In Africa, Nigeria like Algeria, Angola, Equatorial Guinea and Libya rely almost entirely on petroleum profit tax as a major type of direct tax unlike Kenya, South Africa and Mauritania which

show a relatively balanced mix of direct and indirect taxes (Gbato, 2017). The volatility in oil price and production often results in revenue volatility, expenditure volatility and unsustainable economic growth (Raifu and Raheem, 2017). The growth and development of any nation is predicated upon the availability of funds as well as other human and natural resources. Taxation remains an important fiscal instrument of government for generating revenue. Any shock to tax revenue is believed to affect government and thereby affect the national output. The low tax contribution to GDP in Nigeria over the years is affecting government's objectives to expand growth-enhancing expenditure priorities and improve economic growth. The crucial question is: does tax revenue still predict growth in periods of revenue shocks? On this strength, this study therefore, disaggregated the various components of direct tax and indirect tax and examined their individual impacts on the real Gross Domestic Product of Nigeria from 1980 to 2017 using the Auto-Regressive Distributed Lag (ARDL) approach to co-integration. Following this introduction, section two reviews relevant conceptual and theoretical literature while section three discusses the research methodology used in the study. The empirical results and discussions are presented in section four while section five concludes the study and offers some recommendations based on the findings.

## **2. Theoretical and Conceptual Framework**

### **2.1 Theoretical Framework**

The theoretical foundation of this study is anchored on the Laffer's curve theory of taxation, Solow-Swan and endogenous models of growth discussed below.

#### **2.1.1 The Laffer's Curve Theory of Taxation**

The economist Arthur Laffer developed the Laffer curve model of optimal taxation. The model assumes that government will attempt to generate as much revenue as possible without any regard to the efficiency losses caused by taxation. Only constitutional constraints and other legislation can limit government desires for increased revenue. The Laffer curve considers the inverse relationship between tax rates and tax bases and the impact of this relationship on tax revenues. The analysis reveals that a higher tax rate is not always the maximizing rate; a lower tax rate may raise more tax revenue than a higher tax rate (Asuquo and Effiong, 2011). The curve considers the amount of tax revenue raised at the extreme tax rates of zero percent and 100 percent. This theory is of the opinion that a 100% tax rate raises no revenue in the same way that 0% tax rate raise no revenue. This is because, at 100% tax rate, there is no longer incentive for a rational tax payer to earn any income because no one would be willing to work for an after-tax wage of zero (Fave and Dabari, 2017). Thus, the revenue raised will be 100% of nothing. It therefore, follows that there must exist at least one rate in between where tax revenue would be at maximum. This theory is of the opinion that increasing tax rate beyond a certain point will become counter-productive for raising further tax revenue because of diminishing returns (Ekwe and Azubuike, 2018).

The first presentation of Laffer curve was performed in 1979, when its author was speaking with senior staff members of President Gerald Ford's administration about the malaise that had engulfed the country. At the time, most economists were espousing a Keynesian approach to solving the problem, which advocated more government spending to stimulate demand for products. Laffer

countered that the problem is not too little demand. Rather, it was the burden of heavy taxes and regulations that created impediments to production, which impacts government revenue. Laffer argues that when workers see increasing portion of their wages taken due to increased efforts on their part, they will lose the incentive to work harder. For every type of tax, there is a threshold rate above which the incentive to produce more diminishes, thereby reducing the amount of revenue the government receives (Karier, 1997).

### 2.1.2 Theories of Economic Growth

Economic growth is easily quantified as an increase in aggregate output. In theorizing economic growth, David Ricardo (1819) and later Robert Solow (1956) and many others conceptualize an economy as a machine that produces economic output as a function of inputs such as labour, land and equipment. Output can increase either when we add more inputs or use technology or innovation in order to enhance the efficiency with which we transform inputs into outputs. Subsequently, growth occurs when output increases.

Following the seminal contribution of Solow (1956), the determinants of economic growth have attracted increasing attention in both theoretical and applied research. While Solow suggests that much of the growth in an economy is explained by changes in the amount of labour, the endogenous growth theorists emphasize the importance of knowledge capital (Romer, 1986), human capital (Lucas, 1988), learning by doing (Stokey, 1988), research and development and horizontal/vertical innovation (Aghion and Howitt, 1992) in the long run growth of an economy. In addition, other schools have highlighted the significant role of non-economic factors such as institutional structures, legal and political systems and socio-cultural factors in economic growth (Udeaja and Onyebuchi, 2015). The neo-classical growth model of Solow (1956) and Swan (1956) suggests that steady state growth is not affected by tax policy (that is, tax policy has no impact on long run economic growth). Yet, the endogenous growth theory, pioneered by Romer (1990) has produced growth models in which government spending and tax policies can have long-term or permanent growth effects.

Taking Solow-Swan’s approach to economic growth rate as the starting point, economic growth rate depends on available physical and human capital and on the changes in their productivity. Conventionally, the familiar Cobb-Douglas production function can be written as:

$$Y_t = A_t K_t^\alpha L^{1-\alpha} \dots\dots\dots \text{Eqn 1}$$

Where:

- |                                |   |
|--------------------------------|---|
| Y = Total output in an economy | A = Total Factor Productivity (Level of technology) |
| K = Capital stock              | L = Population of the labour force                  |

$\alpha$  and  $\beta$  = parameter representing the output elasticity of each input.

Equation 1 is assumed to satisfy all the requirements of the standard Cobb-Douglas production function (Lucas, 1988). Expressing Equation 1 in double log form, we have:

$$\text{Log } Y = \text{Log } (AK^\alpha L^\beta) \dots\dots\dots \text{Eqn. 2}$$

Linearising Equation 2, we have:

$$\text{Log } Y = \text{Log}A + \alpha\text{Log } K + \beta\text{Log } L\dots\dots\dots \text{Eqn. 3}$$

Taking the first differentiation of Equation 3, it yields

$$y = \alpha k + \beta l + \mu \dots\dots\dots \text{Eqn. 4}$$

where:

$y$  = Growth rate of Real GDP,                       $k$  = Growth rate of capital stock,  
 $l$  = Growth rate of effective labour force,       $\mu$  = Growth of overall productivity while

$\alpha$  measures the marginal productivity of capital and  $\beta$  is the elasticity of labour/output ratio.

## 2.2 Conceptual Framework

Kajola (2006) defines tax as a compulsory payment made by individuals and organizations to the government in accordance with pre-determined criteria for which no direct or specific benefit is received by the tax payer. This in effect implies that tax is a generalized exaction, which may be levied on one or more criteria upon individuals, groups or the legal entities. The motive of tax is to finance the activities of public sector so as to achieve economic and social goals in the country. Nzotta (2007) noted that taxes have allocation, distributional and stabilisation functions. The allocation function of taxes entails the determination of the pattern of production, the goods that should be produced, who produces them, the relationship between the private and the public sectors and the point of social balance between the two sectors. The distribution function of taxes relates to the manner in which effective demand for economic goods is divided among individuals in the society while stabilisation function of taxes seeks to attain a high level of employment, a reasonable level of price stability, an appropriate rate of economic growth with allowances for effects on trade and the balance of payments.

Economic theory suggests that taxation can have both positive and negative effects on economic growth. The negative effect is due to the distortions in choices and effect of discouragement factors inherent in taxes (Easterly and Rebello, 1990). The positive effects of taxation on economic growth were highlighted by the endogenous growth models. These models showed that when tax revenues are used to finance public investment in social and physical infrastructure such as education and health, electricity, telecommunications, roads, defence, etc., they can be favourable to growth (Lucas, 1988, Barro, 1990). In other words, there exists a relationship between tax revenue and the level of economic growth and development. This is consistent with Musgrave's (1969) hypothesis that the level of economic development has a strong impact on a country's tax base and tax policy objectives vary with the stages of development (Nwaorgu and Onyilo, (2016). Also, the economic criteria by which tax structure is to be judged and the relative importance of each tax source vary over time (Musgrave, 1969).

From the theoretical framework, the determinants of economic growth include government tax revenues. The conceptual framework of this study disaggregated tax revenues into their various components of direct and indirect taxes. Following Solow-Swan model, external debt and domestic debt are considered as independent factors of production to replace capital stock while the growth rate of effective labour force was proxy with labour force growth. Total output in an economy was measured with the Real Gross Domestic Product. The study introduced Fiscal Stance as a dummy variable to measure the expected or desired aggregate demand effect of fiscal policy on the economy. The econometric analysis performed in this study builds on a multivariate set-up, allowing for key control variables such as public external debt, government domestic debt, labour force and fiscal stance to intermediate the nexus between tax revenue and economic growth. Such a rich environment can overcome variable omission bias, thus allowing for efficient estimates of the test statistics.

### 3. Research Methodology

#### 3.1 Research Design

This study adopted the quantitative method and descriptive research design to provide empirical solution to the research problems using already existing data. Descriptive research designs help provide answers to the questions of who, what, when, where and how associated with a particular research problem. A descriptive study is used to obtain information concerning the current status of the phenomena and to describe “what exists” with respect to variables (William, 2006).

#### 3.2 Data Sources and Descriptions

The data for this study which are purely secondary were extracted from various reports of the Federal Inland Revenue Service (FIRS), Central Bank of Nigeria (CBN) Statistical Bulletin, Debt Management Office (DMO), World Bank and the International Monetary Fund (IMF) World Development Indicators using the desk survey approach. This is because the study is country specific and the estimation of the empirical models requires the use of time series data. All variables were taken on annual basis as obtained from their various sources in nominal terms.

#### 3.3 Specification of the Empirical Model

The model designed to capture the impact of tax revenue shocks on economic growth in Nigeria expresses changes in Real Gross Domestic Product (RGDP), proxy for economic growth, as a function of the growth rate of Petroleum Profit Tax (PPT), Company Income Tax (CIT), Personal Income Tax (PIT), Customs and Excise Duties (CED), Government Capital Expenditure (GCE), Government Recurrent Expenditure (GRE), Public External Debt (PED), Government Domestic Debt (GDD), and Fiscal Stance (FCS). This study leans very closely on the newer endogenous growth theory prescription of Barro and Sala-i-Martin (1992) which allows for the assessment of the effects of budgetary variables on economic growth. The endogenous growth model here is linear and could be stated in a linear form as follows:

$$\Delta \text{RGDP}_t = \beta_0 + \beta_1 \text{PPT}_t + \beta_2 \text{CIT}_t + \beta_3 \text{PIT}_t + \beta_4 \text{CED}_t + \beta_5 \text{GCE}_t + \beta_6 \text{GRE}_t + \beta_7 \text{PED}_t + \beta_8 \text{GDD}_t + \beta_9 \text{FCS}_t + \mu_t \dots \dots \dots \text{Eqn . 5}$$

Where,

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$  and  $\beta_9$  = Regression coefficients to be estimated.

FCS = Fiscal Stance (Dummy variable, 1 for Budget Deficit and 0 for Budget Surplus).

t = time trend                       $\beta_0$  = Intercept                       $\mu$  = stochastic disturbance or error term.

### 3.3.1 A Priori Expectation from the Model

The theoretical expectations about the signs of the coefficients of the empirical model follow naturally from the analysis of production theory. From equation 5, the study expects the signs of the coefficients of the various tax revenues to assume either positive or negative signs. That is,  $\beta_1, \beta_2, \beta_3$ , and  $\beta_4 = >$  or  $< 0$ .  $\beta_5$  and  $\beta_6$  are the disaggregated coefficients of Government expenditure while  $\beta_7$  and  $\beta_8$  are the disaggregated parameter coefficients of public debts. The study expects the signs of the coefficients of  $\beta_5$  to be either positive and  $\beta_6$  to be negative.. From production theory analysis, the coefficient of public debts is expected to be positively or negatively related with RGDP depending on management of debts.  $\beta_9$  is the parameter coefficient for the dummy variable, Fiscal Stance. The theoretical expectation of the sign of the coefficient could either be a positive or negative sign. That is,  $\beta_9 = >$  or  $< 0$ . A positive coefficient signifies a positive impact of current fiscal policy on economic growth while a negative coefficient indicates otherwise.

### 3.4 Estimation Technique

The study uses the Auto-Regressive Distributed Lag (ARDL) co-integration test popularly known as bounds test procedure, jointly developed by Pesaran et al (2001), to empirically analyse the short and long run impact of tax revenue shocks on economic growth in Nigeria. The ARDL is utilized in this study mainly because it allows for variables integrated of order zero and order one, I(0) and I(1) respectively, to be utilized in the same model without the risk of generating spurious regressions (Pesaran et al, 2001). The ARDL bounds test is also robust for finite samples, even in the presence of phenomena of shocks and regime shifts. In addition, different optimal lags can be used for different variables as they enter the model, which is not applicable in the standard co-integration test. Lastly, this technique allows for the simultaneous estimation of the short and long run parameters in the model. To use this approach, the study first ensure that none of the variables in the model are I(2), as such data will invalidate the methodology. Second, formulate an “unrestricted Error Correction Model (ECM) for all general and specific objectives. Following these, estimate the equation and ensure the errors of each model are serially independent and stable. Then perform a “Bounds test” to see if there is evidence of a long run relationship between the variables and if the outcome is positive, then the study estimate a long run “levels model”, as well as a separate “restricted” ECM.

## 4. Results and Discussion

### 4.1 Unit Root Test Results

Prior to investigating co-integration, researchers effect unit root test on the series under study to examine the stationarity properties of time series variables. The conventional method of Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), Kwiatkowski, Phillips, Schmidt and Shin (KPSS) unit root test of stationarity are usually weak in the face of structural break. A break is an intermittent shock that has a permanent effect on time series. Failure to explicitly account for this break during the unit root testing procedure will lead to a bias that reduces the ability to reject a false unit root null hypothesis (Glynn et al. 2007). The conventional unit root test like ADF, PP, KPSS usually mistake the structural break for a unit root and report wrongly. Because of this, it is usually imperative for one to go for a unit root procedure that explicitly account for the possibility of structural break and the Zivot-Andrews (1992) unit root procedure is used to account for such breaks. The results of the ADF, PP and Zivot-Andrews unit root tests are presented in table 1.

**Table 1: ADF, PP and Zivot-Andrews Unit Root Tests Results**

Variable	ADF		PP Test			ZA		
	Level	1st Diff.	Level	1 <sup>st</sup> Diff.	Remark	Break Date	t-Statistic	Remark
LogRGDP	0.8172 <sup>n</sup>	-3.3343 <sup>b</sup>	1.5994 <sup>n</sup>	-3.1916 <sup>b</sup>	I(1)	2014	-5.4805 <sup>a</sup>	I(1)
LogPPT	-1.1409 <sup>n</sup>	-4.7956 <sup>a</sup>	-0.7736 <sup>n</sup>	-5.8202 <sup>a</sup>	I(1)	2014	--5.3581 <sup>a</sup>	I(1)
LogCIT	-0.5852 <sup>n</sup>	-6.8171 <sup>a</sup>	-0.5778 <sup>n</sup>	-6.6691 <sup>a</sup>	I(1)	2015	-7.9622 <sup>a</sup>	I(1)
LogPIT	-0.9376 <sup>n</sup>	-6.4892 <sup>a</sup>	-0.8298 <sup>n</sup>	-6.4381 <sup>a</sup>	I(1)	2011	-7.0523 <sup>a</sup>	I(1)
LogCED	-0.6526 <sup>n</sup>	-6.0569 <sup>a</sup>	-0.6495 <sup>n</sup>	-6.0568 <sup>a</sup>	I(1)	2003	-6.2392 <sup>a</sup>	I(1)
LogGCE	-0.9588 <sup>n</sup>	-6.3494 <sup>a</sup>	-0.5908 <sup>n</sup>	-6.3394 <sup>a</sup>	I(1)	1999	-7.3027 <sup>a</sup>	I(1)
LogGRE	-1.6727 <sup>n</sup>	-7.7908 <sup>a</sup>	-1.2415 <sup>n</sup>	-7.6220 <sup>a</sup>	I(1)	2011	-9.5838 <sup>a</sup>	I(1)
LogGDD	-2.9009 <sup>c</sup>	-1.0773 <sup>n</sup>	-0.0271 <sup>b</sup>	-9.2562 <sup>a</sup>	I(0)	2015	-5.1611 <sup>a</sup>	I(1)
LogPED	-2.6598 <sup>c</sup>	-4.2422 <sup>a</sup>	-2.6884 <sup>c</sup>	-4.2422 <sup>a</sup>	I(1)	2005	-6.1592 <sup>a</sup>	I(0)
FCS	-5.1559 <sup>a</sup>	-6.1644 <sup>a</sup>	-5.1653 <sup>a</sup>	-19.108 <sup>a</sup>	I(0)	2012	-6.8801 <sup>a</sup>	I(0)

Notes: a, b and c denotes the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively while n denotes Not Significant.

Source: Author's Computation using Data from Central Bank of Nigeria and National Bureau of Statistics (1980-2017)

The ADF and PP unit root test results both showed that, LOGRGDP, LOGPPT, LOGCIT, LOGPIT, LOGCED, LOGGCE, LOGGRE and LOGPED were not stationary at levels. From the ADF test results, only FCS was stationary at levels while the remaining variables achieved stationarity only after first difference. The PP unit root test results showed that FCS and LOGGDD were stationary at levels meaning that they are integrated of order zero or I(0). Hence, we conclude that these variables are stationary at first difference which imply that they are integrated of order I(1). Based on the ADF and PP unit root test results, we can conclude that all our variables are integrated of order zero, I(0) or one I(1).

From the Zivot and Andrews (1992) structural break unit root test, it is evident that breaks in data occurred in 2014 for RGDP and PPT during the oil price shock which started in mid-2014. The

CIT and GDD variables exhibit the same structural break year in 2015 and are stationary at first difference. Breaks in PIT and GRE occurred in 2011 when there was a general election in Nigeria and are stationary at first difference. Breaks in CED occurred in 2003 and 1999 for GCE variable and is stationary at first difference. Public external debt however, exhibited a structural break in 2005 and is stationary at first difference. This is a period during which Nigeria and the Paris Club announced a final agreement for debt relief worth \$18 billion and an overall reduction of Nigeria's debt stock by \$30 billion in October 2005. The objective of the structural break unit root test is to examine the effects of shocks in government revenue sources on Nigeria's economic growth. To do this, the study carried out a multiple breakpoint test for the growth model using the Bai-Perron (2003) sequential breaks test. The results revealed the break dates of 2011, 1990 and 2003 respectively as the sequentially determined breaks of the model in order of their significance (of 1, 2, 3). As we usually use one break in the model and the Bai-Perron sequential breaks test results revealed that 2011 break dates has the most important effect on the variables included in our model, we therefore created a new dummy variable with the value of "zeros" from 1980 to 2010 and "ones" from 2011 to 2017. This dummy variable is used as structural break variable that is used as an independent variable in our model to capture the effect of structural break on economic growth in Nigeria within the study period.

### ARDL Bounds Test to Co-integration Analysis

Given the unit root properties of the variables, we proceed to establish whether or not there exists a long run relationship between the independent variables and real Gross Domestic Product using the ARDL bounds testing procedure. The lag structure of an ARDL model is crucial for the results to be valid. The maximum dependent lags of 2, was automatically selected for our ARDL growth model on the basis of Akaike Information Criterion (AIC) from the lag length selection criteria. We therefore estimate an ARDL growth model (1, 0, 2, 2, 0, 1, 2, 1, 2, 2, 0). The results obtained from the ARDL bounds testing approach and the estimated F-test are displayed in table.

Test Statistic	Critical Value	Significance Level	I(0)	I(1)
F-Statistic	5.767984	1%	2.54	3.86
K	10	2.5%	2.28	3.50
		5%	2.06	3.24
		10%	1.83	2.94

Source: Author's Calculation using E-views 9.5

From the ARDL bounds test of co-integration, the null hypothesis of no co-integration is tested against the alternative hypothesis of the presence of co-integration among the variables in the model. From the results in table 2, since the F-statistic (5.767984) is greater than all the upper bound values at 10%, 5% and 1% level respectively, the null hypothesis of no co-integration is rejected hence there is evidence of long run relationship among the variables in our growth model at 5% level of significance. This finding is consistent with our theoretical framework of Laffer's and Barro's endogenous growth theories which assert that productive government spending and non-distortionary tax policies can have a long-term or permanent growth effects on countries. We therefore proceed to estimate the short and long run coefficients of our ARDL model.

## Long Run Co-integration Results for the Growth Model

Since long run relationship was established from the ARDL bounds co-integration test, the study proceeded to examine the long run effect of the independent variables on economic growth by estimating the conditional ARDL long run model for economic growth and the results are presented in table 2.

Table 2: Long Run Co-integration Results of ARDL Model (1, 0, 2, 2, 0, 1, 2, 1, 2, 2, 0)

Variables	Coefficients	Std. Error	t-Statistic	Probability
LOGPPT	-0.002459	0.0222686	-0.108400	0.9155
LOGCIT	0.489881	0.061447	7.972473	0.0000
LOGPIT	-0.066276	0.018873	-3.511718	0.0043
LOGCED	0.155107	0.052446	2.957460	0.0120
LOGGCE	- 0.273715	0.041065	-6.665420	0.0000
LOGGRE	0.225847	0.067509	3.342460	0.0059
LOGGDD	- 0.439390	0.058594	-7.498841	0.0000
LOGPED	- 0.060070	0.013652	-4.400258	0.0009
FCS	-0.137937	0.052743	-2.615244	0.0226
DUMSB	0.116330	0.063891	1.820768	0.0937

Source: Author's Calculation using Data from Central Bank of Nigeria and National Bureau of Statistics (1980-2017).

The long run coefficient of Petroleum Profit Tax (LOGPPT) has a negative but statistically insignificant effect on economic growth. This implies that PPT has not contributed significantly towards stimulating economic growth in Nigeria during the period under review. The negative sign of this variable is however not unexpected as a result of the over dependence of the country on unpredictable oil revenue for public spending. Volatility in oil price often results in revenue volatility, expenditure volatility, output volatility and unsustainable economic growth. Corruption, mismanagement, waste, oil price volatility and fixation on the sharing of oil revenue at the expense of production are unsustainable and unethical practices that have continued to stifle sustainable economic growth in Nigeria. The result is consistent with extant study of Odhiambo and Oluwatosin (2018) who found a negative and statistically insignificant effect of petroleum profit tax on economic growth in Nigeria.

The long run coefficients of Company Income Tax (LOGCIT), Customs and Excise Duties (LOGCED) both show signs of positive effect on economic growth and are both significant at one percent level. This implies that CIT and CED do have significant impact on the growth rate of Real GDP in Nigeria. Thus, an increase in government revenue generation through company income tax, customs and excise duties is associated with 0.489881 and 0.155107 increases in economic growth respectively. Tax revenue is a major source of financing government spending required to promote growth and provide needed infrastructures. This finding is in line with existing literature and findings of Venkataraman and Urmi (2018), Nonvida and Amegnaglo (2017) and Ofoegbu et al. (2016) who reported a significant positive long run impact of company income tax, customs and excise duties on economic growth in India, Benin and Nigeria.

The long run coefficient of Personal Income Tax (LOGPIT) portrays a negative relationship with economic growth that is significant at one percent level. The result reveals that a unit increase in

personal income tax is expected to decrease economic growth by 6.63 percent *ceteris paribus*. Government will attempt to generate as much revenue as possible without any regard to the efficiency losses caused by taxation. Increasing tax rate beyond a certain threshold is counter-productive for raising further tax revenue and act as a disincentive to economic growth. This justifies the findings of Atems (2015), Stoilova (2017), Badri and Allahyari (2013) who have established that higher taxes have a negative impact on economic growth in 48 states of United States, 28 European countries and Iran.

The long run results further show that the coefficient of Government Capital Expenditure (LOGGCE) has an unexpected negative effect on economic growth that is significant at one percent level. This may suggest that contrary to a priori expectation, in the long run, government capital expenditure may have a net negative impact on economic growth in Nigeria. Thus, a unit increase in government capital expenditure is associated with about 27.37 percent decrease in the level of economic growth in Nigeria within the study period. Nigeria spends significant part of its revenue on servicing huge public debts, subsidizing domestic fuel consumption, fighting protracted insurgency and other violent crimes. Consequently, the country has very little left to fund critical infrastructure like education, health, transportation and communication which exerts positive effect on economic growth. This validate the findings of Iheanacho ((2016), Darma (2014) and Modebe et al. (2012) who found a significant negative impact of capital expenditure on economic growth in Nigeria in the long run.

The long run effect of Government Recurrent Expenditure (LOGGRE) on economic growth is positive and also significant at one percent level. From this result, a unit increase in government recurrent expenditure would lead to about 22.58 percent increase in economic growth. Hence, increase in government recurrent spending can bolster economic growth by putting money into people's pockets. The findings confirm the views of Keynes and Wagner on the impact of public expenditure on economic growth and also consistent with studies by Chikezie et al. (2017), Iheanacho (2016), Modebe et al. (2012), Josaphat and Oliver (2000) who found that increase recurrent expenditure relates positively with economic growth of Nigeria and Tanzania respectively.

Confirming a priori expectation, the long run coefficient of Government Domestic Debts (LOGGDD) demonstrates a negative effect on economic growth that is significant at one percent level. From the results, a unit increase in the level of domestic borrowings by government would lead to a decrease in economic growth by about 43.94 percent. The federal government continued borrowing from the domestic market for deficit financing is limiting the private businesses that need credits from assessing funding for business expansion and growth. Nigeria, like many developing countries, is plagued by increasing government expenditures, unmatched by government revenue. The use of government domestic debts to fund government expenditure are also found to have significant crowding-out effect on private investment. This result justifies the findings of James et al. (2016), Anyanwu and Erhijakpor (2014) who in their studies reported a significant negative impact of domestic debts on economic growth in Nigeria in the long and short run.

The coefficient of Public External Debt (LOGPED) also parades a significant negative effect on economic growth in the long run that is significant at one percent level. In conformity with a priori

expectation, a unit increase in external debt is associated with about 6 percent fall in economic growth, *ceteris paribus*. Borrowing is expected to stimulate economic growth if properly managed and applied to finance the provision of critical infrastructure. However, Krugman (1988) contradicts this view by mentioning external debt as one of the factors hampering economic growth as huge borrowing leads to high indebtedness, debt traps and slow down of economic growth. According to him, accumulated debt stock results in higher tax (tax disincentive) on future output and thus crowds out private investment. The result is in line with Sanya and Abiola (2015), Mbah et al. (2016) and Dladla and Khobai (2018) who established a significant long run impact of external debts on economic growth in Nigeria and South Africa respectively.

The long run coefficient of Fiscal Stance (FCS) exhibits a negative effect on economic growth that is significant at 5 percent level. Confirming a priori expectation, the results indicate that current fiscal policy of increased used of budget deficits to stimulate economic growth is not sustainable and would lead to a decrease in economic growth by about 13.79 percent. The finding of this study indicates that the impact of fiscal deficit on RGDP is mild but negative and significant at the 5 percent level. This contradicts the Keynesian theory, but is in accord with neo-classical theory which asserts that fiscal deficits lead to a drop in the GDP. Nevertheless, the government must strive to keep deficit under control, not to hamper growth, and expenditure. The result corroborate the findings from extant studies by Sanya and Abiola (2015), Chikezie et al. (2017) and Hussain and Haque (2017) who reported a significant negative impact of fiscal deficit on economic growth in Nigeria and Bangladesh respectively.

The long run coefficient of the structural break variable (DUMSB) exhibit a positive effect on economic growth that is not statistically significant. The structural break year (2011) was an election year in Nigeria. The coming to power of President Jonathan, a southerner from the Niger Delta region in 2011 brought some relative peace to the Niger Delta region that made it possible for the government to maximize oil production output in the face of rising oil prices. This led to a significant increase in government revenue that allows the government to strengthen its balance of payment position and build its foreign reserve position. Foreign inflows to the government bond market, portfolio investment inflows also increased in the absence of an oil price shock during this period contributing to the positive impact of the structural break date on economic growth.

### **5.3.7 Analysis of Short-Run Co-integration Relationship of the Growth Model**

The results of the short run dynamics emanating from the long run relationships associated with the ARDL model is presented in table 3. The behaviour of the variables did not change much in the short run both in terms of the signs and the significance of their coefficients. All the variables in the model were statistically significant except PPT. As evident in table 3, the coefficient of the error correction model, that is, the co-integration equation (CointEq(-1)) is found to be statistically significant at 1 percent level and has the expected negative sign. This further affirms the existence of long run relationship between the variables in our model and shows the speed of adjustment to restore equilibrium following a disturbance. The results of the co-integration equation suggest that any shock to the model is totally adjusted at the rate of about 48.94 percent per year. The pace of adjustment is reasonably fast and thus, a shock will take about 2.04 years to fully recover and restore the economy back to long run equilibrium growth path.

Table 3: Short Run Error Correction Model Results for ARDL (1, 0, 2, 2, 0, 1, 2, 1, 2, 2, 0) Economic Growth Model

Variables	Coefficient	Std. Error	t-Statistic	Probability
D(LOGPPT)	- 0.001733	0.006765	- 0.256117	0.8022
D(LOGCIT)	0.151428	0.035650	4.247637	0.0011
D(LOGCIT(-1))	0.227826	0.026532	8.586870	0.0000
D(LOGPIT)	-0. 023646	0.006946	-3.404421	0.0052
D(LOGPIT(-1))	0.092550	0.010331	8.958121	0.0000
D(LOGCED)	0.068480	0.012565	5.450169	0.0001
D(LOGGCE)	-0.087012	0.010139	-8.582265	0.0000
D(LOGGRE)	0.095432	0.016683	5.720255	0.0001
D(LOGGRE(-1))	-0.069354	0.015610	-4.442909	0.0008
D(LOGGDD)	- 0.063651	0.008140	-7.819266	0.0000
D(LOGPED)	- 0.049585	0.009675	-5.125257	0.0003
D(LOGPED(-1))	0.015567	0.007908	1.968561	0.0725
D(FCS)	-0.034265	0.005858	-5.848818	0.0001
D(FCS(-1))	0.048646	0.006288	7.736668	0.0000
DUMSB	0.064943	0.019690	3.298364	0.0064
C	8.799294	0.605509	14.532067	0.0000
CointEq(-1)	-0.489363	0.033892	-14.439041	0.0000

$$\text{Cointeq} = \text{LOGRGDP} - (-0.0025*\text{LOGPPT} + 0.4899*\text{LOGCIT} - 0.0663*\text{LOGPIT} + 0.1551*\text{LOGCED} - 0.2737*\text{LOGGCE} + 0.2258*\text{LOGGRE} - 0.4394*\text{LOGGDD} - 0.0601*\text{LOGPED} - 0.1379*\text{FCS} + 0.1163*\text{DUMSB}).$$

Source: Author's Computation using Data from Central Bank of Nigeria and National Bureau of Statistics (1980-2017).

The short run coefficient of Petroleum profit tax D(LOGPPT) exhibit a negative effect on current level of economic growth that was not statistically significant. The inflow of oil revenue has not made any significant improvement in the lives of Nigerians and the economy as a whole. Consequently, the study findings revealed that the contribution of petroleum profit tax in Nigeria has no significant impact on economic growth in both the short and the long run.

The coefficient of the present rate of Company Income tax variable, consistent with a priori expectation, displayed a positive impact on current economic growth that is significant at 1 percent level. Specifically, a unit increase in the present CIT rate (LOGCIT) causes a 15.14 percent increase in current rate of economic growth while a unit increase in a year lag of CIT (LOGCIT(-1)) will lead to 22.78 percent increase in the current rate of economic growth in the short run. The short run coefficient of present rate of Customs and Excise Duties (LOGCED) is also positively related with the current rate of economic growth and significant at one percent level. The result shows that one percent increase in present CED rate will increase current economic growth by 6.85 percent in the short run. This is attributed to the fact that increased tax revenue invested in social and physical infrastructures promotes economic growth.

The short run coefficient of present Personal Income Tax (LOGPIT) variable in line with a priori expectation, parade a significant and negative impact on current rate of economic growth that is significant at one percent level. Distinctively, an increase in the present PIT (LOGPIT) rate will

lead to 2.36 percent decrease in current economic growth. However, a unit increase in one year lag of PIT (LOGPIT(-1)) rate will increase economic growth by 9.25 percent. Confirming a priori expectation, the short run coefficient of present Government Capital Expenditure (LOGGCE) is negatively related with current level of economic growth and significant at one percent levels. Expressly, a one percent increase in present GCE will decrease the current level of economic growth by 8.70 percent. This implies that present rate of GCE is negatively related to the current level of economic growth in Nigeria. Contrary to a priori expectation, the short run coefficient of present Government Recurrent Expenditure (LOGGRE) is positively related to the current level of economic growth and significant at one percent level. Explicitly, a one percent increase in present GRE causes an increase in the current level of economic growth by 9.54 percent. However, the immediate lag of GRE (LOGGRE(-1)), reveal that a one percent increase in one period lag of the variable causes a decrease in the current level of economic growth by 6.93 percent.

Confirming a priori expectation, the short run coefficient of present level of Government Domestic Debts (LOGGDD) is negatively related to the current level of economic growth and is significant at one percent level. Exclusively, a percentage increase in the present level of government domestic debts will lead to a fall in current level of economic growth by 6.36 percent. The result suggests that high level of domestic borrowings used to finance payment of salaries and running cost of over-bloated civil service, bloated budgets and bureaucracy will negatively affect current rate of economic growth in Nigeria. Contrary to a priori expectation, the short run coefficient of present level of Public External Debts ((LOGPED) is negatively related to the current level of economic growth in Nigeria and is significant at one percent level. Expressly, a percentage increase in the present level of public external debt causes a 4.96 percent fall in the current level of economic growth. However, the coefficient of the one year period lag of the variable (LOGPED(-1)) showed a positive relationship between previous level of external debts and current economic growth that is not statistically significant.

The short run coefficient of the present level of Fiscal Stance (FCS) indicated a negative impact on current rate of economic growth that is significant at one percent level. This implies that a unit increase in the present level of fiscal stance will lead to a fall in current rate of economic growth by approximately 3.43 percent. However, a one period lag of fiscal stance (FCS(-1)) show the opposite effect of increasing current level of economic growth by 4.86 percent . The results show the changing impact of government sector on the economy over time. The coefficient of the structural break dummy variable D(DUMSB) is positively related to economic growth and significant at one percent level. The implies that the stable macroeconomic environment witnessed after the 2011 general elections contributed positively in increased government revenue arising from increase oil price and production levels in the Niger Delta region thus stimulating growth of real GDP in Nigeria.

#### **4.4 Short-Run Econometric Diagnostics Tests**

The results of the short-run diagnostics test are contained in table 4. The Jarque- Bera test was used to check the distribution of errors resulting from regression. The results of the Jarque- Bera test shows that the p-value of 0.092613 is greater than 0.05 which implies that the residuals are normally distributed The Breusch-Godfrey Serial Correlation LM test is used to check for serial correlation. Since the p-value of the F-statistic of 0.1018 is greater than 0.05, it implies that there

is no serial correlation in the residuals of the model and we therefore conclude that our model is robust to serial correlation. The Breusch-Pagan-Godfrey test was used to check for heteroskedasticity in this study. The p-values of the F-statistic of 0.2447 is greater than 0.05, an indication that our model does not suffer from heteroskedasticity. This implies that the residuals of the model are homoskedastic. The Ramsey Reset test used to check for functional form, has a probability of F-statistic of 0.9920 which is also greater than 0.05 percent. We accept the null hypothesis and conclude that there is no problem of mis-specification in our model. The short run models were found not to be spurious because the Durbin-Watson statistics (2.120943) is greater than the  $R^2$  (0.998109).

Table 4: Short-run Diagnostics Tests Results

Test	Null Hypothesis	Obs. R-square	Prob. Value
Jarque-Bera	There is Normal Distribution	4.759644	0.092613
Breusch Godfrey	No Serial Auto-Correlation	4.569763	0.1018
Breusch-Pagan-Godfrey	No Heteroscedasticity	27.26892	0.2447
Ramsey RESET	No mis-specification error	0.000105	0.9920

Source: Author's Computation using E-views 9.5

#### 4.5 Stability Tests

The stability of long run parameters was examined by applying Cumulative Sum of recursive residuals (CUSUM) and Cumulative Sum of Squares of recursive residuals (CUSUMSQ) tests. An inspection of the CUSUM and CUSUMSQ graphs (Figures 3 and 4) from the recursive estimates of the model reveals that there is stability and no systematic change is detected in the coefficient at 5% significant level over the sample period. Finally, the regression for the underlying ARDL model fits very well and passes all the diagnostics tests against serial correlation, normality and heteroskedasticity. We therefore conclude that this model is well specified as it passes both the residual and stability diagnostic tests.

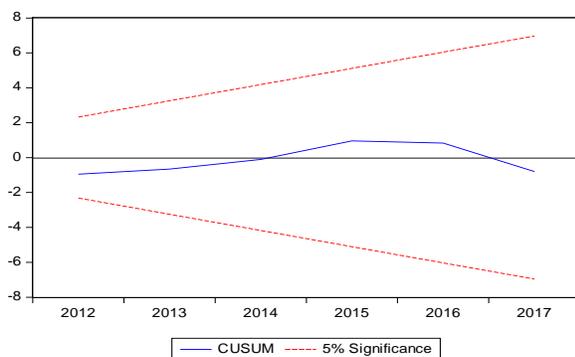


Figure 3: Stability Test, (CUSUM)

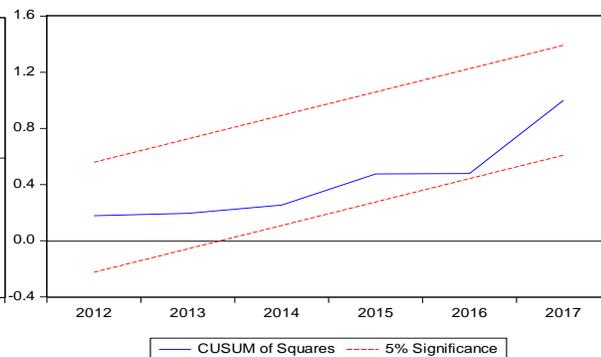


Figure 4: Stability Test (CUSUM of Squares)

#### 5. Conclusion and Recommendations

The main objective of this study is to investigate the impact of tax revenue shocks on economic growth in Nigeria. Time series data obtained from secondary sources for the period 1980-2017 were used for the study. The Augmented Dickey Fuller (ADF) and Phillips-Perron unit root tests shows that the variables are integrated of order zero and one with none integrated of order two.

The Zivot-Andrews structural break unit root test indicated revenue shocks date of 2014, 2015, 2011 and 2003 for PPT, CIT, PIT and CED while the control variables exhibited structural break dates of 1999, 2011, 2015 and 2005 for GCE, GRE, GDD and PED respectively. The ARDL bounds test results established the existence of a long run relationship between tax revenue and economic growth in Nigeria in the study period. The coefficient of co-integration equation which measure the speed of adjustment to long run equilibrium indicated that 48.93 percent short run departure from long run equilibrium are corrected each year. The study has implication for a small tax base to cover government spending. Higher tax revenue is strongly correlated with increased economic growth. The proportion of tax contribution to growth rate in Nigeria falls short of the optimal level in terms of the volume of economic activities and value of total output. Nigeria lags other African countries with respect to tax effort and as such has a huge untapped potential for enhanced revenue mobilization. The study therefore recommends that government should institute an appropriate tax system with emphasis on broadening the tax base and in some cases, reviewing upwards the tax rates in order to increase the tax effort as well as ensure optimal contribution of taxation to economic growth. The current low tax regime in Nigeria is induced by the heavy dependence on oil resources. With persistent fall in oil revenue and its volatile nature; there is need for the Nigerian government to reconsider its tax policy as a veritable source of government revenue. However, this does not necessarily imply that government should increase the rates of different taxes or create new taxes. As there is a large share of potential tax resources that is not being collected by the tax system, a credible strategy would be to look for ways to improve the tax collection system by capturing as many High Net Worth individuals as possible into the tax net. Any attempt to increase the overall tax burden by raising tax rates without improving the efficiency of the tax collection system will be counter-productive. Increase in taxes is likely to encourage tax evasion and push economic activity under-ground. Additional efforts should be geared towards diversification of the revenue base from unpredictable oil revenue to sustainable non-oil revenue sources that will serve as shock-absorbers against oil price volatility while revenue generated from taxes should be effectively applied to develop and grow the economy. Fiscal policy adjustment that reduces unproductive expenditure and protects expenditure in the social sector can lead to faster growth. The level of government expenditure should be set so as to avoid huge deficits leading to debt financing and the crowding-out effect of private investment.

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# Islamic Syndicated Loan, Institutional Quality, and Economic Growth: Malaysia Perspective

Siti Nurhidayah Mohd Roslen<sup>a\*</sup>, Salizatul Aizah Ibrahim<sup>b</sup>, Lim Wei Yin<sup>c</sup> & Tung Soon Theam<sup>d</sup>

<sup>abcd</sup> Universiti Tunku Abdul Rahman, Malaysia  
Email: [nurhidayah@utar.edu.my](mailto:nurhidayah@utar.edu.my)

## Abstract

This study investigates the relationship between the Islamic syndicated loan and economic growth by using the monthly data of Malaysia over the period of 2007 to 2017. Motivated by the fact that there is an emerging demand for Islamic financial products as well as the important role of credit supply in financing economic growth, we analyzed the significance of institutional quality and Islamic syndicated loan level towards stimulating economic growth in Malaysia. Ordinary Least Squares (OLS) estimations between the variables using Hildreth-Lu procedure were conducted in studying the relationship between the identified variables. The results showed a strong evidence to support that higher Islamic syndicated loans level generates economic growth in Malaysia over the studied period. While Islamic syndicated loan can stimulate economic growth, the positive effect may be hindered by stringent institutional framework.

**Keywords:** Islamic syndicated loan, economic growth, institutional framework, financial system, Malaysia

## 1. Introduction

The relationship between financial market development and economic growth has drawn extensive research interest in the recent years probably due to increasing importance of development financing especially in emerging economic regions. Despite the emerging literatures found on the topic, however, the findings were mostly concentrated on the implications of financial developments on economic growth through production factors such as physical capital stocks and human capital development (Yang, 2019; Bernier and Plouffe, 2019; Ibrahim and Alagidede, 2018). In addition, past findings on the relationship between financial market development and real economic performance were mixed. Some of the literatures suggested that there is favorable effect of financial market development on economic growth, while the other supports opposed view.

Financial market development involves the process of reducing the costs incurred in raising capital within the financial system. The main purpose is to support the investment and growth process. The sign and strength of relationship between financial market development and economic growth may depend on the types of sectors dominating the country (i.e. whether it is financial sector or banking sector based). Mishra & Narayan (2015) and Narayan & Narayan (2013) have suggested that financial sector development has a statistically significant and positive impact on economic growth, but not banking sector. Banking sector development was found to results in negative economic growth. This could be explained by the form of economy employed by the country itself.

Countries with more services based economy tend to have capital market based financial system in order to boost economic growth (Allen et al., 2018). In addition, since the stage economic growth evolves over time, hence, the financial structure may also change in the same way too (Liu and Zhang, 2018). Regardless of which stage of development a country is, one cannot deny the fact that capital formations factor is vital in financing the investment activities in stimulating the economic growth (Bernier and Plouffe, 2019; Yang, 2019; Eren, Taspinar and Gokmenoglu, 2019).

In supporting the increasing capital needs especially in developing countries, the use of syndicated loans have becoming one of the financing options available for large and medium-sized firms. Being considered as an alternative to bond financing, this form of financing facility have been getting greater attention by recent researchers due to its ability in promoting loan diversifications for syndicate banks (de las Mercedes Adamuz and Hernández Cortés, 2014) and allowing riskier borrowers to get convenient access to loans (Lim, Minton and Weisbach, 2014; Maskara, 2010). The present study gives special consideration to Islamic syndicated loans in order to provide some highlight on its role towards economic growth in Malaysia as it was found in past literature that Islamic finance led to more stable business cycle periods (Djennas, 2016) and thus contribute to higher economic growth. Besides, most studies in the past were mainly concentrated on the effect of banking development on economic growth in general (Caporale et al., 2019; Lerskullawat, 2017; Rajesh Raj, Sen and Kathuria, 2014; Fasih, 2012). Therefore, in this research, the impact of Islamic syndicated loans towards economic growth, in relation to different institutional quality will studied while controlling for some variables.

Our contribution in the literature is twofold. First, we add to the strand of research on Islamic bank sector by bringing into the fore the potential role of Islamic syndicated loans towards stimulating economic growth. Secondly, our findings contribute to the on-going discussions on the implications of institutional quality on the performance of Islamic banking products. The rest of this paper is structured as follows. Section 2 provides background information and develops empirical hypotheses. Section 3 details model specifications, data, and methodologies. Section 4 presents the findings and discusses the estimation results. Finally, section 5 contains summary of the main findings and concluding remarks.

## **2. Background and Hypothesis Development**

To place the present study in its context, we first provide general overview of Islamic syndicated loans in Malaysia. Then, on the basis of various literatures, we examine the relationship between Islamic syndicated loans in Malaysia and institutional qualities on the economic growth.

### **2.1 Islamic Syndicated Loan in Malaysia**

Syndicated loan is a form of financing in which two or more lenders jointly provide loans to borrowers. Each lender in the syndicate will contributes part of the loan amount and they all share the lending risk (Mast, 2007). The syndication will be led and administered by arranging bank. Nowadays, the syndicated loans have been offered in both conventional and Islamic financial systems.

Islamic syndicated loan has emerged as part of the global financing sources. In Malaysia, Islamic syndicated loans are being offered by Islamic banks, commercial banks, and investment merchant banks. In terms of size of offerings, Islamic syndicated loans offered by Islamic banks outpaced that of conventional and merchant banks as shown in the statistical data from December 2006 to April 2019 in Figure 1 (Bank Negara Malaysia, 2019). The high contribution of the Islamic syndicated loans offered by Islamic banks in Malaysia over the commercial banks is an indication that there is an increasing trust of firms towards Islamic banking system in raising capital using syndicated loans in Malaysia.

Islamic syndicated loans differentiates itself from the existing conventional banking through its compliance to the Shari’ah law which is prohibition of interest (*riba*), extreme uncertainties (*gharar*), and gambling (*maysir*). These features are elements that make Islamic banking system to be perceived as a banking system that provides greater stability to investors as compared to the conventional banking system. In addition, Islamic Banks in Malaysia is expected to increase the size of its syndicated financing with the increasing demand of the global halal economy (Bloomberg, 2018). In this study, the level of Islamic syndicated loans will be denoted by the Islamic syndicated loans offered by Islamic banks alone in order to generalize the findings specifically from the scope of Islamic banks.

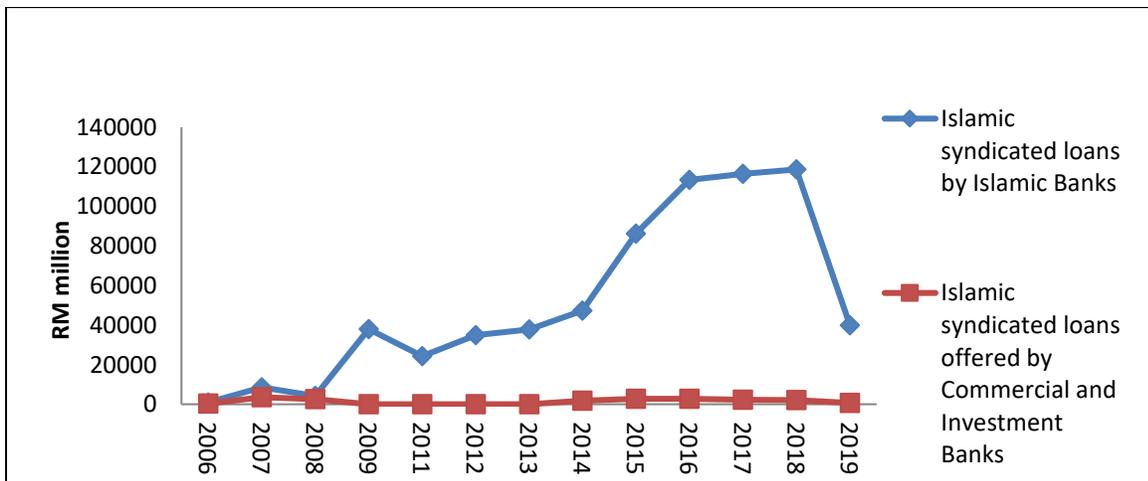


Figure 1: Islamic Syndicated Loans Offered in Malaysia (Dec 2006-April 2019)

## 2.2 Syndicated Loans and Economic Growth

There are scarce research that studies the direct relationship between syndicated loans and economic growth. However, the relationship can be elaborated by looking at the indirect implications of certain market and firms specific factors towards the loan risks. For example, during global financial crisis period at which, during which the market interest rate is heightened, there is an increasing size of syndicated loans being offered by non-bank lenders as the syndicated loans system enable small lenders to overcome their balance sheet constraints in getting access to certain group of borrowers (Cerutti, Hale and Minoiu, 2015). In addition, the interest rates in syndicated loans were also determined by the government economic policy (Ashraf and Shen, 2019) which will then shaped the way financial market functions.

Besides market factor, firms' specific factors will also determine the types of loans offered by bank and non-bank institutions. According to Altunba (2009), firms with large size, high financial leverage, more profits, and high value tend to use syndicated loans. Firms that issue syndicated loans will normally finance high risk projects (Poulsen and Sinkey, 2018) and because of that, it will be offered at higher premium by lenders (Lim, Minton and Weisbach, 2014). Despite of its high risk profile, syndicated loans are still preferred by lenders as it can provide greater diversification benefits than individual loans offered by one single lender (Simons, 1993).

Since Islamic syndicated loans is governed under Shari'ah law, it is expected that all the transactions to be effectively carried out by the intermediating institutions in order to it to results in higher economic growth (Kassim, 2016). As long as the lending institutions able to ensure high quality loans are offered (Jin et al., 2019), high economic growth can be achieved as a result of lower non-performing loans issues (Boumparis, Milas and Panagiotidis, 2019). Based on these literatures, we hypothesized that there is positive impact of Islamic syndicated loans level on the economic growth.

### **2.3 Institutional Quality and Economic Growth**

When it comes to the implications of institutional quality towards economic growth, previous researchers have suggested mix findings. Some authors argue that relaxed institutional settings may stimulate growth (Boamah, Akotey and Aaawaar, 2019; Xing et al., 2019) , while others find the other way around (Nguyen, Le and Su, 2020; Ketteni and Kottaridi, 2019; Gozgor et al., 2019).

The institutional quality will determine how firms will operate. Business environments with less strict regulations, may encourage high investments and generally been considered as growth-supportive. This is because, with strict regulations, there will be lower capacity for banks and lending institutions to extend their balance sheets that will consequently results in lowering money supply (Xing et al., 2019). In addition, with greater financial liberalization, geographically separated markets will become more integrated (Yao et al., 2018) which will allow lending institutions to experience diversification gains provided that the system is strategically formed by taking into account the correlations factor between engaging countries (Boamah, Akotey and Aaawaar, 2019).

Opposing literatures suggested that credit market deregulations is not the way to go for lending institutions in emerging economies (Ketteni and Kottaridi, 2019) as it may lead to economic policy uncertainties. Economic policy uncertainties changes as a result of market regulation changes. High economic uncertainties will cause lower bank credit growth rate (Nguyen, Le and Su, 2020) and thus lower corporate investment level (Gozgor et al., 2019). With this opposing point of views, this research is expected to shed some light on how the quality of economic institutions (as measured by index rule of law and index of regulatory quality) is going to affect the relationship between Islamic syndicated loans with economic growth. We hypothesized that, strict regulatory framework (i.e. high institutional quality) will results negative impact of Islamic syndicated loans on economic growth.

### 3. Model Specifications, Data, and Empirical Methodology

This study focuses on the relationship between Islamic financial developments as measured by Islamic syndicated loan level with economic growth. This study uses the monthly data from year 2007 until 2017 extracted from World Development Indicator (WDI) database as well as Bank Negara Malaysia statistical data from its websites.

We begin our empirical analysis by examining the non-linear relationship between economic growth and domestic credit, followed by with the inclusion of Islamic syndicated loans variables in addition with other controlling variables as shown in equation (1). The purpose of this preliminary modeling is to identify the significance of bank credit existence towards the economic growth in the period under study.

$$\ln \text{GDP}_t = \alpha_0 + \alpha_1 \text{DC}_t + \alpha_2 \ln \text{SL}_t + \alpha_3 \text{I}_t + \alpha_4 \text{Ed}_t + \alpha_5 \text{GC}_t + \alpha_6 \text{TO}_t + \mu_i \quad (1)$$

Where  $\ln \text{GDP}_t$  is natural log of GDP per capita used as a proxy of economic growth,  $\text{DC}_t$  is the domestic credit extended by commercial banks to the private sectors as a percentage of GDP to measure the banking system activity level,  $\ln \text{SL}_t$  is the natural log of syndicated loan size extended by Islamic banks,  $\text{I}_t$  is the measure of inflation,  $\text{Ed}_t$  signifies the education level represented by the primary school enrollment rate,  $\text{GC}_t$  is the government consumption expenditures, and  $\text{TO}_t$  is the trade openness.

The next analysis is directed towards identifying whether the quality of contract enforcement and regulatory quality do plays any role in moderating the impact of Islamic syndicated loan level on economic growth. To do this, we further extend our model to include the interaction between the index rule of law ( $\text{ROL}_t$ ) which captures the quality of contract enforcement, and the regulatory quality ( $\text{RQ}_t$ ) to measure the ability of the government in formulating and applying sound policies and regulations. The ROL and RQ variables were both used in measuring quality of economic institutions. The resulting interaction models are as shown in equation (2) and (3).

$$\ln \text{GDP}_t = \alpha_0 + \alpha_1 \text{DC}_t + \alpha_2 \ln \text{SL}_t + \alpha_3 \text{I}_t + \alpha_4 \text{Ed}_t + \alpha_5 \text{GC}_t + \alpha_6 \text{TO}_t + \alpha_7 \text{ROL}_t + \alpha_9 (\text{ROL}_t \times \ln \text{SL}_t) + \mu_i \quad (2)$$

$$\ln \text{GDP}_t = \alpha_0 + \alpha_1 \text{DC}_t + \alpha_2 \ln \text{SL}_t + \alpha_3 \text{I}_t + \alpha_4 \text{Ed}_t + \alpha_5 \text{GC}_t + \alpha_6 \text{TO}_t + \alpha_8 \text{ROL}_t + \alpha_{10} (\text{RQ}_t \times \ln \text{SL}_t) + \mu_i \quad (3)$$

The parameter of  $\alpha_9$  measures the rule of law effect of Islamic syndicated loans on economic growth rate. A negative  $\alpha_9$  implies that the impact of Islamic syndicated loans level on economic growth will be lower in a country with stricter contract enforcement. In addition, another key parameter was also added to measure the institutional quality which is denoted by  $\alpha_{10}$ . A negative  $\alpha_{10}$  coefficient value signifies that the impact of Islamic syndicated loans level on economic growth would be weaker for country with high institutional quality.

Before examining the non-linear relationships between the identified variables, we test the stationary of each variables using Augmented Dickey-Fuller Test (ADF). It is important for us to measure the stationarity properties of the variables before performing the regression analysis to avoid the possibility of getting spurious regression models. Finally, the OLS estimations were generated by using Hildreth-Lu procedure. This procedure is used to adjust a linear model in

response to the presence of serial correlations in the error term found using the Durbin Watson test on the original data (Hildreth and John, 1960).

#### 4. Data and Estimation Results

Table 1 provides summary statistics on the variable for the overall period 2007-2017. Overall, we find that Islamic syndicated loans do play an important role in supplying credit for the economy. Before exposing the econometric results, note that the variables rule of law and regulatory quality will be introduced in separately in different models.

Table 1: Summary statistic.

Variables	Obs.	Mean	Std. Dev.	Min	Max
Ln GDP	132	27.24	0.20	26.95	37.56
DC	132	113.30	8.87	96.60	125.00
Ln SL	132	7.81	1.07	5.72	9.26
Ln I	132	2.53	1.26	0.58	5.41
Ed	132	97.97	1.62	95.44	99.91
GC	132	12.80	0.76	11.50	13.84
TO	132	152.00	18.74	128.80	192.50
ROL	132	0.46	0.06	0.34	0.59
RQ	132	0.59	0.16	0.30	0.84

Notes: Ln GDP = Ln GDP per capita growth, DC = ratio of domestic credit per GDP, Ln SL =Ln Syndicated loans by Islamic banks, Ln I = Ln Inflation rates, Ed = Education, GC= government consumption per GDP, TO= trade openness, ROL = rule of law, and RQ =regulatory quality

We also have used ADF unit root test as presented in Table 2 to test whether or not the unit root is presence in the autoregressive model we used to predict economic growth. The unit root test is very important before applying any regression analysis as suggested in Shahbaz (2014) and Shahbaz (2013). Ln GDP and Ln SL variables were both stationary at data level. DC, Ln I, GC, ROL, and RQ are stationary at first difference. Only two variables were stationary at second difference which are Ed and TO.

Table 2: Unit root analysis.

Variables	Level		First difference	
	Intercept	Intercept and trend	Intercept	Intercept and trend
Ln GDP	0.0039	-0.1958*	-1.2676	-1.4050
DC	-0.0237	-0.0742	-1.0062***	-1.0089***
Ln SL	-0.0176	-0.1279**	-0.6263**	-0.6159
Ln I	-0.1667*	-0.1577	-1.5398***	-1.5597***
Ed	-0.4197	-0.7367	<sup>a</sup> -10.045***	<sup>a</sup> -10.074***
GC	-0.0346	-0.0261	1.0068***	-1.0212***
TO	-0.3729	-0.8567	<sup>b</sup> -10.014***	<sup>b</sup> -10.003***
ROL	-2.0971	-0.0784	-1.4807***	-1.5529***
RQ	-0.0262	-0.0693	-1.0012***	-1.0012***

\* Significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

<sup>a</sup>Significant at 1% by taking second difference

<sup>b</sup>Significant at 1% by taking second difference

Notes: Ln GDP = Ln GDP per capita growth, DC = ratio of domestic credit per GDP, Ln SL =Ln Syndicated loans by Islamic banks, Ln I = Ln Inflation rates, Ed = Education, GC= government consumption per GDP, TO= trade openness, ROL = rule of law, and RQ =regulatory quality

Presented in Table 3 are the results of OLS estimations between the variables using Hildreth-Lu procedure to correct for autocorrelation (Column 1 to 6). The first specification runs the baseline model by controlling for overall banking section activity in addition to the control variable related to macroeconomic context. The second specification controls for the Islamic syndicate loan activity by using the level of syndicated loan offered by Islamic banks (Column 2). The institutional variables are included in further specifications in column 3 and 5. The specifications in column 4 and 6 include the combined effect of the institutional dimension and the size of Islamic syndicated loan.

The results show a positive and significant relationship between credits offered by banking institutions and economic growth, thus confirming similar findings from various studies that highlighted the importance of financial sector depth for economic growth. Indeed, according to Vo (2018), it can be said that the positive link between economic growth and bank lending is resulted from the increase of economic activities. This preliminary finding also implies the extent to which bank credit is still an important form of financing for Malaysian firms in fuelling economic growth.

Table 3: Islamic syndicated loan and growth – Hildreth-Lu procedure

Dependent variable: GDP per capita growth (Ln)		Dependent variables					
	(1)	(2)	(3)	(4)	(5)	(6)	
Constant	39.06 (4.38)***	37.81 (4.20)***	37.74 (4.18)***	28.82 (4.73)***	37.89 (4.23)***	37.04 (4.17)***	
Ed	0.054 (7.66)***	0.0536 (7.62)***	0.054 (7.57)***	0.054 (11.29)***	0.049 (6.33)***	0.046 (5.93)***	
Ln I	0.014 (4.32)***	0.014 (4.34)***	0.014 (4.35)***	0.021 (9.43)***	0.015 (4.58)***	0.017 (4.99)***	
GC	-0.083 (-8.96)***	-0.081 (-8.71)***	-0.082 (-8.68)***	-0.086 (-13.53)***	-0.074 (-6.93)***	-0.072 (-6.78)***	
TO	-0.003 (-5.92)***	-0.003 (-5.99)***	-0.003 (-5.96)***	-0.005 (-13.43)***	-0.003 (-6.14)***	-0.003 (-5.99)***	
DC	0.004 (3.59)***	0.004 (3.44)***	0.005 (3.37)***	0.002 (2.56)**	0.004 (3.48)***	0.005 (3.61)***	
Ln SL		0.006 (0.97)	0.006 (0.99)	0.1789 (12.21)***	0.006 (1.02)	0.036 (2.14)**	
ROL			0.020 (0.45)	3.087 (12.33)***			
ROLxLnSL				-0.390 (-12.34)***			
RQ					0.040 (1.47)	0.571 (2.03)**	
RQxLnSL						-0.069 (-1.89)*	

R <sup>2</sup>	0.9977	0.9977	0.9977	0.9989	0.9977	0.9978
F-statistic	59.55***	49.75***	42.40***	101.77***	43.46***	39.18***
D.W	2.056	2.082	2.08	2.04	2.07	2.08

\* Significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Notes: Ln GDP = Ln GDP per capita growth, DC = ratio of domestic credit per GDP, Ln SL =Ln Syndicated loans by Islamic banks, Ln I = Ln Inflation rates, Ed = Education, GC= government consumption per GDP, TO= trade openness, ROL = rule of law, and RQ =regulatory quality

However, we find that for a given level of financial development, Islamic syndicated loan does stimulate growth but not as significant as other factors (column 2). The insignificant relationship were also observed when the institutional quality (as measured by the rule of law index and the regulatory quality index) were taken into account (column 3 and 5). This could occur because of the limited scale of Islamic syndicated loan as compared to other loans provided by conventional banks. Despite the insignificant relationship observed in the findings, the positive relationship between Islamic syndicated loan and economic growth still shows that syndicated Islamic loans do play some roles in boosting economic growth. The coefficients of interactions between Islamic syndicated loan and economic growth become significant in both Model 4 and Model 6 suggesting that the marginal effect of syndicated Islamic loan depends on the quality of the institutions.

The results shown in Model 4 and 6 provide an overview on the role of institutional quality in relation between level of Islamic syndicated loans and economic growth. A negative and significant coefficient of the interaction terms in Model 4 and 6 show that stricter contract enforcement and sound policies for regulations tend to hinder the positive relation between Islamic syndicated loans level and economic growth. In other words, Islamic syndicated loans can result in high economic growth even at small size of loans provided that there is low regulatory environment. This finding suggested that low regulations may increase firm borrowings (Jiang et al., 2020) via Islamic syndicated loans which is also aligned with Nazmi (2005) who posited about the positive impact between deregulation and financial development.

As for the control variables, the coefficients related with the GDP per capital are always significant in all models shown in Table 3 (Model 1 to 6). The coefficients assigned to primary school enrolment ratio (Education) suggests that level of education may lead to improved to labor force productivity which will then results in higher economic growth. Our finding corroborate with those by Delalibera & Ferreira (2019); Ogundari & Awokuse (2018) and Mariana (2015) that educations would have a sizable impacts on income per capital and productivity of a country. In addition, the level of inflation rate agree with the conclusion made by Attari & Javed (2013), who claim that inflation rate do positively affect economic growth but within certain variability level (Ouyang and Rajan, 2019).

On the other hand, government consumption spending and trade openness do seem to have negative effect on growth. This negative relationship could exist because the excessive government investment and public debt which are beyond the optimal level. According to Chen, Yao, Hu, & Lin (2017), the effect of government spending could change from positive to negative when the government investment per GDP ratio has reaches a certain threshold level. Similar explanation could be applied to trade openness.

## 5. Conclusion

It has been well documented that Islamic finance is one of the most rapidly growing segments in the financial sector of many developing countries. Recall how the first Islamic bank was established in Malaysia back in year 1963 when the Pilgrims Management and Fund Board (Tabung Haji) was introduced by the government, followed by the establishment of Islamic Banking Act 1983 and first Islamic bank operation in Malaysia in year 1983 (Bank Islam Malaysia Berhad). The importance of this segment in generating economic growth has been intensified after the global financial crisis in year 2007-2008. Although various studies have been conducted in the area of Islamic finance, yet, there is scarce literature for the role of syndicated Islamic loan on economic growth.

The main objective of this paper was to examine the Islamic syndicated loan and economic growth nexus for Malaysia country over the 2007 to 2017 period. The results confirm similar conclusions from past studies about the deregulations and liberalized financial environment in fueling economic growth. Our study also suggests that Islamic financial development (as measured by Islamic syndicated loan level offered by Islamic banks) is positively correlated with economic growth. However, the positive implication of this segment of Islamic banking and finance activity may be hindered by stringent institutional framework.

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# **The moderating effect of trust in authority on the relationship between tax rates, penalty, detection probability, cost of compliance, royalty rates, environmental regulations and petroleum profit tax compliance. A theoretical framework**

**Abba Ya'u<sup>a</sup>, Natrah Saad<sup>b</sup>, & Abdulsalam Mas'ud<sup>c</sup>**

<sup>abc</sup>Tunku Puteri Intan Safinaz School of Accountancy Universiti Utara Malaysia (TISSA-UUM)  
Email: [abbayau1@gmail.com](mailto:abbayau1@gmail.com)

## **Abstract**

The paper presents a theoretical framework on the moderating effect of trust in authority on the relationship between tax rates, penalty, detection probability, cost of compliance, royalty rates, environmental regulations, and petroleum profit tax compliance. The objective of the proposed framework is to expand the Allingham and Sandmo (1972) model of tax compliance by adding two more predictor variables relevant to the oil and gas industry (royalty rates and environmental regulations), and moderating variable (trust) to stimulate the relationship. Allingham and Sandmo (1972) model received a lot of criticism for not considering other non-human factors variables which can help in determining taxpayer's compliance behavior, hence the expansion of the model to include new variables purely non-human factor which is relevant to the industry in question. A thorough search of the following databases; Scopus database, Web of Science, Emerald, Google Scholar, among others were conducted to come up with the relevant and related literature on the subject matter. Providing empirical evidence through validation of this framework would have important implications to policymakers in host oil and gas producing countries, practical implication on oil and gas operators, the implication to deterrence theory as well as future research.

**Keywords:** Trust in government; Petroleum profit; Tax; Environmental regulation; Royalty rates; Compliance

## **1. Introduction**

The current study aims at presenting a conceptual framework on the moderating effect of trust in government on the relationship between, tax rates, penalty, detection probability, cost of compliance, royalty rates, environmental regulations, and petroleum profit tax compliance. Oil is an important source of government revenue for many countries around the globe. The report by IMF (2012a) offered important insights on the oil contribution to government revenue across various continents. For instance, 45 percent of government revenue comes from mining alone in Botswana; one-quarter of government revenue comes from the combination of petroleum and mining in the Democratic Republic of Congo, Bolivia, Papua New Guinea, Indonesia, Vietnam and Russia (IMF, 2012a).

Furthermore, new discoveries of oil in commercial quantity found in Uganda, and Ghana IMF (2012a) which highlight the possibilities of having a high percentage of government revenue from

petroleum in these countries. Non-renewable natural resources are, however, found lesser but still significant in most OECD countries, which include Australia, Norway, Canada and the UK (Boadway & Keen, 2013). The IMF report highlighted that some developing countries are increasingly having a high percentage of revenue from petroleum of up to 80% of the total government revenue. This is the case for some Middle East countries such as Saudi Arabia, African countries such as Nigeria and Equatorial Guinea, Asian countries such as Brunei.

Evidence shows that Nigeria and Saudi charge between 50 to 80% of oil revenue from oil majors as petroleum profit tax Oremade (2010) due to their reliance on revenue from oil sectors. Despite the dependency of oil revenue by some developing countries evidence indicate enormous tax evasions by oil and gas companies. Nigeria is among the developing countries faces challenges especially regarding petroleum profit tax noncompliance informs of tax evasion by oil companies operating in oil upstream sector as argued by (Oremade, 2010; Ebimobowei & Ebiringa, 2012). This issue of non-compliance in developing countries including Nigeria makes them open for future research (Andreoni, Erard & Feinstein, 1998, p. 856). Thus, the needs for an examination of factors influence tax compliance among oil and gas companies operating in the upstream Nigerian oil sub-sector. This is desirable considering that Nigerian relied on this sector for its revenue. However, existing literature on tax compliance has not paid attention to the oil and gas sector despite its immense contribution to the economic growth of virtually all oil-producing countries. For example, in Nigeria, the oil sector contributes about 70% of government revenue and 95% of foreign exchange earnings (Kyari, 2013). Despite the enormous contribution of oil to the economic growth of Nigeria, studies that examine petroleum profit tax compliance are scant. Only one study found by Oremade (2010) whose study the perceptions of petroleum profit tax compliance from the tax administrators' point of view. Lack of tax compliance studies on the oil sector applies to most of the oil-producing countries.

Therefore, this study proposes a framework that expanded Allingham and Sandmo (1972) tax compliance which was initially originated from the seminal work of Becker (1968) to incorporate two additional predictor variables that are relevant to the oil and gas industry these variables are (royalty rates and environmental regulation), with trust in government to serve as moderating variable. Kirchler et al (2008), Gangl, Hofmann, and Kirchler (2015) and Hofmann et al (2014) argued that trust in authorities leads to tax compliance. This highlighted a potential influence of trust in authority in shaping tax compliance, hence this study proposed to use trust in authority to serve as potential moderating variable. If validated the study will contribute to the existing tax compliance literature in several ways. Firstly, the Allingham and Sandmo model has not been tested or examine in the oil and gas sector, this study will be the first to explore the power of these variables on oil and gas taxpayers.

Secondly, the model is expanded by adding two new variables which were not been tested in the tax compliance environment, therefore, it will serve as a roadmap for testing the effect of these variables on tax compliance behavior. Thirdly, the introduction of trust in government as a moderating variable into the model will make the model to look more robust and offer additional direction on how trust could stimulate the relationship between the propose constructs (including additional variables) and the petroleum profit tax compliance. Fourthly, the current framework will further be strengthening the weaknesses of Allingham and Sanmo (1972) tax compliance of not considering other peculiarities aspect of tax compliance behavior, such as incorporating non-

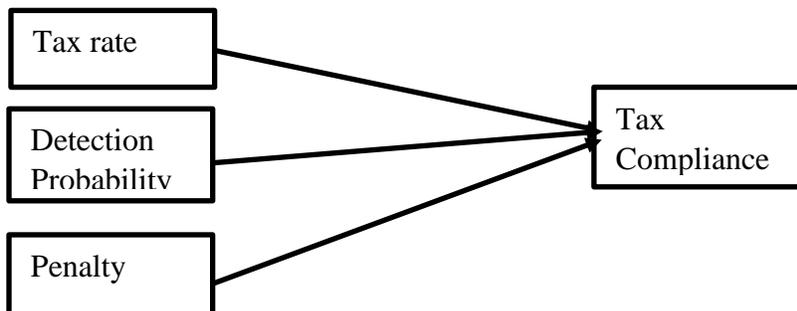
human factor variables into the model as advocated by many scholars. Finally, the model if validated would benefit oil and gas companies and ultimately many host oil and gas countries through the implementation of appropriate policy measures. The next section will focus on the proposition development of the constructs.

## 2. Literature Review

### 2.1 Deterrence Theory

The first economic tax compliance model was derived from the deterrence theory which was the seminal work of Becker (1968). The theory was initially build based on the economics of crime approach. The theory examined the deterrence effect of threats of punishment or sanctions on unwanted or illegal behavior. The theory postulates the different category of crime committed by an individual is done not because of the motivational factors to commit the crime, but rather because of the difference in expected benefit as well as the expected cost of committing such crime. The theory is simply implying that taxpayers are rational human beings who use available alternatives to maximize expected utility. Becker (1968) stressed that the alternative decision on the expected utility of an individual is, however, determined by the recognized possible outcomes, which desirably are assigned and attaching the likelihoods of uncertain outcomes.

Thus, Hamm (1995) stated that the alternative outcomes of each crime are eventually multiplied by the weighted outcome and likelihoods which assumes that the expected alternative utility decision will be obtained, and the utility is maximized, especially when the taxpayers select alternatives decision that gives the most favorable expected utility. Extant literature categorized deterrence into two categories; specific and general deterrence, Jacson, and Millron (1986) argued that researchers on tax compliance behavior mostly focuses on general deterrence, which simply means deterrence effect of potential sanction, while specific deterrence refers to the deterrence effect of actual actions. Consequently, Allingham and Sandmo (1972) were the first researchers to used deterrence theory into the taxpayer's compliance behavior and came up with what we refer to as the A-S model, which was based on Becker (1968) economic of crime model, which eventually this study tends to expand. Figure 1. Depict the model

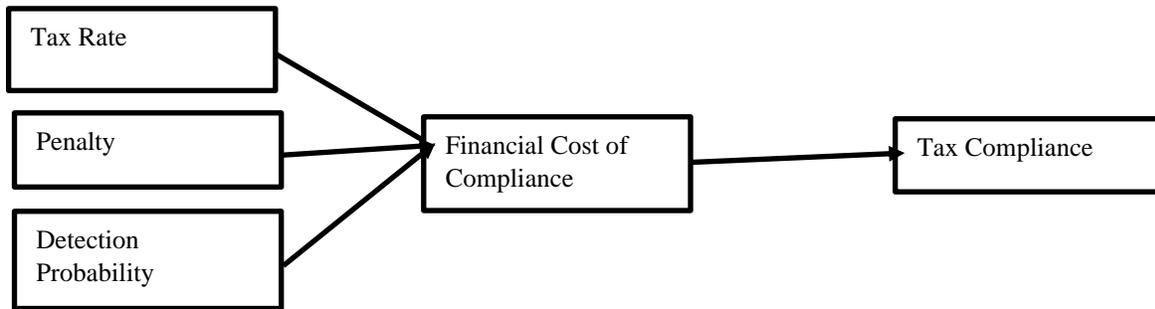


Sources: Allingham and Sandmo (1972)

Figure 1: Allingham and Sandmo model

Accordingly, Allingham and Sandmo (1972) argued that the decision of rational taxpayers to evade tax payment or comply is based on the taxpayer's choice on risk and uncertainty. According to Allingham and Sandmo under deterrence theory, the compliance decision of taxpayers is the

function of three variables for example tax rate, penalty, probability of detection as depicted in figure 1. Above and can be mediated by the cost of compliance Fischer et al (1992), hence the introduction of the cost of compliance into the model. The expanded deterrence theory by Fischer is depicted in figure 2 below.



Sources: Fischer et al (1992)

Figure 2: Expanded Allingham and Sandmo model

## 2.2 Petroleum Profit Tax

Oremade (2006) documented that the Petroleum Profit Tax is charged from the companies operating in the Nigerian oil sector on the value of oil sales at a price prevailing in the world oil market. Moreover, crude oil and gas sales for local refining are valued at actual amount realized for petroleum profit tax, and the value of oil sales at the global oil market is compared with the prevailing value at the posted price, where the posted price is greater the tax is charged at the posted price (Gbegi, et al., 2017). Petroleum tax refers to the tools and machinery of government used to create more essential rent sharing balance between host government and oil and gas companies, and that Nigerian petroleum profit tax is a clear example of petroleum taxation (Amiesa, Omowunmi & Joseph, 2018). Petroleum Profit Tax (hereafter, PPT) defined as the direct tax imposed annually on the chargeable profit of petroleum taxpayers, conducting petroleum exploration and production activities, and also serves as the instrument used for getting revenue from hydrocarbon wealth by the host country (Evans & Hunt, 2011). Petroleum profit tax is a tax related to upstream oil operations in the Nigerian oil industry (Odusola, 2006). Generally, PPT is associated with profit-sharing element on oil exploration, oil mining, oil prospecting leases, rents and royalties (Gbegi, et al., 2017). PPT refers to the charging of taxes on the profit accrued in the course of oil operation in Nigeria (Nwezeaku, 2005). Petroleum profit tax is assessed from the profit of companies engage in oil operation for the prevailing accounting period normally from January to December (Anyawu, 1993). Therefore, the current study aims at exploring the effects of tax compliance variables on petroleum taxpayers which is quite new and unique in the tax compliance environment. Petroleum Profit Tax is currently at 50% for operation in the deep offshore and inland basin, while the rate is 85% for operations in the onshore and shallow waters in Nigeria (PPTA, 2004 As amended). Moreover, PPT serves as the dependent variable in the current proposed framework.

### **2.3 Trust in Authority (Moderation Variable)**

To logically grounded our prediction, this section will explain the role of trust in authority in moderating the proposed unique interaction effects of the deterrence theory variables on petroleum profit tax compliance. Trust could be regarded as the ability and willingness to be exposed to the activities of other parties based on the anticipation that the other party will do a particular act vital and significant to the trustor, regardless of the capability to control or monitor the other party (Mayer, Davis & Schoorman, 1995). Consequently, taxpayers who recognize tax authority as trustworthy are likely to trust the tax authority, this may invariably increase compliance (Murphy, 2004). Additionally, Kirchler et al (2008) argued that trust is one of the significant factors that shape compliance.

Driving from the work of Kirchler et al (2008) on the slippery slope framework which proposed two forms of compliance; enforce and voluntary tax compliance and concluded that voluntary tax compliance is drive by trust in authorities. In concomitant with Kirchler et al (2008) assertion Gangl, Hofmann, and Kirchler (2015) and Hofmann et al (2014) in separate studies argued that trust leads to tax compliance. Though trust in authorities found to be one of the factors of tax compliance, but the trust relationship between authorities and taxpayers are still considered as “cops and robbers” in developing countries (Kastlunger et al., 2013; Muehlbacher Kirchler, & Schwarzenberger, 2011). Notwithstanding, even in the developed nations demand for tax compliance by authorities remains to be apparent as a burden that lowers business profits (Alm, Kirchler, & Muehlbacher, 2012; Alm & McClellan, 2012; Torgler, 2011). Trust is important in shaping compliance, because most of the taxpayers evaluates whether the authorities (Trustees) pursues an objective that are vital to him/her (Gangl et al., 2015; Gangl, et al., 2012). Therefore, trust should be an emotion directed towards other party and it should go beyond logical evaluation but genuine care and concern (Johnson & Grayson, 2005; Schaubroeck, Lam, & Peng, 2011). Trust is unarguably playing a significant and influential role in shaping the relationship between taxpayers and authorities, especially where government performance convinces the taxpayers to view their authorities as capable and concerned on their wellbeing (Gobena, & Van Dijke, 2016). Based on these debates it is evident that trust can shape taxpayer’s behavior. Argument could be made that if oil and gas taxpayers trust the tax authorities, they will comply Kirchler et al (2008), Gangl, Hofmann, and Kirchler (2015) and Hofmann et al (2014) and vice versa. This highlighted the moderating interaction of trust in authorities. Therefore, this study argued that trust in authorities will moderate the relationship between exogenous latent constructs and the endogenous construct.

### **2.4 Tax Rates**

The tax rate could be regarded as the actual rate of taxes on which the taxpayers are anticipated to pay out of their taxable profit to relevant tax authorities. It has been argued that significant interest has been shown on corporate income tax reforms which eventually widens the base and lower the tax rates Gravelle (2011). Subsequently, many scholars have examined the influence of tax rate on tax compliance, for example, Mas’ud et al (2014) uses simple regression to examine the influence of tax rate on tax compliance in Africa within the period 2012 to 2013. The study covers 61 African countries, and the result found significant negative. Effect of tax rates on tax compliance. However, their findings have limited validity in other sectors such as petroleum sectors, put differently, the

variable has not been examined in oil and gas sector, for this reason, they may not be a good yardstick in determining the actual effect of the variables. Furthermore, a higher tax rate does not essentially imply high tax compliance, hence tax payments depends on the tax based (Vintila, Gherghina & Paunescu, 2018). Subsequently, Gius (2018) examines the relationship between tax rate and tax revenue, he argued there is a level of the tax rate at which tax revenues are maximized. Gius, further asserts that, at a high marginal rate, the relationship is inverse because high tax rates may restrain economic activity and decrease the supply of labor.

Clotfelter (1983) and Slemrod (1985) investigate on marginal tax rates and found that marginal tax rates have a significant effect on underreporting. Additionally, Bayer (2006) found that higher tax rates increase evasion. More so, Wang, et al (2018) found a positive relationship between effective tax rates and CEO promotion. Similarly, Freidland, Maital, and Rutenberg (1978), Collins and Plumlee (1991), Alm, Jackson and McKee (1992), Park and Hyun (2003) in a laboratory experiment using differential tax rates found that increases in tax rates lead to higher evasion. Contrary to the findings that postulate the increase in tax rates may lead to higher tax evasion, the following studies indicate opposite findings. Alm, Sanchez, and Dejuan (1995), Masud et al (2014) found a negative relationship between an increase in tax rates and evasion.

Based on the empirical finding above the following proposition was developed:

***P1** There is a negative relationship between tax rates and petroleum profit tax compliance.*

Deterrence models of tax compliance behavior predict that an increase in tax rates will increase compliance (Allingham & Sandmo, 1972; Alm, Sanchez and Dejuan, 1995; Mas'ud et al, 2014). Contrarily, other researchers on tax rate found that higher tax rates decrease compliance for examples Pommerehne and Weck-Hannemann (1996); Weck-Hannemann and Pommerehne (1989), Clotfelter (1983), Slemrod (1985), Bayer (2006), Freidland et al (1978), Collins and Plumlee (1999), Alm et al (1992), Park and Hyun (2003). Baron and Kenny (1986) argued that where there are mixed findings on the relationship between constructs a moderating variable can be integrated to stimulate the relationship, therefore, based on the mixed findings above the following proposition was drawn.

***P2** Trust in government will moderate the relationship between tax rates and petroleum profit tax compliance, such that the relationship will be weaker or stronger for the companies that have trust in government.*

## **2.4 Penalty Rate**

Penalties refer to the negative punishment by paying money on those who violate the rules and regulations (Savitri, 2016). Savitri further argued that there are two types of tax penalties in tax laws: the criminal sanction and the administrative sanction. The administrative sanction where imposed when taxpayers violate administrative rules and regulation as such taxpayers pay penalties, and or interest, while criminal sanction is likely to be a jail sentence or prison. Additionally, a penalty is considered as the preventive measurement employed by the tax authority on taxpayers (Devos, 2013). Furthermore, Gordon and Wen (2018) examined tax penalties on fluctuating incomes, using longitudinal data in Canada. The study uses longitudinal data to

estimates the tax penalties in the six panels of Canadian data from 1993 to 2010. The result suggested that the tax penalty in recent times is lower than in the mid-90s essentially as a result of a decrease in marginal tax rates and that the tax penalty is insignificant for most taxpayers but remains consequential for many. The results further revealed that 10 percent of taxpayers faced annual tax penalties between the period 2005-2010 nearly 1 percent of their incomes, and also the tax penalties are ultimate at the lower end of the income range of autonomous self-employed. Nevertheless, empirical evidence on the relationship between penalty and tax non-compliance indicates a positive relationship between the two variables, for example, Virmani (1989) found a positive relationship between higher tax penalty rate and tax non-compliance and further argued that imposing higher penalty rates may have induced taxpayers to behave dishonestly. Additionally, Lee (2015) argued that the imposed penalty has an indirect effect on tax evasion.

Doran (2009) found that the penalty may encourage evasion. Furthermore, Sinnasamy and Bidin (2017) found that there is a positive relationship between a penalty and a tax non-compliance. Correspondingly, Balassone and Jones (1998) argued that penalty reduces the possibility of higher tax evasion. Savitri (2016) found a positive relation between penalty and tax compliance through the mediation effect of service quality. The right and acceptable penalty in place will lead to efficient tax administration which may influence tax compliance. Additionally, none of the study available has examined the influence of tax penalties in oil and gas sectors, despite the influential effect of penalties in determining compliance as argued by Allingham and Sandmo (1972), and Fischer et al (1992) both of this study postulate that penalty could lead to tax compliance. Therefore, this study tends to use the variable to see whether it may lead to PPT compliance or non-compliance in the oil and gas sector hence the development of the following proposition.

*P3 There is positive relationship between penalty rate and petroleum profit tax compliance*

Historically, the extant literature on tax penalties demonstrates inconsistency findings which may eventually be a contextual, sectorial or even methodological reasons. Therefore, this could be one of the reasons that may require further investigation of the variable. Following Barron and Kenny (1986) that postulates the need for introducing moderating variables once mixed finding exist the following proposition where drawn.

*P4 Trust in governments will moderate the relationship between penalty rate and petroleum profit tax compliance, such that the relationship will be stronger or weaker for the companies that trust the government.*

## **2.5 Detection Probability**

Probability of detection is defined by Chau and Leung (2009) as the possibility that the tax authority can discover tax non-compliance by taxpayers. Furthermore, the probability of detection received considerable attention from many scholars. For example, Alm, Martinez-Vasquez, and Schneider (2004) emphasized that the probability of detection has a significant double deterrence on taxpayers. The central argument here is that the nexus is what they refer to as the direct deterrence effect of taxpayers that were being audited as well as the indirect effect of taxpayers that were not being audited. They further state that as the probability of detection goes higher this

may or may not encourage tax compliance. As stated in Kirchler (2007) a survey study by Mason and Calvin (1978) stresses that tax evaders always regard the chance of being detected as low.

Palil and Mustapha (2011) examine using multiple regression the determinants of tax behavior in Malaysia. Through the employment of a survey of 1,073 taxpayers, the result revealed that where taxpayers assumed, they will not be detected as a result of the insufficient investigation, they embark in severe tax evasion strategy using less detectable documentations to pay less tax. Notwithstanding, probabilities of detection may invariably encourage some taxpayers to declare their true income and eventually, may increase compliance. Allingham and Sandmo (1972) submitted that an increase in probabilities of detection will eventually, always leads to a greater income being declared. Empirical evidence on the influence of the probability of detection on tax compliance revealed mixed and inconsistency findings. For instance, Alm (1991) found a positive relationship between the probability of detection and tax compliance. Additionally, Mason and Calvin (1978) in their research using a survey indicates that evaded taxpayers perceived the chances of being caught lower than honest taxpayers. On the other hand, Young (1994), and Slemrod et al. (2001) in different studies shows that detection probability was found to be an important determinant of taxpayer's compliance. Though, they reported that probabilities of detection were negatively correlated with compliance behavior. Based on the mixed empirical findings above and the adaption of Barron and Kenny's assertion on the moderating variable the following propositions were established.

*P5 There is positive relationship between detection probability and petroleum profit tax compliance*

*P6 Trust in government will moderate the relationship between the probability of detection and petroleum profit tax compliance, such that the relationship will be stronger or weaker for the companies that trust the government.*

## **2.6 Tax Compliance Cost**

Compliance cost refers to the cost incurred by a taxpayer as a result of fulfilling their tax obligations separately from the tax liability (Main, 2012). Additionally, compliance cost is the aggregate of the cost incurred by taxpayers in addition to their tax liabilities, in accomplishing taxation requirement (Rahmawati, as cited in Savitri, 2016). Tax compliance cost refers to the costs which are incurred by the third party or taxpayers, above the normal tax liabilities in a quest to meet the requirement of the tax system (Godwin, 1978). Johnstons (1961) defined corporate tax compliance cost "as the reduction in operating costs, exclusive on the tax itself, which may result if the federal income tax were eliminated" (Godwin, 1978, p. 391).

Haig (1935) who mail a questionnaire to 1600 members of the American Management Association (AMA) found that high compliance cost was related to low administrative cost, and finally argued that there is nexus between compliance and administrative cost. However, Stamatopoulos, Hadjidema, and Eleftheriou (2017) found corporate tax compliance costs of considerable size and differ with numerous companies' unique characteristics which include among other company's locations, legal forms, and sectors in which it operates. Eichfelder and Kegels (2014) found empirical evidence that tax authorities are one of the significant costs drivers which give rise to

taxpayer's unfriendly tax administration cost to reach up to 25%. It is, however, important to note that there is limited empirical evidence on the relationship between compliance cost and tax compliance as argued by Abdul-Jabbar (2009) as most of the study attempted to highlights the magnitudes of compliance cost in terms of values.

Consequently, few empirical studies on tax compliance cost concerning tax compliance were found by (Abdul-Jabbar & Pope, 2008; Abdul-Jabbar, 2009; Sapiei & Abdullah, 2014; Adam & Yusof, 2018). The size of compliance cost and compliance behavior shows no statistical significance (Abdul-Jabbar & Pope, 2008). Based on the findings above and the non-availability of empirical evidence on the relationship between the cost of compliance and tax compliance in the oil and gas sector the following proposition was developed.

*P7 There is negative relationship between compliance cost and petroleum profit tax compliance*

Empirical evidence on the relationship between tax compliance cost and tax compliance are scant in the existing literature. However, the few ones found showed mixed findings, for instance, Sapiei et al. (2017) found a positive relationship between tax compliance cost and good and services tax (GST) in Malaysia. Compliance costs are found not to influence SME's tax non-compliance in Malaysia (Abdul-Jabbar, 2009). Contrarily, other studies found tax compliance cost to have a significant negative impact on GST non-compliance (Xin et al., 2015; Faridy et al., 2014; Nzioki & Peter, 2014; Adam & Yusof, 2018). Based on the inconsistency findings above, following Barron and Kenny (1986) which state that where there is the existence of inconsistency finding a moderating variable can be introduced to stimulate the relationship. Argued, hence the following proposition developed.

*P8 Trust in government will moderate the relationship between compliance cost and petroleum profit tax compliance, such that the relationship will be stronger or weaker for the companies that trust the government.*

## **2.7 Royalty Rates**

Royalty refers to the share of production emanated from lease contract between the right owner of the oil and gas or other mineral resources in other words called “lessor” and the “lessee” who is given the right to use the lands for the development of mineral resources, in return for granting the lessee the rights to explore the mineral resources, the lessee is given a share of mineral of any kinds produced or a royalty to the lessor (Carr & Owen, 1997). On the other hand, investors participate in royalties through production to the surface of his part, and most of the investors attempt to extend their interest through demand to adjust royalty rates to suit them and warn that any attempt to increase royalty rates may discourage investment (Onifade, 2017). Moreover, concerning changes in production as relating to royalty, Gowharzad and Al-Harthy (2011) argued that there will be a higher royalty rate as production increases, therefore the government will eventually benefit from an increase in production and also charge lower royalty rate as production decreases. Though the empirical literature on the relationship between royalty rates and petroleum profit tax compliance has not been critically examined, studies available indicate the significance of studying the sector as well as the variables concerning taxation which could serve as the basis for forming the hypothesis. For example, Kemp (1992) examined the effectiveness and efficiency

of the petroleum fiscal regime in Norway, Netherlands, Denmark, and the UK in collecting natural resources tax (economic rents), from the development of new field associated with uncertainty related to development costs and oil prices. In a similar vein, Osmundsen (1998) establishes a model of dynamic non-renewable resources taxation.

Dismukes, Bueke and Mesyanzhinov (2006) reiterated, that an evolving challenge facing several energy-producing countries will be an establishment of policies that encourages the sustained economic development of growing oil and gas properties, especially under royalty relief scenario an increasing amount of revenue is realized by the states. Furthermore, Boyd and Khowsrow (1994) investigate how energy cuts to balance with income tax increase affect consumption, production, and welfare in the Philippines. They conclude that energy tax cuts improve the energy sector though it decreases the manufacturing sector output irrespective of the level of energy tax reduction. Interestingly, this corresponded with the earlier empirical evidence which reported that taxation impact on the economics of natural resources (Isehunwa & Uzoalor, 2011).

Based on the above evidence which eventually highlights the importance of natural resources tax in to the state's economic development as well as how the connections of natural resources tax such as royalty to the mainstream of taxation is so significant, and also the lack of existing studies that tested the influence of royalty rates on petroleum profit tax compliance the following proposition where developed.

***P9** There is relationship between royalty rates and petroleum profit tax compliance*

Though, the empirical literature on the relationship between royalty rates and natural resources tax is scant. However, some empirical studies available indicate the nexus between royalty rate and natural resources taxation. For example, Kemp (1992) examined the effectiveness and efficiency of the petroleum fiscal regime in Norway, Netherlands, Denmark, and the UK in collecting natural resources tax (economic rents & royalty), from the development of new field associated with uncertainty related to development costs and oil prices. Dismukes, Bueke and Mesyanzhinov (2006) reiterated that an evolving challenge facing several energy-producing countries will be an establishment of policies that encourages the sustained economic development of growing oil and gas properties, especially under royalty relief scenario an increasing amount of revenue is realized by the states.

Furthermore, Boyd and Khowsrow (1994) investigate how energy cuts to balance with income tax increase affect consumption, production, and welfare in the Philippines. They conclude that energy tax cuts improve the energy sector though it decreases the manufacturing sector output irrespective of the level of energy tax reduction. Interestingly, this corresponded with the recent empirical evidence which reported that taxation impact on the economics of natural resources (petroleum tax and royalty) (Isehunwa & Uzoalor, 2011). The transparent tax system by tax authorities might greatly influence the relationship between royalty payment and petroleum profit tax compliance. Based on this assertion the current study argued that trust in authorities will stimulate the relationship between royalty payment and petroleum profit tax compliance.

*P10 Trust in authorities will moderate the relationship between royalty rate and petroleum profit tax compliance, such that the relationship will be weakened or strengthened for the companies that trust the government.*

## **2.8 Environmental Regulations**

Environmental regulations refer to the use of urban and natural socio-economic and physical environments in the service of regulations (Korpela et al., 2018). View from traditional economics, states that strict environmental regulations may restrict the technological novelty of a company (Lankoski, 2017). Additionally, environmental regulations will restrict the effectiveness and efficiency of technological modernizations and subsequently reduce the efficiency of the manufacturing sector through empirical analysis (Leeuwen & Mohnen, 2013; Zhao & Sun, 2016). Moreover, Guo, Xia, Zhang and Zhang (2018) argued that environmental regulations cause pressure on the company's behavior which may result in an increase in environmental cost and may eventually affect the company's profitability. Other scholars such as Feichtinger, Hartl, Kort and Veliov (2005) stressed that strict environmental regulations target at reducing emissions mostly have a significant effect on industrial development. Based on the above debate it is important to note that environmental regulations affect the cost of production of companies as well as the profit which may affect the taxes in return, which further highlights the importance of examining the effect of this variable on taxpayers.

Nevertheless, empirical evidence as regards the relationship between environmental regulations and petroleum profit tax may not be found, as this study was the first of its kind to test the relationship between the variables in question. As such other studies on environmental regulations that are related to the variable will be reviewed to serve as the basis for hypothesis development. For example, Cerqueti and Coppier (2014) whose study on the issue of evasion and environmental policies suggested that environments are affected by numerous economic factors, they refer to the economic factors to includes environmental inspectors (regulators and tax inspectors) and polluting firms (taxpayers).

Thus, several scholars concentrate on the impact of human activities on pollution and natural resources, technological processes, and energy consumption (Bosetti, Messina & Valente, 2002; Tapiero, 2009; Cerqueti, 2014). Consequently, Song, Wang and Sun (2018) examined the relationship between environmental regulations, green technology, and profit in manufacturing among 1,197 firms in China between 2008 to 2015. They found that environmental regulations moderate the relationship between green technology and the profit of manufacturing firms. Based on the above evidence and the lack of studies that empirically tested the relationship between environmental regulations and petroleum profit tax compliance the following proposition was developed.

*P11 There is relationship between environmental regulations and Petroleum Profit Tax Compliance*

Few studies examined the influence of environmental regulations on different aspects of human, political and economic systems. For instance, Zhao et al. (2018) investigate whether environmental regulations undermine energy firm's performance, using event study methodology, the study found

environmental regulations to have several effects on the stock price of China's listed fossil-based energy firms. Other findings revealed that environmental regulations have negative great effects on listed fossil-based energy firms that have a higher level of Environmental Information Disclosure (EID) than firms with a lower level of EID, which invariably pose great challenges to policymakers in designing relevant and appropriate environmental policies.

Additionally, Cheng and Liu (2018) examined the effects of public attention on the environmental performance of most polluting companies in China. Using big data from web search, the result found that companies which are open to a high level of public attention have better environmental performance. Furthermore, employing quasi-experiment in China, Zhang, Chen and Guo (2018) investigate whether central supervision enhances local environmental enforcement. The result revealed that central supervision considerably decreased industrial Chemical Oxygen Demand (COD) emission by almost 26.8% which highlighted the need for improvement in China's environmental regulations using central supervision. On the other hand, an empirical exploration study on environmental regulation and green skills was conducted by Vona et al (2018) and the result indicated that changes in environmental regulation found not to affect overall employment. Based on the empirical findings above the following proposition developed

*P 12 Trust in government will moderate the relationship between environmental regulations and petroleum profit tax compliance, such that the relationship will be weakened or strengthened for the companies that trust the government.*

### 3.0 Proposed Conceptual Framework

Following the literature discussed above, Figure 3 shows the theoretical framework which depicts the direct as well as the indirect relationship of the constructs under consideration.

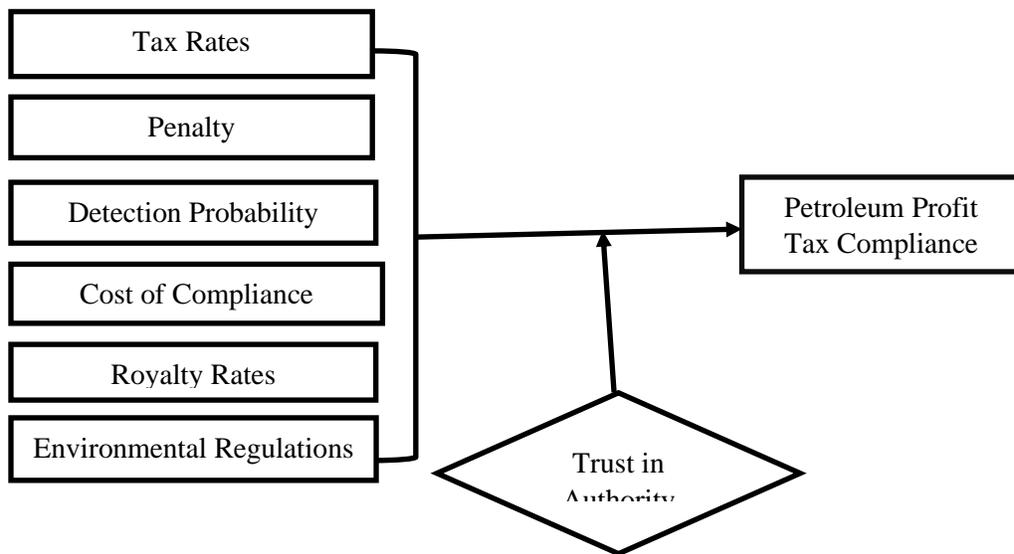


Figure 3: Proposed framework

#### **4. Conclusion/Policy Implication**

The paper discussed the moderating effect of trust in government on the relationship between tax compliance variables of Allingham and Sandmo (1972) that comprises tax rates, penalty, detection probability, compliance cost, which were expanded with two more predictor variables relevant to oil and gas industry (royalty rates and environmental regulations) moderating variables (trust in government) and petroleum profit tax compliance as depicted in Figure 1 above. The paper argued that trust in government can moderate the relationship between the constructs in the framework and the explained variable (petroleum profit tax compliance). Additionally, the study can benefit the overall international tax authority in general, the Nigerian tax authority in particular. The study will help the tax authorities in developing and administering tax laws and policies to reduce tax evasion and increase the overall level of corporate tax compliance with particular reference to petroleum companies. Moreover, it will provide insight into the regulatory agencies as regards the appropriate tax system to be used in the country that will be friendlier to both government and oil operators. The study would serve as evidence for the regulatory agencies to offer an appropriate recommendation to the government for the need to restructure the existing tax system for the betterment of both government and oil companies.

Thirdly, the study will also be beneficial to other countries having abundant natural resources in number of ways: the study will help other countries to come up with more robust tax structure capable of increasing PPT compliance, the study will help those countries in designing simple tax system that will increase compliance especially in the area where similarities exist among the countries. Fourthly, the study will be of great importance to the larger academic environment. Petroleum taxation was not been critically examine using the tax compliance model. From the contextual perspective, the study will provide empirical evidence on the determinants of PPT in Nigeria. Thus, it will provide a roadmap for other researchers interested in investigating the relationship between tax compliance variables and petroleum profit tax compliance among oil companies in other countries around the globe.

The framework will expand the existing economic deterrence theory by adding two more predictors variables (Royalty rate & environmental regulations) and a moderating variable (Trust in government), thereby contributing theoretically to the tax compliance literature. The model is in the process of validation, if validated empirically, some policy insights can be offered to the oil and gas host countries which can benefits both the government, oil operators and by extensions any other potential investors willing to embark into oil and gas activities around the globe.

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# **Impacts of Boko Haram Insurgency on Food Security Status in Kano Metropolitan**

**Mukhtar Mustapha**

Department of Economics & Agribusiness, School of Economics, Finance and Banking,  
Universiti Utara Malaysia, 06010 Sintok, Kedah.

E-mail: [mustaphamukhtar@ymail.com](mailto:mustaphamukhtar@ymail.com)

## **Abstract**

The objective of this study is to evaluate the impact of conflicts (Boko Haram Insurgency) on households' food security status in Kano Metropolitan. Using a sample size of 100 household heads drawn from Gwale and Kano municipal areas. The research investigated the impacts of conflicts on food security status using Food Security Index (FSI) and Binary regression. Result from the FSI reveals that 69% of the households are food secure, with daily average per capita energy consumption of 3,086 kcal while binary regression shows that all the variables under conflict have a negative impact on household's food status, which include food scarcity, market closure, unemployment, security checkpoints, high cost of foodstuff and destruction of property. Households classified as food insecure adopt extremely severe coping strategies, severe coping strategies and less severe coping strategies. The study applauds that, extremely severe coping strategy to be replaced with the less severe, which can be reversible within a short period. While the study recommended that government should adopt short term and long-term measures in reducing conflict in the study areas.

**Keywords:** boko haram; unemployment; per capita energy.

## **1. Introduction**

The number of people galloping into serious food security challenges in the world is increasing by the day. Presently according to Food and Agricultural Organization (FAO); International Fund for Agricultural Development (IFAD); United Nations Children Emergency Fund (UNICEF); World Food Programme (WFP) and World Health Organization (WHO) an estimated 821 million people are suffering from hunger in the world (FAO, IFAD, UNICEF & WHO, 2018). By implication, this means that, for every nine people in the world, at least one is suffering from a severe food security problem. The figure represents an increased from the previous year projection of 804.6 million (FAO et al., 2018). African continents and Northern America are the worst affected regions in the world, mostly due to continuous conflicts, deteriorated economy and climate condition. While Asian continents has witnessed improvement in the number of people suffering from chronic hunger within the period under review (FAO et al., 2018).

Conflict and hunger affected the lives of millions of individuals residing in conflict-affected areas. According to Holleman et al. (2017) majority of the conflict-affected countries identified by FAO are currently in a protracted crisis in term of food, majorly due to conflicts and violence. In the

same vein, FAO et al. (2017) stated that over 60% of the estimated 821 million hungry people are found in conflict-affected zones in the world.

Household's food security status is influenced by conflict in both short term and long term, which subsequently affect wellbeing, individual cognitive improvement and productivity (Arcand, Rodella-Boitreaud and Reiger, 2015). According to Martin-Shields and Stojetz (2018) there is a direct negative relationship between agricultural productivity and conflict, which subsequently impacted on food security status of households. According to the United Nations High Commissioner for Refugees (UN-HCR, 2016), over 65.3 million people were affected due to conflicts in the world. As noted by Gleditsch, Wallensteen, Eriksson, Sollenberg and Strand (2002), conflict occurrence is exceptionally high in developing countries of the world.

Townsend (1994); Maccini and Yang (2009) observed that in most of the conflict-affected zones, majority of the households and businesses are usually smallholder farmers, characterized by high degree of uncertainty in income, even without conflict, mostly due to climate change. Some of them are product suppliers locally, domestically or globally. These categories of households are always subjected to price oscillations in market places (Urdinola, 2010; Adhvaryu, Kala & Nyshadham, 2015; Adhvaryu, Fenske & Nyshadham, 2016). In this scenario, conflict resulted in additional shock that influence the livelihood and wellbeing of the households. The outcome, therefore, presented two issues. First, the class of the shock may be moderately dissimilar across various kinds and intensities across national and local institutions, which could either be transformed or emerge in the course of the conflict (Justino, 2012). Secondly, food security is directly shaped and further interacts with other factors to further compound the food security situation through either price fluctuations or climate weather condition during conflict.

Boko-Haram is a new Islamic fundamentalist group found in Nigeria, with small branches in neighbouring countries. Its self-acclaimed name is "Jama'at Ahl Us-Sunna li'd-Dawah wa'l Jihad" which stands for (group for the protection of Sunnah and struggles); however, society and media refer to them as Boko-Haram (Murtala, 2013; Khan & Hamidu, 2015). The group stamped its footprint in 2003 when it openly engaged Nigerian police and various government formations in the country. The group perspective runs contrary to most Muslims in the country (Elden, 2014). According to Forest (2012) the origin of the group was as a result of fallout of country's bad governance, which produces high level of unemployment among the youth as well as extreme poverty and vast inequality.

Empirical evidence revealed that there are few studies relating to food security and conflict. According to Taeb (2004); Messer and Cohen (2004) observed that there are no arduous empirical studies relating to conflict with household's food security status in Nigeria. In the same vein, Abbass (2014); Nchi (2013) noted little empirical studies in conflicts in Nigeria without focusing adequately on the repercussion of food security. Therefore, this study intends to bridge the gap by analyzing the effect of Boko-Haram on households' food security in Kano, Nigeria.

## **2. Literature Review**

Tari, Kibikiwa and Umar (2015) investigated the impacts of Boko-Haram insurgency on the food security status among some designated households in some selected local government areas in

Adamawa, Nigeria. Using binary regression and food security index. The result revealed that daily average per capita calorie intake among households in the selected local government areas were 1,060 kcal, 1150 kcal, 1,003 kcal and 963 kcal in Mubi North, Maiha, Gombi and Hong respectively. The result further indicated that these selected locations were food insecure. Household head's age, marital status, household size, income and monthly expenditure were variables that influence household food security status.

Ogbozor (2016) investigated the causes and magnitude of Boko Haram violent radicalism in Northeast, Nigeria. The research addressed three fundamental questions; what are the socioeconomic causes of the conflict? The core causes of conflict and its magnitudes? Result indicated a negative correlation between the conflict and socioeconomic condition; directly or indirectly effects were also observed between the conflict and the rural livelihood. Aluko, Osikabor, Adejumo and Sumade (2016) examined the apparent impacts of Boko Haram insurgency from Northeast as a means of accessing cowpea to Bodija market located in Ibadan, Oyo Nigeria. The research expended descriptive analysis, chi-square and Pearson Product Moment Correlation. Result revealed that age, education and marketing proficiency of the household head as well as the source of cowpea from the conflict-affected areas were significantly correlated to the perceived impacts of Boko Haram insurgency.

### **3. Methodology**

The study used primary data, while a well-structured questionnaire were used among the 100 household heads. A stratified probability sampling method was used to categorized Kano into rural and urban. Out of the eight (8) local government areas (LGAs), under metropolitan, two (2) LGAs were selected, and 100 regular households drawn for the research. The selection of these two (2) is due to the fact that most of the Boko Haram insurgency were carried out in either metropolitan or Gwale local government areas. While analyzing the data, descriptive, food security index, in-the context coping strategy index and binary regression were used. Food security index was selected because it is simple and easy to interpret the outcomes.

### **4. Results**

Descriptive analysis indicated that 96% of the household heads were married, while 82% were male-headed household heads. Average household head age was 39 years, indicating that most household heads were within their productive age, while average family size among the household was seven (7) members in a household. About 52% of the household size comprised of children under the age of 18 years. Majority of the household heads were engaged in public sector job. Average monthly expenditure among households was estimated at N206,446 (US\$675) with about 48% of the monthly household expenditure within the range of N101,000–N200,000 (US\$331–US\$657). Descriptive analysis also revealed that average monthly income among households was N154,245 (US\$504) with majority of the households within the range of N101,000–200,000 (US\$331–US\$657) while average household member's monthly income was N22,430 (US\$73), which indicate high tendency of poor households in the study area due to high poverty rate.

#### 4.1 Food Security Index

Food security index measures the calorie consumption of households as compared to recommended calorie intake set by FAO. To achieving this index, two stages need to be fulfilled namely identification and aggregation. In the identification stage, household size will be demarcated into infant (1 month to 6 years); children below the age of 18 years and adults above 18 years. This demarcation become necessary since each of the above individual group have different calorie intake as provided by Stefan and Pramila adult equivalent for adjusting household size in Appendix B (Stefan & Pramila, 1998). For simplicity of the calculation, an average of the adult equivalent for adjusting household was further adopted as used by Kuwornu, Suleyman and Amegashie (2013) as provided in Table 3.1 below.

Table 3.1  
*Recommended Daily Energy Intakes and Equivalent Scale*

Age category (yrs)	Average energy per day	Factor equivalent
Children less than 6 yrs	813	0.3
Children (6 – 18) yrs	1,897	0.7
Adults (> 18) yrs	2,710	1.0

Source: Kuwornu et al., (2013).

Therefore, an infant has an average energy requirement of 813 kcal per day with factor equivalent of 0.3. While children between the age of 6-18 years have an average energy requirement of 1,897 kcal, furthermore, adult will have 2,710 kcal, which represent the recommended average daily energy requirement as provided by FAO in Nigeria (FAO, 2016). Still under identification stage, since households consume different kinds of foods, measured in grams (kg) for instance, wheat (3,500 kcal/kg), millet (3,500 kcal/kg), rice (3,660 kcal/kg), cowpea (5,950 kcal/kg) and the rest, also provided by Oguntona and Akinyele (1995). Each of these foods has different calorie content, when the product of the energy content in each food is taken with food measured in kg we obtain the total energy of each food item called kcal.

On the other hand, the aggregation stage involves the processing of cumulative household calorie consumption into average daily per capita consumption in a household. For instance, households with three (3) infants, three (3) children and two (2) adults, that consumes a 1kg of rice, 0.5 kg of millet, 1kg of wheat and 1kg of cowpea, will have a total calorie energy intake of (3,660+1,750+3,500+5,950 = 14,850 kcal). To also convert the household size and aggregate it into adult equivalent, we take the infants (3\*813 = 2,439kcal/2,710kcal =1 adult equivalent); children 6–18 years (3\*1,897 kcal = 5,691 kcal/2,710=2 adult equivalent); while adults (2\*2710 kcal=5,420 kcal/2,710 = 2 adult equivalent. Thus, the summation of adult equivalent across the group will make a household adult equivalent of (1+2+2 = 5 adults). Therefore, food security index is given as follows:

$$\alpha = \frac{\delta_{\tau}}{\pi} \quad (3.1)$$

where represent food security status of households, which could either be food secure if equal to 1 or above, otherwise food insecure less than 1,  $\delta_{\tau}$  is the household per capita calorie or energy consumption and  $\pi$  is the per capita recommended energy requirement in a household, which is 2,710 kcal.

Surplus and shortfall ratio is the distance above from the threshold, which is one (1) express in term of percentage (surplus index) or below the threshold (shortfall index), also given as follows.

$$(\rho) = \frac{1}{\theta} = \prod_{i=1}^m \vartheta \quad (3.2)$$

$$\vartheta = \frac{\varepsilon - \mu}{\mu} \quad (3.3)$$

further substituting into Equation (3.2) will provide Equation (3.4) below

$$(\rho) = \frac{1}{\theta} = \prod_{i=1}^m \frac{\varepsilon - \mu}{\mu} \quad (3.4)$$

where indicate the number of households either classified as food secure or food insecure, represent per capita calorie surplus or deficiency.

Various studies adopted FSI in determining household's food security status in Nigeria; this includes the work of Mukhtar, Kamaruddin and Applanaidu (2018a, b); Fawole and Ozkan (2017); Mukhtar (2019b).

## 4.2 Binary Regression

Base on the outcome of food security index, classifying household into food secure and food insecure, a logistic model is estimated to measure the effect of conflict on household food security status. Thus the explicit model of the estimation is given below:

$$\alpha = \beta \lambda_i + \sigma_i \quad (3.5)$$

Where indicate the vector of the independent variables, indicates the error term, while represent the vector of the parameter estimator. Therefore, the empirical model used for the estimation is given as:

$$\alpha = \beta \lambda_0 + Fds\sigma_1 + Mkcls\sigma_2 + Schpt\sigma_3 + Uempty\sigma_4 + Hcfd\sigma_5 + Destpty\sigma_6 + e_i \quad (3.6)$$

Table 4.2 indicates the status of food security among household in Kano metropolitan. The table reveals that 69% of the households were food secure. However, indication shows that there was more food secures households in Gwale (78%) as compared to Kano municipal with 69%. In the same vein, there are fewer households food insecure households in Gwale than in Kano Municipal with 22% and 31% respectively. Total households daily energy consumption (HHDEC) in Gwale is 600, 340.2 kcal, while total daily households energy requirement was 359, 888 kcal. Also, there is total adult equivalent (AE) of 132 individuals in Gwale. Therefore dividing the AE with HHDEC and HHER will resulted in Household per capita energy consumption (HHPEC) and Household per capita energy requirement (HHPER). By adopting Equation (3.1) food security status (Z) of households is determined in Table 4.2. Indication from the Table 4.2 reveals that food security status in Gwale among food-secure households is 1.67 with surplus index of 0.67 or 65%, while shortfall index among food-insecure household is 0.08 or 8% because food security index is 0.92.

Surplus and shortfall index reveal the extent to which household exceed food status threshold, while shortfall shows the extent of household deviation from the threshold.

Table 4.2 further reveals that HHDEC and HHER in Kano Municipal among food-secure households is 367,098kcal and 307856kcal respectively, while HHPEC and HHPER is 3277.66kcal and 2748.71kcal respectively, this resulted in food security index (Z) among food-secure households as 1.19 thereby resulting in surplus index of 0.19 or 19%. HHPEC, HHPER, HHPEC and HHPER for food-insecure household in Kano Municipal is 409,104kcal, 55,1214kcal, 2,025.27kcal & 2,728kcal respectively. After applying Equation (3.1) will give an index of 0.74 and a shortfall of 0.26 or 26%.

The region overall can be considered food secure because overall food security index is 1.13 clearly above the threshold of 1. By implication, the surplus index among the food secure households upset the shortfall index incurred by the food insecure household, thereby overall making the region food secure.

Table 4.2  
Summary of Food Security Index in Kano Metropolitan

Factors	Gwale (n = 50)			Kano Municipal (n = 50)			Pooled (n = 100)		
	Food Secure	Food Insecure	All	Food Secure	Food Insecure	All	Food Secure	Food Insecure	All
% of HH	78	22		60	40		69	31	100
HHDEC	600340.2	201459	801799	367098	207645	574743	967438	409104	1376542
HHER	359888	220052	579940	307856	331162	639018	667744	551214	1218958
HHPEC	4548	2487.15	3764.31	3277.66	1716.07	2466.71	3964.91	2025.27	3086.42
HHPER	2726.42	2716.69	2722.72	2748.71	2736.88	2742.57	2736.66	2728.78	2733.09
<b>Z</b>	<b>1.67</b>	<b>0.92</b>	<b>1.38</b>	<b>1.19</b>	<b>0.63</b>	<b>0.90</b>	<b>1.45</b>	<b>0.74</b>	<b>1.13</b>
HeadCount	0.78	0.22	1	0.6	0.4	1	69.00	31	1.00
Shortfall (Pi)	0	0.08	0	0	0.37	0.1	0.00	0.26	0.00
Surplus (Ps)	0.67	0	0.38	0.19	0	0	0.45	0	0.13
HH AE	132	81	213	112	121	233	244.00	202	446.00

Source: Field Survey, 2018.

Where HHDEC represent total households daily energy consumption, HHER represent total household daily energy requirement, HHPER represent household daily per capita energy consumption, HHPER represent household daily per capita calorie requirement, Z is the household food security status, P<sub>s</sub> represent food surplus index, P<sub>i</sub> food shortage and HH AE is the household adult equivalent.

The moment households are faced with the issues of food security problem, coping strategies set in. The research adopted in context coping strategy. The method identifies various strategies operational in the location. Households were later requested to identify and rank the strategy used during food shortage. Based on the ranking, strategies that were not in existence were then eliminated. The frequency, on the other hand, indicates the number of days that a household has to put up with identified coping strategy in a household.

Table 4.3 indicates the CSI among the households in Kano Metropolitan. It is clearly, meaning that household under Kano Municipal has the highest CSI of 64 as compared to Gwale with only 42. The index takes the product of severity and frequency in each of the coping strategy adopted by the household to obtain the weighted score. The weighted scores, in turn, is sum up to obtain the CSI from each location. Indication from Table 4.3 revealed that selling assets/livestock and skipping meals represent extreme coping strategy in the location with a pooled percentage of 27%

each, it also show that more households resolved in using these two strategies over others. Severe coping strategies among the households include children eating first, before adult and reduce consumption in a household with 17% and 12% respectively. Other coping strategies considered less severe among households involve borrowing money or purchasing food on credit, depending on assistance from family and friends (5%), eating less preferred food (5%) and removing/relocating children to less expensive school (3%). This finding is in line with Mukhtar (2019c) outcomes.

Table 4.3  
Coping Strategies Adaptation in Kano Metropolitan

Coping Strategy	Gwale			Municipal			Pooled
	Severity	Frequency	Weighted	Severity	Frequency	Weighted	%
Borrowing money/purchase on credit	1	2	2	1	3	3	4
Selling assets/livestock	4	3	12	4	4	16	27
Children eat first before adult	3	3	9	3	3	9	17
Reduce consumption of food	2	3	6	2	3	7	12
Depend on assistances-family & friend	1	2	2	1	3	3	5
Skipping meals	4	2	8	4	5	20	27
Eating less preferred food	1	2	2	1	3	3	5
Remove/relocated to less expenses school	1	1	1	1	2	2	3
<b>Total Scores</b>			<b>42</b>			<b>62</b>	

Source: Field Survey, 2018.

Binary logit was used to analyze the effects of conflict (Boko Haram Insurgency) on household food security status in Kano Metropolitan, as shown in Table 4.4. All the variables indicated that food security is negatively affected by conflict. This finding is in line with the aprior expectations.

Indication from Table 4.4 reveals that food scarcity has a negative effect on the food security status of the household. According to Nwabueze (2016) in most cases during conflicts, especially in rural locations where farming activities were carried out, majority of the farmers, that generally bring in food products to the urban centres were restricted due to conflicts. In the same vein, Ekong (2003); Adalakun, Adurogbanga and Akinbile (2015) confirmed that food scarcity has a negative effect with food security status of the households. Table 4.4 further reveals that market closure has a negative effect on the food security status of households. According to Marama (2015), the market is a soft spot and easy target for most attacks by the insurgency, mostly due to the large number of people and low security. Activities in a market during conflict is affected, households that rely on the market for foodstuff suffers a severe setback, and consequently it reduce their food security status Ofem and Inyang (2014). According to Tasiu (2016); Awodola and Oboshi (2015) noted that in most conflict-affected areas, shops and other businesses were crippled down, which also subsequently affected the household's food security status. In the same line of argument Okereocha (2012) observed that over 80% of business activities in Kano state were crippled due to Boko haram insurgency.

Table 4.4 also indicates that security checkpoint has a negative impact on household's food security status, especially in developing countries where corruption is exceptionally high. The negative

implications developed as a result of excessive exploitations by the security personnel, especially on foodstuff and cost of transportation of food items to the conflict-affected area (Mohammed & Ahmed 2015). Also, Oti, Onyia and Umoinyang (2016) observed that the negative impact of security checkpoint and market closure in conflict areas seriously affect household's food security status. Furthermore, Table 4.4 indicates that unemployment has a negative effect on the food security status of the household. Employment is the source of livelihood of household, and food security is influence where there is a shortage or no job for the household. Conflicts affect the employment status of the household in two ways (Amodio and Di-maio (2014) one the firm or agricultural activities are affected and closed down, in the same way, the workers or farmers were rendered jobless. Secondly, households were forced to leave (migrate) their communities and sometimes stay in camp.

Table 4.4 reveals that high cost of foodstuff has a negative impact on household food security status. O'Grada noted that one of the adverse effects of conflict is rooted in high cost of foodstuff and is considered as a vital factor. Awodola and Oboshi (2015) noted that conflict resulted in a hike in the price of food products 12% - 122%. Haynes (2007); Ojogbo and Egware (2016) linked food shortage during conflict with high cost of foodstuff, which eventually affected the food security status of households. Also, Table 4.4 reveals that destruction of property has a negative effect on the food security status of the household. In most cases, households were either forced to pay for protection or their properties were vandalized and used by the insurgent (Haruna, 2015).

**Table 4.4 Impacts of Conflict on Food Security Status of the Households**

<b>Factor</b>	<b>Coefficient</b>	<b>Strd.Err</b>	<b>z</b>	<b>P&gt; z </b>
Food scarcity	-0.762	0.458	-1.66	0.096
Market Closure	-0.908	0.494	-1.84	0.066
Security checkpoints	-0.594	0.482	-1.23	0.218
Unemployment	-1.392	0.536	-2.60	0.009
High cost of foodstuff	-0.839	0.468	-1.79	0.070
Destruction of property	-1.204	0.300	-4.01	0.003

Source: Field survey, 2018 \*significant at 10%, \*\* significant at 5% and \*\*\* significant at 1%.

## **5. Conclusions and Policy Recommendations**

The paper assesses the impact of Boko Haram insurgency on household food security status in Kano Metropolitan, Kano state. Food security index revealed that 69% of the households in Kano Metropolitan were food secure with average food security index of 1.13 and average daily per capita energy consumption of 3,086 kcal, while daily per capita energy requirement of 2,713 kcal. Surplus index also revealed that the region achieved 13%. Coping strategy index revealed that households in Kano Municipal were more food insecure than households inGwale with an index of 62. While coping strategies adopted by the food insecure households include extremely severe coping strategy, which comprises of selling of asset and livestock and skipping meals. Severe coping strategies, on the other hand, consist of children eating first and reducing consumption in the household. And less severe coping strategies comprises of borrowing and buying food on credit, depending on assistance to eat, eating less preferred foods and relocation of children and wards to less expensive school. All the variables used in conflict indicated a negative impact with food security status of the households; these variables include food scarcity, market closure,

security checkpoints, unemployment, high cost of foodstuff and destruction of property during conflict.

The paper, therefore, recommends that to curtail Boko Haram insurgency, government need to introduce measures that are short term and long term in nature. The short-term policy include total crackdown of Boko Haram members through intelligent gathering, enforcing a mandatory curfew and state of emergency in a conflict-affected area, fishing out individuals that fund the organization publically. While the cult prints judgment should be carried out with speed of light, in the long-term, the security personnel should be equipped with sophisticated and up to date weaponry to aid in facing the insurgency squarely. The government should invite the foreign countries in training the security personal, and lastly, the government should introduce the policy of carrot and stick among the member of the insurgency.

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# **The Nigeria Police Reform and Utilisation of Forensic Science: Has the Latter Been Part of the Former?**

**Sarki, Z. M<sup>a\*</sup>, Geshina A. M. S<sup>a</sup>, Lalu, A.U<sup>b</sup>, Saleh, M<sup>2</sup>, Shankar D.<sup>a</sup>**

<sup>a</sup>Forensic Science Programme, School of Health Sciences, Universiti Sains Malaysia,  
Kubang Kerian, Kelantan, 16150 Malaysia

<sup>b</sup>Department of Sociology, Federal University Dutse, P.M.B 7156 Dutse, Nigeria  
Email: [geshina@usm.my](mailto:geshina@usm.my)

## **Abstract**

The first formal introduction of forensic science into the Nigeria Police work was more than three decades ago. Despite the benefits that can be realised from using the science at different levels of case management, improvement on forensic facilities and their utilization in police duties was not given due consideration in current police reform activities in the country. This paper therefore explored and critically reviewed 46 works and two policy documents related to police reform in Nigeria with a specific aim of understanding whether forensic science application has actually been part of the reform. The paper is thus a narrative review. After the review, it was found that forensic science utilization has not been properly incorporated into the Nigeria's police reform activities. It is therefore recommended that future policy documents on Nigeria Police reform should clearly include the provision and application of forensic science in various police work, especially criminal investigations. Also, adequate forensic science facilities with commensurate training be provided to the police, and that a positive culture regarding the application of forensic science in their activities should be fostered.

**Keywords:** Criminological forensics; Forensic investigations; Forensic science culture; Nigeria Police; Police reform; Policing

## **1. Introduction**

Reform of government agencies connotes efforts made toward upgrading and improving services rendered by the institutions with a view to satisfying the public who are the consumers of such services; while respecting human rights, preserving the rule of law, and being accountable to their constituents (International Center for Transitional Justice, 2018). Police reform thus encompasses steps undertaken by the police authority and governments to ensure an effective delivery of police service to denizens (Organisation for Security and Co-operation in Europe, 2004). There are many debates as to how police can be reformed in different societies, especially in settings that are modernising and practicing democracy.

One debate is that reformation of police work should begin with improving the general state of personnel through salary, bonus, and other incentives. Those in support of this argument are a reflection of the remuneration and compensation point of view (Sule et al, 2015). According to the

argument, inadequate remuneration has consequential effects on performance; hence to have an effective reform effort, employees need to be properly remunerated and compensated.

Another focus of debate is on the occupational health and well-being of human resources (Bowling et al, 2010), instead of the material benefits of the job. This perspective argues for feeling of and improving satisfaction with the work itself and relationship among co-workers and supervisors. While there are arguments for the combination of both (Organisation for Security and Co-operation in Europe (OSCE), 2008), with salary being constant; modernising and making available operational and logistics facilities are seen as the best way to ensuring reformation of the police.

The essence of these debates is that reform remains a necessary phenomenon without which the police could be ineffective, leading to escalation of crimes and criminal behaviour. While the authors of this paper believe that police reform should be comprehensive to include personnel motivation, and provision of required and operational working facilities needed by the police; the paper sought to find out whether the application of forensic criminal investigation is being considered in reforming the Nigeria police (NP). The overall aim is to make a case for the use of forensic science in police activities.

In other words, if forensic application has been part of the police reform then the call is for its improvement, and if it has been neglected, to argue for its appropriate inclusion. This is because comprehensive and consequential police reform in contemporary times could hardly be achieved without adoption of scientific means of dealing with crime and criminal behaviour. Crime and crime prevention are social facts, therefore, as the former changes the latter should equally be changed to address it.

This paper is a narrative review. Relevant works published between 1993 and 2018 were searched from Google scholar, Academia and African Journals Online (AJOL) using the key phrase: “Nigeria police reform and utilisation of forensic science”. A total of 46 works and 2 policy documents were included for the final review. With reference to relevant articles, the paper begins with a discussion on the concepts of police and policing. It briefly presents theoretical perspectives of police reform and then traces the historical development of police reform in Nigeria to the current democratic dispensation. This is followed by a discussion on the benefits of forensic criminal investigation in crime prevention and control, and the state of forensic science in Nigeria. Lastly, the paper suggests how forensic criminal investigation could be incorporated in reform activities concerning the NP.

## **2. The Concepts of Policing and the Police**

The concepts of police and policing tend to create definitional problems to some people; as the two concepts are related but not necessarily the same (Williams, 2014). Policing is an act performed by individuals that could be called police. However, the scope of policing is wide as it is not only the police who are engaged in policing. Other individuals may be doing policing work, hence the evolution of concepts such as community policing, neighborhood policing, neighborhood watch, and safe neighborhoods.

What this translates to is that policing could have preceded the police. The history of many countries, for instance Egypt (Kurian, 2006), England (Rawlings, 2008) and Nigeria (Alemika, 2009) provide evidence that the concept and idea of policing existed separate, parallel, before, or together; with the presence of an authorized police force. The history of the police is then not necessarily the history of policing, just as the history of policing is not always the history of the police (Rawlings, 2008).

Policing is an old term which has been associated with efforts to secure selves, property and community from foreign intrusion and harm (Rawlings, 2008; Reiner, 2010). It encompasses attempts to maintain peace and security in mechanical and organic settings (Reiner, 2010). Policing consists of several field operatives, including groups of volunteering citizens, private security providers, the 'police' and other selected individuals. For instance, policing work existed in Spain during the late 1400s and was done by mercenaries, just as there were parish constables, magistrates and other citizens involved in policing in France and England (Kurian, 2006). In traditional African societies, policing work was done by locally organized vigilante groups, palace guards, age grade and elders (Alemika, 2009), while private armed guards were used in ancient Egypt (Kurian, 2006). Policing has then been historically perpetual and wider than what the police are, as we know and see them today.

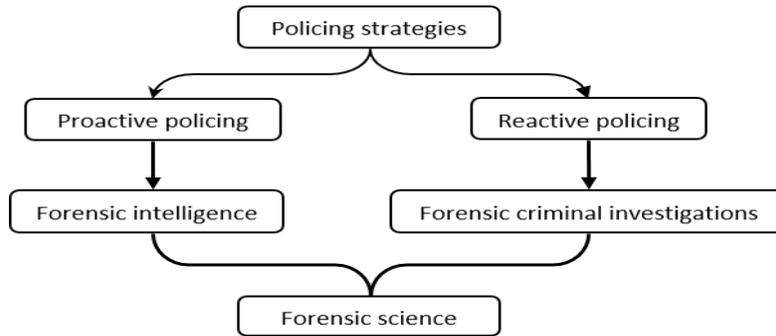
However, the police are not found in every society, but are usually associated with complex societies where social relations are mechanically pursued (Reiner, 2010). It is a modern bureaucratic institution where ranks are maintained and functions are shared among trained individuals with the general aim of securing lives and properties within a particular jurisdiction. The overall philosophy of police anywhere is maintenance of order and controlling crime (Kurian, 2006); hence police do, and is part of policing.

The existence of police and policing is inevitable, particularly when contemporary social relation ideals and cohesion promote human rights, security and peace of all citizens. The relevance of the duo can be seen more clearly (Kraska, 2007) when societies are being bedeviled with different kinds of conflicts, for example economic strain, political maneuvering, lawlessness, and ethnic or group clashes. Collectively, police activities have a profound influence on the strength of the processes that are necessary to democratic political life (Kurian, 2006). Therefore, policing and police reforms should continually be designed and pursued in order to be relevant and in line with internal national security issues.

### **3. Benefits of Forensic Science to Policing**

The idea of forensic science has to do with the application of science, and to some extent technology; in dealing with the questions of civil and criminal matters, though it is more likely and commonly applied in criminal cases (Prahlow, 2010). Within the forensic science discipline, various scientific methods are employed and allowed to "speak" factually for the issues under consideration. Torture and other human rights abuse during investigation, which are common among some police investigators (Human Rights Watch, 2005); could substantially be reduced with the application of forensic criminal investigation.

The scope of forensic science is wide in that its application improves policing and police work as both proactive and reactive strategies (Ribaux and Margot, 1999). The proper use of forensic data is an effective means of planning and carrying out proactive policing (Ribaux and Margot, 1999). The belief by some people that forensic science is reactive and only useful after a crime has been committed is thus false. Shown in Figure 1, the two major strategies of policing can be utilized through adequate use of forensic science.



**Figure 1:** A diagram showing how policing strategies can be done with forensic science

**Source:** The authors

Proactive policing can be achieved through intelligence-led operations using forensic intelligence to forestall a certain criminal activity or track a specific criminal. Forensic intelligence (Ribaux and Margot, 1999) refers to the use of crime scene evidence such as DNA, fingerprint and trace evidence; to cross-reference within an indexed dataset and link together crime scenes, materials, and suspects (Legrand and Vogel, 2012). For example, from a collection of crime scene evidence; the place where an offender lives, when and where he may next commit crime can be hypothesized, as a result of which police surveillance and or targeted patrol can be organized.

In reactive policing, police respond to a crime incident that has already happened and is either reported by an individual, group or discovered by the police (Lee, Palmbach, and Miller, 2001); it is done with the view to track criminals and prevents further escalation of the incident. Common and important practice in reactive policing is crime scene investigation, which is a process of gathering, preserving and analyzing physical evidence from the crime scene (Lee, Palmbach, and Miller, 2001) with the view to understanding what crime is committed and by who. As the physical evidence found at the crime scene during investigation is the cornerstone to a successful outcome of a case, the application of forensic science methods is a reliable means to gather and analyse evidence, and reduce misidentification of suspects – an occurrence which sometimes happen in traditional evidence gathering processes (Gianelli, 2007).

#### **4. The State of Forensic Science in Nigeria and its Implications**

It is clear that forensic science methods are beneficial to the activities of the police and the criminal justice system, and consequently it should be taken seriously; yet it seems not much consideration is given to its utilization by the police in Nigeria. With an estimated population of 192 000 000 people (Nigeria population and development, Fact sheet, 2017), a crime index of 70.87% (Numbeo, 2018), and increasing rates of criminal activities (Torruam and Abur, 2014); there are only two forensic laboratories owned by the NP (Nigeria Police, 2016). The first laboratory was

established in 1986 in Lagos, which is mostly abandoned because of inadequate and outdated facilities (Police Reform in Nigeria, 2010). The second laboratory was commissioned in 2016 (i.e. 30 years after the establishment of the first laboratory) at the NP headquarters in Abuja (Nigeria Police, 2016).

The entire forensic manpower capacity of the NP as at 2007 comprised of only one trained forensic pathologist, with no ballistics and DNA experts; and fingerprints and photographs of crime scene were rarely taken (Police Reform in Nigeria, 2010). Reliable records of the number of trained forensic experts in the NP may not be available as many of the professionally trained police officers end up being positioned to general duty instead of serving as forensic officers. This may likely to do with the lack of interest in forensic science application which the senior police officers may have developed due to the corruption identified with the agency (Chukwuma, 2000).

A review of the forensics and investigation capabilities of the NP found a near total absence of forensic science in crime investigation (Police Reform in Nigeria, 2010); particularly, when compared to South Africa that has a population of 57,751,485 people (Statistics South Africa, 2018), a crime index of 76.80% (Numbeo, 2018) and yet its police service owns four comprehensive and functioning forensic laboratories (South African Police Service, 2018). Lack of reliable forensic investigative facilities in the NP could lead to many unresolved and poorly resolved cases (Nte, 2012), which gives rise to an outcome that is contrary to the essence of criminal justice system - ensuring peace and fairness through justice, timely due process and valid evidence procedures.

The availability of forensic science and its application in criminal investigations by the NP could have helped the Nigerian government in its previous and current efforts to curb and prosecute rape, kidnapping, theft, murder and drug abuse, as well as financial misappropriation by government officials and private individuals, which are common (OSAC, 2018) and have been negatively affecting the socio-economic development of the country (Dada et al, 2013). Consequently, questions are continually raised as to why and what could have been responsible for not adequately utilizing forensic science by the police in spite of its enormous advantages.

## **5. Police Reform and the Nigeria Police**

Historically, the use of deadly force by police personnel is used on individuals to ensure compliance to the laid down rules and regulation of a society (Fyfe, 2013), irrespective of whether citizens' rights have been violated or not. Later, particularly with enlightenment and the popularization of democracy, various reform ideas of police organization were initiated, conceptualized and implemented by different societies; with the view to make police operation in tandem with the fundamental principles of human rights (Fyfe, 2013). As a result of focused attention on human rights, the foundation to the hitherto police reform idea of democratic policing (OSCE, 2008), which is now becoming popular; slowly firmed.

The theoretical and practice issues of police organization have thus evolved over the years. Initial reform efforts stressed professional administration, structure, and control (Fyfe, 2013). Soon after, attention was paid to improving police performance through inspired leadership and improving employee needs, i.e. the humanist approach to police organization. In recent years however, the emphasis has been placed on improving the effectiveness of police tactics and strategies and, on

the police agency's relations with its external environment, otherwise known as the Strategic Management and Institutional approaches (Kennedy, 1993).

Specifically, the Strategic Management and Institutional approaches has to do with the objectives of the police and how tasks and resources can be organized to achieve planned objectives (Kennedy, 1993). It involves appropriate mobilization of needed personnel and facilities that could make crime prevention and control possible. By this, comprehensive police reform should then include proper recruitment and training of personnel as well as provision of modern investigative and operational facilities, including forensic science laboratories and training. What is the trend in the Nigeria Police?

The history of the NP like many of its kind in former British colonies in Africa, can be traced to colonialism (Alemika, 2009). Owing to this kind of roots, the NP was consistently found to be more active in protecting the current regime and those that are closely related to it, rather than focusing on its primary functions of crime control and order maintenance. According to Alemika (2009), regime security and reactive policing are among the major features of almost all police organisations in African countries.

As these should not be part of the characteristics of ideal democratic policing, reform of the NP was attempted at several times. During the most part of military regimes, improving the police service were virtually neglected, consequently, most of the efforts towards reforming the police were made after the return to democracy in 1999. For instance, there were efforts to reform the police through improving its image, reorientation, re-structuring, re-equipping, provision of logistics support, increasing its size, and introduction of better welfare packages (Jemibowon, 2000).

However, many civil society groups believed that the police were not undergoing the reform needed since the authorities were evidently keen in pursuing the issue of personnel shortage only. Consequently, about 22 groups of civil societies comprising of security and development experts; felt the police reformation was not being properly carried out and that certain areas should be the focus of the reformation. The areas highlighted in need for reform were police legislation and standing orders, community-police relations, police operations and accountability, human resources, training and development in the police, gender and policing, police welfare, and conditions of service (Chukwuma, 2000). Looking at the civil societies' submission for improvements, there was seemingly no consideration for reforming the police through proper adoption of forensic investigation which is timely and important. Hills (2008) maintained that despite the reform plans, the NP has popularly remained brutal and corrupt, signifying the absence of an objective means of ensuring accountability in the administration and operational aspects of the police (for example, forensic criminal investigation); there were flaws regarding the policing standards and practices.

Also, the reform agenda of the Ministry of Police Affairs and the Strategic Plan of the Police Service Commission, did not give particular attention to the issue of forensic science. For example, the overall aim of the Six-year Police Reform Programme (2010 – 2015) of the ministry was to transform the NP into an efficient, people friendly service towards protecting the lives and property of the citizens and other people living in Nigeria (Ministry of Police Affairs, 2018), yet no details

were provided in the document as to improve the forensic capabilities of the Police. Moreover, while the Police Service Commission's Five Year Strategic Plan (2008-2012) has recognized the importance of having a well trained and competent workforce (Police Service Commission, 2018), again, there was no strategy meant to adequately address the shortage of forensic facilities of the NP, which could have enhanced the competence and ability of the police.

## 6. Conclusion and Recommendations

The relevance of forensic science methods in crime prevention and control has been recognized world over. Specifically, various forensic science techniques are used during police investigations to obtain 'value-free' evidence that can be reliable in successfully prosecuting a case before the court of law. A proper forensic science application by the police is important as it can ensure just dealing with crime suspects and improve security. This notwithstanding, forensic science is not given needed consideration in Nigeria, and this continues to lead to many unsuccessful prosecution of criminal cases. Adequate forensic science facilities and their utilization could help in case clearance and ultimately improves the function of criminal justice system and security. It is therefore recommended that more forensic facilities should be provided to the NP; at least, one in every state commands in the country. Just as it is also important to continually train police officers on forensic techniques, it is also recommended that policy documents in respect of police reform in Nigeria should clearly include provision and utilization of adequate forensic facilities.

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# The effects of intergroup relations on anticipated emotions and resource allocation in a multi-ethnic Malaysian sample

Suzanna Awang Bono<sup>a\*</sup>, Job van der Schalk<sup>b</sup> & Antony S. R. Manstead<sup>b</sup>

<sup>a</sup>Universiti Sains Malaysia, Malaysia

<sup>b</sup>Cardiff University, United Kingdom

Email: [suzanna.bono@gmail.com](mailto:suzanna.bono@gmail.com)

## Abstract

How individuals divide resources between themselves and another person is influenced both by their pro-sociality (social value orientation, or SVO) and the emotions they feel when dividing the resources (anticipated emotions). Research has also shown that individuals favor members of their own group (ingroup) over individuals from other groups (outgroup) when allocating resources. The Malaysian multi-ethnic population is an ideal context to study the effects of intergroup relations on anticipated emotions and resource allocation. The current studies recruited Malaysian participants to examine whether anticipated emotions and allocation behavior are influenced by the ethnic identity of the other person. Participants completed an SVO measure and rated how they would feel if they were to share resources equally or unequally. They then made allocations between themselves and an ingroup or outgroup member in an economic game. Results showed that there was no evidence of ingroup favoritism in anticipated emotions and allocation behavior. This may have been due to impression management, social desirability concerns, and/or the use of a population with socially liberal attitudes. The results nevertheless provided support for the notion that anticipated emotions play a role in resource allocation decisions.

**Keywords:** Social value orientation; Anticipated emotions; Ingroup favoritism; Allocation behavior; Economic games.

## 1. Introduction

Individual dispositional preferences and anticipation of future emotions affect fairness and cooperative behavior (Mellers & McGraw, 2001; Van Der Schalk, Bruder, & Manstead, 2012). For instance, allocators who have a dispositional preference to be fair will anticipate more cooperative emotions and fewer competitive emotions when allocating resources, and this leads to fairer allocations towards their opponents (Bono, Van der Schalk, & Manstead, 2019). At the same time, individuals tend to favor members of their own group (ingroup) over individuals from other groups (outgroup) when allocating resources. In this study, we investigate whether the emotions that an individual anticipates and the actual allocation behavior are influenced by the social identity of an opponent.

Individual differences in allocation preferences such as social value orientation (SVO) are known to affect allocation behaviour (Messick & McClintock, 1968). SVO is commonly categorized into

three orientations; prosocial, individualistic and competitive (Van Lange, De Bruin, Otten, & Joireman, 1997). *Prosocials* prefer to minimize the difference in resource allocation between themselves and others or to maximize both their own and others' outcomes. *Individualists* have a preference for maximizing their own payoff. *Competitive* individuals prefer to maximize the difference between their own and others' outcomes by having a higher payoff than the other person. In past research, individualists and competitors are usually combined in a single category as '*proself*' (Haesevoets, Folmer, & Van Hiel, 2015), a term that we will adopt here.

Past literature has also shown that individuals are affected by the emotions that they anticipate experiencing as a consequence of their decision making (Mellers & McGraw, 2001). For example, anticipated pride about being fair and anticipated regret about being unfair predicts cooperative resource allocation behaviour (Van Der Schalk et al., 2012). Bono et al. (2019) investigated the relation between SVO and anticipated emotions and showed that allocators who have a dispositional preference to be fair anticipate more cooperative emotions, and that these cooperative emotions help to explain why prosocials tend to make more fair decisions.

In another line of research, social identity theory (Tajfel & Turner, 1979) argues that individuals derive part of their identity from the groups they belong to and that this contributes to their personal self-esteem. Hence, individuals are motivated to positively differentiate their group from other groups. For example, in a behavioural economic game allocators tend to allocate more resources to ingroup members than to outgroup members (Ben-Ner, McCall, Stephane, & Wang, 2009). This suggests that ingroup favouritism, a tendency to favour ingroup members over outgroup members, occurs in allocation decisions.

In the current studies, we investigate how intergroup relations in Malaysia affect anticipated emotions about fair and unfair decisions and subsequent allocation behavior. Malaysia's population consists of three main ethnic groups, Bumiputra, or Malay [69.1%], Chinese [23%] and Indians [6.9%], and others [1%] (Department of Statistics, 2018). The presence of different ethnic groups in Malaysia makes it a relevant context in which to investigate differences in allocation towards ingroup and outgroup members. For the present studies, we recruited participants from the Malay, Chinese and Indian ethnic groups.

We predicted that participants would anticipate more cooperative emotions and less competitive emotions when making allocations to ingroup members than when allocating to outgroup members. We also predicted that participants would allocate more tokens to ingroup members than to outgroup members. A third prediction was that the effect of receiver's group membership/social identity on allocator's allocation behaviour would be mediated by anticipated cooperative and competitive emotions. We also explored whether the finding that anticipated emotions mediate the effect of SVO on allocation behavior would replicate in a non-Western sample.

## 2. Study 1

### 2.1 Method

#### 2.1.1 Design and participants

The study had a 3 (Allocator groups: Chinese, Indian and Malay; quasi-experimental between-subjects factor) x 3 (Receiver groups: Chinese, Indian and Malay; within-subjects factor) mixed design. We recruited 123 Malaysians (97 females, 25 males, 1 undisclosed,  $M_{age} = 25.23$ ,  $SD = 2.94$ ) from the three major ethnic groups, Chinese ( $N = 43$ ), Indians ( $N = 38$ ) and Malays ( $N = 42$ ). Recruitment was done through social media and snowballing. Each participant was given a RM15 gift voucher for their time and were entered into a lucky draw in which four pairs had a chance to win a voucher worth RM60 each. The questionnaire was administered online using a survey site (Qualtrics).

#### 2.1.2 Materials

**Index of Cooperative and Competitive Emotion (ICE) Measure.** To measure anticipated cooperative and competitive emotions, participants were asked to rate how they would feel about division of tokens, using a scale of 1 (not at all) to 5 (very much) to indicate the extent to which they would feel each of six emotions: pleased, proud, regretful, disappointed, guilty, and ashamed. The measure consists of 12 scenarios that represented equal (12:12 and 21:21 [Chinese], 9:9 and 24:24 [Indian], 15:15 and 18:18 [Malay]) and unequal (16:8 and 28:14 [Chinese], 12:6 and 32:16 [Indian], 20:10 and 24:12 [Malay]) allocations towards others who belonged to the three ethnic groups (Chinese, Indian and Malay). For each ethnic group, ethnic group-specific names were used (Chinese: Siew Ling or Sui Mei [female] & Chi Yung or Jian Hong [male], Indian: Shantini or Lakshmi [female] & Viknesh or Kumar [male], and Malay: Nurul or Aini [female] & Ali or Samad [male]). For example, one item asked participants to imagine that there were 36 tokens at stake, and the participant took 24 tokens for him/herself and allocated 12 tokens to the other person was Malay. Participants are then asked to rate how they would feel about this division of tokens. Definitions of each emotion were given in English and in the Malay language to make sure participants understood what these emotions mean. The English definitions were taken from the Oxford online dictionary ("proud, pleased, regret, disappointment, guilt, ashamed," 2018) and the Malay definitions were taken from the Dewan Pustaka and Bahasa online dictionary ("bangga, gembira, menyesal, kecewa, bersalah, malu," 2018). There were two versions of these scenarios, one with female opponents and the other with male opponents. Participants were always presented with the version that matched their own gender. The scenarios were presented in a random order.

**Social Value Orientation.** Participants' SVO was assessed using the SVO Slider Measure (SVO-SM) (Murphy, Ackermann, & Handgraaf, 2011).

**Allocation behavior.** Each participant played the role of allocator in a DG and was given a total of 30 tokens to divide between him/herself and an opponent who (by virtue of the same names presented to the participant in the ICE measure) belonged to one of the three ethnic groups. The participants were told that the tokens had monetary value, in the sense that the points gained would be paid out in real money if they won a lottery. On completing the survey, participants were

automatically entered into lucky draw in which they could win a gift voucher worth up to a maximum of RM60.

### **2.1.3 Procedure**

Participants first completed a consent form. Next, they completed demographic items (ethnic group, age, gender, fluency in English, and occupation). Participants were then asked to complete the SVO-SM and another questionnaire (the IIM; Leach et al., 2008). Next, participants were shown the definitions of the emotions that they would be presented in the ICE measure. They then reported their anticipated emotions for the 12 different allocation scenarios of the ICE measure in a randomized order. Next, participants completed an attention check and then were asked to play the DG three times (once for each ethnicity: Chinese, Indian and Malay in a randomized order) to measure their allocation behaviour. Participants were asked whether they had taken their participation in the study seriously. Finally, participants were debriefed, thanked and received their participation reward.

## **2.2 Results**

### **2.2.1 Data treatment**

Out of the 123 Malaysians recruited, data from 105 individuals ( $M_{age} = 25.33$ ,  $SD = 2.86$ ) were retained for analysis. There were 22 males, 82 females and 1 participant with undisclosed gender<sup>1</sup>. The participants included 35 Chinese, 33 Indians and 37 Malays. Data from participants who: failed the attention check ( $N = 7$ ), admitted that they were not serious in answering the questionnaire ( $N = 3$ ), and took longer than 2.5 times the median response time ( $Mdn = 19.35$ ,  $N = 8$ ) were excluded from the analyses.

### **2.2.2 Anticipated emotions and allocation behavior**

A *t*-test showed that participants did not differ in their anticipated cooperative and competitive emotions towards ingroup ( $M = 1.14$ ,  $SD = 1.32$ ) and outgroup ( $M = 1.18$ ,  $SD = 1.31$ ) members,  $t(102) = -.72$ ,  $p = .471$ . When comparing participants' allocation behaviour toward ingroup and outgroup receivers, a Wilcoxon signed rank test showed that participants did not differ in their allocation behaviour towards ingroup ( $M = 13.79$ ,  $SD = 3.44$ ,  $Mdn = 15.00$ ) and outgroup receivers ( $M = 13.86$ ,  $SD = 2.99$ ,  $Mdn = 15.00$ ),  $Z = -.24$ ,  $p = .810$ .

### **2.2.3 Anticipated emotions as a mediator**

Bono et al. (2019) reported that the effect of individual preferences for cooperative and competitive outcomes on allocation behavior is mediated by anticipated emotions. To investigate if this pattern would replicate in a non-Western sample, a second mediation analysis was carried out to test whether anticipated cooperative and competitive emotions mediated the relation between SVO and allocation behaviour (see Figure 1.2). This analysis showed that the total effect of SVO (on the

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<sup>1</sup> For this particular participant with undisclosed gender, data for the ICE and allocation behavior measure were not recorded.

left-hand side of Figure 1.2) on tokens allocated in DG (on the right-hand side of Figure 1.2) was positive and significant, and that there was a positive and significant effect of SVO on anticipated emotions (the mediator; at the top of Figure 1.2), revealing that prosocials allocated more of their resources to others and anticipated more cooperative emotions. Furthermore, there was a significant effect of anticipated emotions (the mediator) on allocation behavior, while controlling for the effect of SVO. Moreover, the indirect effect of SVO on allocation behaviour through ICE-PRG was significant,  $b = .02$ , 95% CI [.01, .05], and the effect of SVO on allocation behavior was no longer significant when controlling for anticipated emotions, suggesting full mediation.

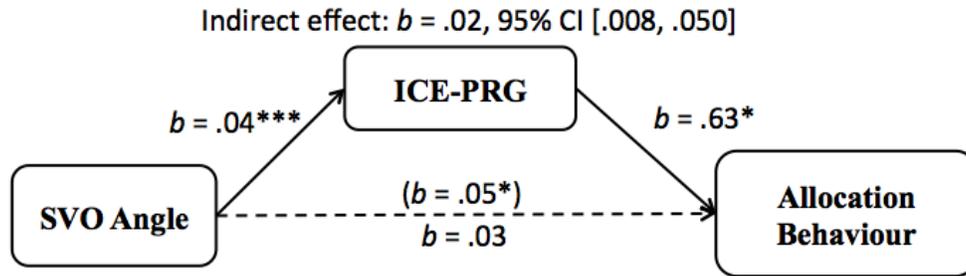


Figure 0.1: Indirect effect of Social Value Orientation on dichotomized averaged tokens allocated to the receiver (regardless of ethnicity) in the Dictator Game through anticipated emotions (ICE PRG). \*  $p < .05$ , \*\*\*  $p < .001$  (Study 1).

### 2.3 Discussion

The finding that differences in anticipated cooperative and competitive emotions mediated the effect of SVO on allocation behaviour replicates the finding of Bono et al. (2019). Prosocials anticipate more cooperative emotions (pride about being fair, regret and guilt about being unfair) and fewer competitive emotions (pride about being unfair, regret and guilt about being fair) than proselves, and that it is these anticipated cooperative and competitive emotions that are responsible for individual differences in allocation behaviour. Importantly, this pattern of mediation was replicated in a population from a non-Western culture.

However, the results of the present study did not support the prediction that individuals would anticipate less cooperative emotions towards outgroup others and would allocate less resources to the outgroup. This stands in contrast to the ingroup favouritism in allocation behaviour observed by other researchers (Ben-Ner et al., 2009; Berg, Dickhaut, & McCabe, 1995; Forsythe, Horowitz, Savin, & Sefton, 1994; Liebe & Tuitic, 2010). A possible reason for the absence of this effect is that participants were asked to play three DGs consecutively with members of the three different ethnic groups, in a within-subjects design. This may have made them aware of the fact that the ethnicity of the other to whom they were making allocations was being varied. Impression management concerns may have restrained participants from allocating the resources unequally between the members of the different ethnic groups.

In Study 2 the design was switched to a between-subjects manipulation of receiver's social identity, in order to minimise the influence of social desirability. By switching to a between-subjects design, the manipulation of the opponent's social group identity should have been less transparent than it was in Study 1. We also sought to recruit a bigger sample in order to rule out the possibility that the lack of evidence for differences in allocations to ingroup and outgroup

members in Study 1 was due to lack of power. A further change from Study 1 was that instead of the DG, we used the ultimatum game (UG) (Güth, Schmittberger, & Schwarze, 1982). The UG differs from the DG in such a way that the receiver has the option to reject the allocation of the allocator in which case both players end up with nothing.

### **3. Study 2**

The main aim of Study 2 was to re-examine the prediction that there would be a difference in allocation behavior towards ingroup and outgroup members. We also took the opportunity to explore whether social dominance orientation (SDO) would moderate the predicted ingroup favoritism in allocation behavior. Social dominance theory argues that persons high in SDO have a preference for hierarchical social relations and are more accepting of inequality. Individual differences in SDO might therefore predict allocation behavior in general, and ingroup favoritism in particular. In addition, we again investigated whether anticipated emotions would mediate the effect of SVO on allocation behavior.

#### **3.1 Method**

##### **3.1.1 Design and participants**

Study 2 had a 3 (Allocator groups: Malay, Chinese, and Indian) x 3 (Receiver groups: Chinese, Indian and Malay) between-subjects design. There were 565 participants (435 females, 129 males, 1 other,  $M_{age} = 23$ ,  $SD = 4.142$ ) recruited for this study. Out of these, 243 were Chinese, 222 were Malay, 65 were Indians, 22 were of mixed ethnicity, and 13 were from other ethnic groups. Participants were recruited from Malaysian universities through social media and mass emailing to groups of classes with the help of staff. As an incentive, all participants were entered into a lucky draw in which four pairs had a chance to win a voucher worth RM60 each. Similar to Study 1, the questionnaire was administered through Qualtrics.

##### **3.1.2 Procedure**

A professional translator translated the questionnaire from English to Malay and the entire questionnaire was presented in both Malay and English, with the question in Malay at the top and the English translation directly underneath. Participants were first asked to complete a consent form. They were then asked to provide demographic information (ethnicity, age, gender, fluency in English and Malay, and occupation). Next, participants completed the IIM (Leach et al., 2008), then the SVO SM (Murphy et al., 2011) and an attention check. This was followed by the SDO measure (Pratto, Sidanius, Stallworth, & Malle, 1994) and the ICE measure, which was simplified by not varying the recipients' social identity. Here the ICE measure presented six allocation scenarios that reflected the UG rules, such that participants were reminded that the receiver could reject the allocation presented in each scenario. Similar to Study 1, both Malay and English definitions of the emotions were presented on the same screen below each item of the ICE measure.

Next, participants played the UG once with an opponent whose name was randomly chosen from the three ethnic groups. Each participant played the role of the allocator and was given a total of 30 tokens, to be divided between him/herself and the receiver. The names used were the same as in Study 1 and the assigned receiver was always the same gender as the allocator. Participants were

told that the receiver would be able to accept or reject the proposed allocation, and that if the recipient rejected the proposal, neither the allocator nor the recipient would receive any tokens. If the recipient accepted the proposal, the allocator and the recipient would receive what the allocator had proposed. Participants were told that the tokens had monetary value in the sense that the points gained would be doubled and would be paid out in real money if they won the lucky draw. After playing the UG participants asked whether they had taken their participation in the study seriously. Finally, participants were thanked and debriefed.

### 3.2 Results

Out of 565 participants, data from 371 participants ( $M_{age} = 23.05$ ,  $SD = 4.06$ ) were retained for analysis. We excluded participants who failed the attention check ( $N = 62$ ) and whose response time was either shorter than 2.5 times the median response time ( $N = 37$ ) or longer than 2.5 times the median response time ( $N = 29$ ). We excluded participants whose ethnicity was 'other' ( $N = 1$ ) or mixed ( $N = 16$ ). Due to the low number of ethnic Indian participants recruited it was not possible to conduct reliable analyses on this subsample and data from these participants ( $N = 49$ ) were also not included in our analyses. There were 197 Chinese and 174 Malay participants (81 males and 290 females) in the final sample.

A Mann-Whitney test was used to investigate whether participants differed in their allocations to their ingroup and outgroup members. Allocations to ingroup members ( $M = 14.53$ ,  $SD = 2.96$ ,  $Mdn = 15.00$ ) did not differ significantly from allocations to outgroup members ( $M = 14.46$ ,  $SD = 2.84$ ,  $Mdn = 15.00$ ),  $U = 15414.50$ ,  $Z = .19$ ,  $p = .852$ .

Logistic regression was used to explore the combined effects of allocators' group membership, receivers' group membership, and SDO score on allocation behavior (which was dichotomized, because the data violated the assumption of normality). Results revealed that there were no effects of allocators' group membership or receivers' group membership. The only significant finding was a main effect of SDO, showing that those with a greater preference for hierarchy in society were less likely to make fair allocations,  $b = .04$ ,  $p = .003$ , odds ratio = .96.

We examined whether this effect of allocators' SDO on allocation behaviour was mediated by anticipated cooperative and competitive emotions (see Figure 1.3). Consistent with the results already reported, this analysis showed that the total effect of SDO on tokens allocated in UG was negative and significant. There also was a significant negative effect of SDO on anticipated emotions (the mediator), showing that participants scoring higher on SDO anticipated fewer cooperative emotions. Furthermore, there was a positive and significant effect of anticipated emotions (the mediator) on allocation behavior while controlling for SDO. Importantly, the indirect effect of SDO on allocation behaviour through ICE-PRG was significant,  $b = -.02$ , 95% CI [-.03, -.01], and the direct effect of SDO on allocation was no longer significant when controlling for SDO, suggesting full mediation.

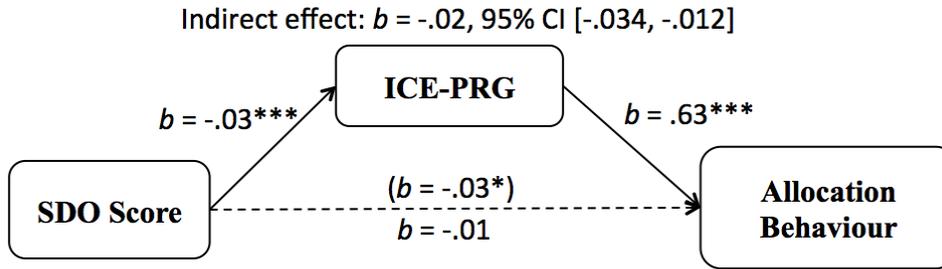


Figure 0.2: Indirect effect of Social Dominance Orientation on dichotomized averaged tokens allocated to the receiver (regardless of ethnicity) in the Ultimatum Game through anticipated emotions (ICE PRG). \*  $p < .05$ , \*\*\*  $p < .001$  (Study 2).

Finally, as we did in Study 1 we explored whether the effect of allocators' SVO on allocation behavior towards others was mediated by anticipated emotions. The mediation analysis showed that the total effect of SVO on tokens allocated in UG was significant and positive,  $b = .07$ , 95% CI [.405, .094]. SVO was a significant predictor of ICE-PRG,  $b = .03$ , 95% CI [.022, .044], and ICE-PRG was a significant predictor of allocations made towards others,  $b = .52$ , 95% CI [.275, .773] after controlling for SVO. In addition, the indirect effect of SVO on allocation behaviour through ICE-PRG was significant,  $b = .02$ , 95% CI [.009, .029]. However, the direct effect of SVO on allocation remained significant,  $b = .05$ , 95% CI [.004, .023], suggesting partial rather than full mediation.

### 3.3 Discussion

Contrary to predictions, there was no significant difference in participants' allocation behaviour towards ingroup and outgroup members in Study 2. The current findings therefore failed to replicate previous research in which ingroup favoritism was found in social dilemmas assessing cooperation (Balliet, Wu, & De Dreu, 2014; Ben-Ner et al., 2009).

SDO did not moderate ingroup favoritism, but there was a significant relation between SDO and allocation behavior, such that those higher in SDO were less likely to be fair in allocating tokens to others. Further analyses also showed that this effect of SDO on allocation behavior towards others was fully mediated by anticipated emotions. This shows that the influence of individual differences in preference for hierarchical social relations on discrimination operates through cooperative and competitive emotions.

### 4. General Discussion

The main aim of these studies was to vary the group membership of the receiver in an economic game setting to see whether this manipulation would influence participants' allocation behavior. However, there was no evidence of the predicted ingroup favoritism in either study. As noted earlier, the absence of an effect on allocation behavior may have been due to impression management and social desirability concerns and using a non-representative sample that may have more liberal social attitudes. A further possibility is that by individualizing the receiver (by giving him or her a name), the procedure used in the current studies may have inadvertently enhanced fair behavior in most participants, because they may have been more reluctant to act unfairly towards a named individual than they would have been if the recipient had been anonymous (as recipients generally are in economic games).

In conclusion, although the main findings of the current studies were not in line with predictions, both studies showed that anticipated emotions significantly mediated the relation between SVO and allocation behavior. This is consistent with the notion that anticipated emotions play a key role in resource allocation decision making (Bono et al., 2019). The fact that this finding was replicated in a non-Western sample demonstrates the robustness of this finding. Furthermore, the finding that the relation between SDO and allocation behavior was fully mediated by anticipated emotions reveals that individual differences in preferences for a hierarchical social order predict individual level discrimination through their effect on cooperative and competitive emotions. This speaks to the generality of anticipated emotions as a psychological mechanism that can explain how preferences for divisions of outcomes are expressed.

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# Physical and psychological boundary of traditional Hindu fishing community in Bangladesh: Perception of the educated youth

Mohammed Mamun Rashid<sup>a\*</sup>, Azlinda Azman<sup>b</sup> and Paramjit Singh Jamir Singh<sup>c</sup>

<sup>abc</sup> Universiti Sains Malaysia, Malaysia

Email: [rashidmamuns@yahoo.com](mailto:rashidmamuns@yahoo.com)

## Abstract

Fishing is an ancient and risky profession. Subsequently, it has provided job for many people in the world. Meanwhile, in Bangladesh, small coastal communities are often involved in open access and unregulated small-scale fisheries. Fishing is often practiced by people in the lowest castes in the Hindu community. This study focuses on the fishing community called the Jaladas (slave of the water) who are deemed as caste-bound people in Hinduism. These people have faced exploitation and negatively affected by many internal and external factors from generation to generation. This village-based primary study examines how educated youths from Hindu fishing communities perceive their own lives & livelihoods, and how they respond to the changes of socio-economic, political and cultural situations. 40 educated youths, who completed at least the Secondary School Certificate, were selected through purposive sampling. They were interviewed about their choice of occupation, social and cultural thinking, kinship, religious worship, and relationship with Muslim moneylenders, political affiliation, engagement with traditional institutions, government and non-governmental supports, community development, and their future plan. This study reveals that despite the strong community bondage, the mindset of educated youths of fishing village has been changing due to the influence of exogenous factors like education, media, mobility, and involvement with political parties. These youths have gradually overcome the socio-psychological barrier and keen to engage in different jobs except fishing. However, they often face financial difficulties and have limited job opportunities, which have made them frustrated. The Government of Bangladesh (GoB) and development agencies should take special initiatives to ensure socio-economic and cultural development among educated youths from underprivileged fishing communities by providing more employment opportunities, training, financial supports, and alternative income generating activities.

**Keywords:** Bangladesh; Kumira fishing village; Socio-economic development; Well-being; Youths.

## 1. Introduction

Fishing is one of the most ancient professions in the history of mankind. Historical records have shown that fishing was introduced prior to the introduction of agriculture. Fishing and aquaculture have provided humans with food sources, as well as generate income. This industry has generated a massive number of employments and at present, it is one of the fastest growing industry in the world. In 2015, it was reported that the global total marine catch reached to about 81.2 million tons. Moreover, the Food and Agriculture Organization, (2014) reported that millions of people depend on fishing and aquaculture as the source of income. Furthermore, hundreds of millions of

people depend on the industry for their livelihood. In Bangladesh, the fishing activities can be broadly categorized into three main categories: inland capture, inland culture and marine fisheries. In this light, fish and other marine products contribute to 60% of the total animal protein consumption in the country (Department of Fisheries, 2015) and the fishing industry also helps generate employment for people in the rural areas and helps the alleviation of poverty. This reflects the significant role played by the industry in Bangladesh as it not only provides employment opportunities, it also supplies cheaper source of protein for the poor.

Despite its significance, for the financial year of 2012-2013, the fisheries industry only contributes to 3.68% of the national Gross Domestic Product (GDP) (Ministry of Finance, 2014). This could be due to the fact that most fishermen in Bangladesh are living in small villages and only practice small-scale, or artisanal fisheries (Islam et al., 2011). In this regard, fishing is done not as a moneymaking venture, but as part of a traditional lifestyle. Here, such activity has a social dynamic and is done naturally. It is also considered as open access and free. Deb (2009) mentioned that in the densely-populated Bangladesh, minorities such as the Hindus are bounded by law, culture, political and other factors to enter low waged, open access jobs such as fishing and the majority need to ensure the minority will not earn more than them.

Subsequently, low caste Hindu communities, such as the Jaladas, commonly practice fishing. According to Hinduism, The Jaladas are known as the 'slave of the water' are traditionally fisherfolk communities and is a caste-bound community. They usually live in segregated paras comprising of different households that are often independent and separate from other villages. In this regard, they have limited or no primary social relations and/or kinship with people outside of the paras. Traditional beliefs have prevented higher caste Hindus and Muslims aristocracy and gentry from social mingling with the Jaladas. In recent years, the Hindu fishing communities, who are mostly Hindus are threaten by Muslim fishermen who changed from their traditional occupation of being farmers due to societal pressure, economic constraints, and climate change (Alam, 1996). This has forced more Muslims in to Kumira become self-employed work as laborers or become fishermen.

According to Habib (1992), the Jaladas is a religious minority in Bangladesh and due to the caste system, believes that it is difficult for them change to other professions. Such traditional mindset has created a socio-psychological barrier for them as they automatically think they should serve as 'servants of water'. They also believe that they are cursed as slaves, and consider themselves as sinners as they rely on catching and killing fish for income. This has made the feel and they are destined to become fishermen all of their lives.

Alam (1996) described that the Jaladas Hindu fishing para occupies a section of a village in the vicinity of the Bay of Bengal, close to Chittagong city. Due to the unique characteristics of the caste rule and their profession, the fisherfolk are in a way, isolated from other people living in the surrounding paras. Furthermore, when other families of the Jaladas caste come to settle in the area, they naturally want to be part of the Jaladas para. Furthermore, Jaladas fishermen mostly fish from a particular fishing ground and spend their leisure time together in a specific tea-shop, community center or in temples.

Meanwhile, the access to education and modernity has changed how the younger generation thinks. In the 1980s, efforts were done to provide access to education to the coastal communities and subsequently, most youths from these communities have received secondary or college level education. This has a profound effect as youths is considered as the most productive group of the society and they are the backbone of the national development agenda. In Bangladesh, youths are between 18-35 years and they make up one third of total population. Furthermore, 20.9 million out of the 56.7 million labor forces in the country are youths aged between 15-29 (Bangladesh Bureau of Statistics, 2013).

In the meantime, Bangladesh is facing an unemployment crisis. According to the Planning Commission of Bangladesh (2016-2020), it is difficult to provide high-waged employment and the steep competition for work has made it difficult for school dropouts, unskilled and unemployed youths to find work (Uddin et al., 2008).

Based on the authors’ primary research done, this study has provided an overview of the fishing communities. In this light, this study will examine how educated youths from Hindu fishing communities perceive their lives and livelihoods and respond to the ever changing of socio-economic, political and cultural contexts.

## 2. Methods and Materials

This study is a mixed method research, which applies both qualitative and quantitative methods to collect and analyze data. This study was carried out in Kumira fishing village, Sitakunda, Chittagong, which is located in the southeastern part of Bangladesh. Kumira is located in the coastal belt of the Chittagong District and is part of the Sitakunda sub-district, located approximately 26 kilometers north of Chittagong City. Kumira faces the Bay of Bengal on the west and surrounded by hills on the east, the village Court or ‘para’ is located in south Kumira with the Kumira canal runs on its north.

This study involved 40 purposively selected educated youths from the community. These youths are considered as ‘educated’ as they have completed at least the Secondary School Certificate). The questions in the survey questionnaire focused on choosing occupation, social and cultural thinking, present living place, kinship, religious worship, relationship with Muslim money lenders, political affiliation, engagement with traditional institutions, government and non-governmental supports, community development, and future plan of the youth. Two FGDs were conducted with youths.

Table 1: Respondents’ demographics

Element	Particulars	Male	%	Female	%	Total
Age	18 to 20	13	32.5	8	20	40
	21 to 25	7	17.5	6	15	
	26 to 30	4	10	0	0	
	31 to 35	2	5	0	0	
Gender	Male/Female	26	65	14	35	40
	Complete Secondary School Certificate (SSC)	6	15	2	5	

Education	Studying in Higher Secondary Certificate (HSC)	11	27.5	6	15	40
	Complete HSC	3	7.5	2	5	
	Studying in Graduation	3	7.5	3	7.5	
	Graduate (completed bachelor degree)	1	2.5	1	2.5	
	Post-graduate	2	5	0	0	
Marital Status	Unmarried	22	55	13	32.5	40
	Married	4	10	1	2.5	

Note: SSC is 10 years of schooling

### 3. Results and discussions

#### 3.1 Community Boundary

One of the earliest analyses on community is by Peter J. Bertocci (1970) who examined a “community” based on the socio-economic structure inside (intra) and outside (extra) of a conventional view of a community, village, institutions & leaderships based on the economic relations with kinship and community bonds. Meanwhile, A.P. Cohen (1985) examined the cultural aspect of a “community” by focusing on religious group and societal boundary such as in neighborhoods. On the other hand, in Kumira, the fishing ‘para’ has a different physical environment as the dwellers (fishermen) closely rely with each other. Subsequently, the number of households in Kumira has increased from 267 in 1995 to 520 households. While some are capable of buying land in a better place in nearby villages, they are still reluctant to leave their own people. They have created a boundary of their own. This study found that 7.50% respondents are living in the city because of their profession but most of them have a regular contact with their community.

#### 3.2 Education

In 1995, the fishing community in Kumira had a very low rate of literacy (22.00%) and the CODEC report (1996) claimed that the level of education among male and female in Kumira was much lower than the national average (CODEC, 1996). According to Manusher Jonno Foundation (2016), the low level of education among the fisherfolk makes them become marginalized in Bangladesh. As most fishermen have little financial stability, they found it difficult to provide education to their children. In 1985, the DANIDA funded Community Development Centre (CODEC) began efforts to provide access to health, education, financial support to the Hindu fishing communities (CODEC). Subsequently, a community school for the children of the fishing community was opened and all of the respondent highly appreciate the education opportunity provided by CODEC. CODEC also provides scholarship support to meritorious and poor students to continue their education. In this regard, 42.50% of the respondents hold Higher Secondary Certificate (HSC) and are receiving college level education. Meanwhile, some female respondents are studying nursing while others are studying for vocational diploma in renowned colleges in Chittagong and Feni. This reflects the increase in youth mobility in the area. Some of these youths also help to share knowledge and inspire the younger members of the community by distributing books and school supplies to encourage them to go to school.

### **3.3 Occupation**

Perhaps one of the most apparent psychological barrier for the Jaladas is that as fisherfolks, they are different from other groups of people. Furthermore, the Muslims and some of the Hindus from different castes feel that the Jaladas can only work as fishermen due to the caste rule that encourages the Bangladeshi society to think this way. Alam (1996) cited that it is too early to conclude whether there is an emerging trend where young Jaladas seek other long-term professions. While some of these young men have migrated to the Middle East, they mostly will return to Kumira after their contract expires, and ended up almost as fishermen, or find work related to the fisheries or aquaculture. This study found that 12.50% of the total respondents are working in other industries such as teaching, salesmen, steel mills, and ship-breaking while some are self-employed. Others are eager to engage in jobs, however, some have limited skills which has kept them unemployed.

In this light, youth unemployment is a major problem in Bangladesh, and some has linked this problem to the failure of the country's education to empower the country's youths with the right set of skills which could make them more employable in the economy. In this study, all of the respondents believe that formal education elevates their social status and not one of them are keen to choose fishing as an occupation as small-scale fishing is deemed as not profitable. On the other hand, the lack of employment opportunities outside of the fishery industry has led to frustration among educated youths in the fishing village.

### **3.4 Religious Worship**

The fishermen spend their entire time each day at close quarters with each other. People know one another in the fishing Para and they share common or contemporary duties, which included fishing. They also fish in a particular fishing ground and spend their leisure time in the same public places such as tea shops, community centers and temples. They also celebrate the Durga Puja festival in October with all members of their particular community in the Para. During the fishing season, the Monosha Punthi Pat (songs of the Goddess of Snakes) ritual is conducted in each fishing house every night on a rotation basis. All members in the community attend this religious-cultural function. On the last day of the Bengali year (April), the fishermen and the members of the community will also celebrate Chaitrasangkanti. For the celebration, they often buy new clothes and decorate their houses with flowers. While other Hindus also celebrate this day, the celebration of the Jaladas community is unique in all respects.

Their worship rituals are very different from Muslim prayers and Hindus from higher castes. These people celebrate their faith with music, drinking and wearing their colorful and unique attire and drawing patterns on their faces. It was found that 92.50% respondents participate in religious worship in their fishing village. All of them have a strong religious belief and participate actively in religious festivals. The fishing people of Kumira have their own special attire which makes them different from the Muslims or even other Hindus of other caste. However, all of the respondents prefer to wear modern clothes and this could be due to the influence of formal education, mingling with Muslim friends and the impact of media.

### **3.5 Kinship and Marriage**

The mindset of educated youths on kinship and marriage has changed. In the past, Jaladas people in Kumira will not marry outside of the Jaladas caste, which reflects the role of marriage in organizing the people of Kumira into a caste-bound community. On the other hand, 70.00% of the respondents opined that they want to marry outside the Jaladas caste.

### **3.6 Samaj, Sardar, Salish**

The fishermen in Kumira have a distinctive pattern of social organization. The social system is controlled by a system which comprises of 3 aspects, the Samaj (kinship), Sardar (traditional leadership), and Salish (a non-formal court for problem mitigation). The Samaj, Sardar and Salish system among the Jaladas caste is still strong. However, the authority of the Sardars has been undermined by the rise of the Aratdars (wholesale businessmen), the Union Council and the Police. A majority of the respondents (87.50%) stated that the present Sardars are biased towards the vested interest groups and money. For the respondents, they prefer to consult the local Union Council and political leaders to solve their problems. Meanwhile, even though fishermen brave the sea to fish, they tend to have little power on land as they have been exploited for too. It was found that 25.00% of the respondents are directly affiliated with political parties. They are involved in the local arbitration process both in Hindu or Muslim communities and have connection to sub-district and district level political leaders.

### **3.7 Market, Marketing Chain and Capital Penetration**

The marketers and the marketing chain in Kumira have a negative effect on the community. Large companies and moneylenders provide loans for capitals and for basic necessities such as consumables, medicine, medical treatment, and they are expected to pay for it through their catch. This has forced the people in Kumira to become bonded-laborers. Subsequently, the moneylenders' have disrupted the wellbeing of the fishermen and the community in Kumira. This reflects how marketers, the marketing chain and capitalism disrupt the people of Kumira as a community. However, some of the respondents (15.00%) seem to be oblivious with the prolonged exploitation of Jaladas community by Muslim moneylenders and some even work as agents for the Muslim moneylenders.

### **3.8 Future Plan**

A majority of the respondents (75.00%) want to engage in white-collar jobs. They opined that fishing is a low status job and are not interested in becoming a fisherman. They wanted to improve lives and livelihoods beyond fishing. A few of them want to collaborate with policy makers to improve the lives of fishing community by adopting improved fishing technology, providing better healthcare, increasing access to education, and creating more employment. They also want to empower the fishing community so they can claim rights and entitlements from the state.

#### 4. Conclusion

This study has documented the Jaladas' distinct socio-economic, political, cultural backgrounds. As fisherfolks who depend on traditional fishing activities, they highly depend on fisheries, water, nets, boats, rivers and the sea. Subsequently, they are socially neglected, economically insolvent, politically pressured, culturally mistreated, technologically backward, have lack of access to information, and have a vulnerable livelihood. This study found that the mindset of educated youths in the fishing village has been changing. While most of them are still bound to the community, some of them have changed their mindset due to the influence of exogenous factors like education, media, mobility, money, and involvement of political parties. Most of the educated youths interviewed have gradually overcome the socio-psychological barrier and want to engage in other professions as they want to break away from their vulnerable livelihood. However, most feel frustrated as they face financial issues and have limited job opportunities.

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# Depression, Anxiety and Coping Styles in Patients with Brain Pathology in a Malaysian Hospital

Priscilla Das<sup>a\*</sup>, Nyi Nyi Naing<sup>b</sup>, Nadiah Wan-Arfah<sup>b</sup>, KON Noorjan<sup>c</sup>, Yee Cheng Kueh<sup>d</sup>,  
Kantha Rasalingam<sup>e</sup>

<sup>a</sup>Unit of Biostatistics & Research Methodology, School of Medical Sciences Universiti Sains Malaysia 16150 Kubang Kerian Kelantan, Malaysia  
Faculty of Health Sciences, Asia Metropolitan University, G-8, Jalan Kemacahaya 11, Taman Kemacahaya, Batu 9, 43200 Cheras, Selangor Darul Ehsan, Malaysia  
Faculty of Medicine, SEGi University No. 9, Jalan Teknologi, Taman Sains Selangor, Kota Damansara, PJU 5, 47810 Petaling Jaya, Selangor, Malaysia

<sup>b</sup>Institute for Community (Health) Development (i-CODE), Universiti Sultan ZainalAbidin, Block E, Level 1, Gong Badak Campus, 21300 Kuala Nerus, Terengganu, Malaysia

<sup>c</sup>Department of Psychiatry, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia 43400 UPM Serdang, Selangor

<sup>d</sup>Unit of Biostatistics & Research Methodology, Department of Psychiatry, School of Medical Sciences Universiti Sains Malaysia 16150 Kubang Kerian Kelantan, Malaysia

<sup>e</sup>Department of Neuroscience, Hospital Kuala Lumpur 50586 Jalan Pahang  
Kuala Lumpur

Email: [daspriscilla@yahoo.com](mailto:daspriscilla@yahoo.com)

## Abstract

**Objective:** To evaluate coping styles of brain pathology patients. The study also investigates the psychiatric disorders, socio-demographic profiles and clinical factors that influence the patients. **Methods:** This was a cross-sectional study conducted at the Kuala Lumpur Hospital in Malaysia, which is a tertiary referral centre for neurological diseases. In all, 100 patients were assessed using the Brief COPE questionnaire for coping styles and the Mini-International Neuropsychiatric Interview to assess psychiatric disorder. **Results:** The coping strategies used by the patients in descending order of frequency were: religion, use of emotional support, acceptance, use of instrumental support, positive reframing, active coping, self-distraction, planning, humour, venting, self-blame, denial, behavioural disengagement and substance use. The coping styles were found to be associated with major depressive disorder, anxiety disorders, socio-demographic profiles, and clinical factors. Venting, acceptance and self-blame coping styles were significant predictors and related to major depressive disorder. **Conclusion:** It is important to identify the types of coping styles practiced by the patients to improve their overall survival rate.

**Keywords:** Anxiety disorder; Brain Tumour, Brain Pathology; Major Depressive Disorder; Neurological Disorder; Psychological.

## **1. Introduction**

During the past two decades, research has focused on coping styles among individuals with life-threatening illnesses (Shakeri et al., 2015; Taniguchi & Mizuno, 2016). A number of researchers have investigated coping styles among cancer patients (Jones, Fellows, & Horne, 2010; Matthews & Cook, 2009; Sharpley, Bitsika, & Christie, 2009). However, to our knowledge, there is limited research examining coping styles among brain pathology patients.

Varying aspects of coping can be assessed by using the Brief COPE questionnaire developed by Carver (Carver, 1997)(insert citation). The Brief COPE assesses different types of coping, such as active coping, planning, positive reframing, acceptance, humour, religion, the use of emotional support and instrumental support, self-distraction, denial, venting, substance use, behavioural disengagement and self-blame (Carver, 1997). Previous study noted that the coping ability were constantly challenged among the cancer patients because of cancer severity and its treatment that often creates severe stress situations that eventually causes difficulties in maintaining an optimal adjustment (Taniguchi & Mizuno, 2016).

Two types of coping styles such as problem oriented coping strategies or emotion-oriented coping strategies were found among the cancer patients. The study reported that the patients with problem-oriented coping strategies have better adjustment and improved quality of life compared to patient with emotion-oriented coping styles (Maleknia & Kahraze, 2015). The research reported that there is no best standardized measurement to measure for the distress which relates on the clinical symptoms.

Therefore, the future studies should focus to examine coping styles among brain pathology patients Identification of distress over time is essential to organize best supportive care to overcome the high prevalence of distress for tumour patients (Liu et al., 2018). Therefore, early identification of poor coping styles among patients is clinically important and cancer patients should feel free to make an effort to increase their well-being, thus increasing chances of their own survival rate and prevent cancer relapse (Koehler, Koenigsmann, & Frommer, 2009).

## **2. Methods**

This study was conducted within the Hospital Kuala Lumpur (HKL), Malaysia between April 2016 to December 2016. The hospital is a tertiary referral centre for neurological illnesses. The study entailed a cross-sectional design, and was approved by Human Research Ethics Committee, Universiti Sains Malaysia (USM/JEPeM/16050178) and Medical Research & Ethics Committee (MREC) at the Ministry of Health (MOH) (NMRR-16-1134-29874 (IIR)). Consecutively eligible patients were recruited to participate in the study. The inclusion criteria were: aged 18 years or above; diagnosed with brain pathology and able to communicate in English, Malay, Mandarin or Tamil; and cognitively fit to be interviewed and give informed consent. Each patient's socio-demographic profile and clinical status were recorded. Socio-demographic factors such as gender, ethnicity, marital status, highest level of formal education, occupation status and total monthly household income were retrieved from the patients. Brain pathology diagnoses were assessed from the medical records.

Psychiatric disorders were examined by the Mini International Neuropsychiatric Interview (MINI) version 6.0.0 (Sheehan D, 2009)(insert citation no. 6 here). Based on Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV(Sheehan DV, 1997); insert citation here) and the 10th edition of the International Classification of Diseases(Sheehan D, 2009) (insert citation here), the questionnaire was developed. It has 96% sensitivity and 88% specificity. MINI questionnaires assessed psychiatric disorders such as MDD, panic disorder, agoraphobia, social anxiety disorder or current social phobia (SAD), obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD), generalized anxiety disorder (GAD) and other psychiatric disorders The interviewer (first author) was well trained by senior psychiatrists to use the MINI questionnaire (Sheehan D, 2009).

The Brief COPE questionnaire has 14 scales of specific coping styles which measures difficult and stressful life events (Carver, 1997)(insert citation here). Each scale is comprised of two test items and scaled as follows: 1 = “I usually don’t do this at all”; 2 = “I usually do this a little bit”; 3 = “I usually do this a medium amount”; and 4 = “I usually do this a lot.” The scores ranged from 2 to 8 and this score was calculated by adding the two items from each scale (Carver, 1997). Coping styles were categorised into three types such as problem-focused coping, adaptive coping and maladaptive coping styles. In brief COPE problem-focused coping described into (active coping, planning and use of instrumental support), emotional-focused coping(emotional support, positive reframing and religion), adaptive coping(acceptance and humour) and maladaptive coping styles(self-distraction, denial, substance use, behavioural disengagement, venting and self-blame) (Rohland., 1998).

### **3.Results**

The data were analysed using the Statistical Package for the Social Sciences (SPSS), Windows version 22.0. Descriptive statistics were determined. To assess the predictors of depression status as a function of coping styles the bivariate logistic regression analyses were used. In the study, Major Depressive Disorder (MDD) and the anxiety disorders were treated as the dependent variables and coping styles as covariates. The Mann-Whitney U test for nonparametric data was performed to investigate between group differences in coping styles for several factors, including depression, anxiety, socio-demographic characteristics, and clinical characteristics. In all cases, a  $p < 0.05$  was considered as statistically significant A total of 100 patients in HKL who were identified with brain tumour or brain disorder by radiological appearance with subsequent histological confirmation based on WHO grade were included in the study. The socio demographic profiles of the patients shown in the table 1.

Table 1: Socio-demographic characteristics of brain disorder respondents in HKL (n=100)

<b>Characteristics</b>	<b>n</b>	<b>Percentage (%)</b>
<b>Age (year)</b>		
<b>18-20</b>	2	2.0
<b>21-30</b>	15	15.0
<b>31-40</b>	21	21.0
<b>41-50</b>	25	25.0
<b>51-60</b>	21	21.0
<b>61-70</b>	15	15.0
<b>71</b>	1	1.0
<b>Gender</b>		
<b>Female</b>	66	66.0
<b>Male</b>	34	34.0
<b>Ethnicity</b>		
<b>Malay</b>	78	78.0
<b>Chinese</b>	12	12.0
<b>Indian</b>	9	9.0
<b>Others</b>	1	1.0
<b>Religion</b>		
<b>Muslim</b>	78	78.0
<b>Buddhist</b>	11	11.0
<b>Hindu</b>	7	7.0
<b>Christian</b>	3	3.0
<b>Others</b>	1	1.0
<b>Marital status</b>		
<b>Single</b>	24	24.0
<b>Married</b>	74	74.0
<b>Widowed</b>	1	1.0
<b>Divorced</b>	1	1.0
<b>Children</b>		
<b>Yes</b>	68	68.0
<b>No</b>	32	32.0
<b>Highest level of formal education</b>		
<b>Primary</b>	13	13.0
<b>Secondary</b>	48	48.0
<b>College/University</b>	38	38.0
<b>No education</b>	1	1.0
<b>Highest certificate</b>		
<b>Primary School Evaluation Test (UPSR/PSET)</b>	12	12.0
<b>Lower Certificate of Education (PMR/SRP/LCE)</b>	14	14.0
<b>Malaysian Certificate of Education (SPM/SPMV/MCE)</b>	29	29.0
<b>Malaysian Higher School Certificate (STPM/HSC)</b>	3	3.0
<b>Certificate/Diploma</b>	20	20.0
<b>Degree</b>	18	18.0
<b>Master</b>	3	3.0
<b>No education</b>	1	1.0
<b>Occupation status</b>		

<b>Working</b>	55	55.0
<b>Not working</b>	45	45.0
<b>Working sector</b>		
<b>Government</b>	21	21.0
<b>Non-government</b>	31	31.0
<b>Self-employment</b>	1	1.0
<b>Not working</b>	45	45.0
<b>Semi-government</b>	2	2.0
<b>Total monthly income household (RM)</b>		
<b>0-3000</b>	53	53.0
<b>3001-6000</b>	13	13.0
<b>6001-9000</b>	8	8.0
<b>&gt;9001</b>	4	4.0
<b>others</b>	22	22.0

### 3.1 Coping Styles of Brain Disorder Patients

The types of the patients' coping styles (see Table 2) showed that (see my comments). Religion has the highest mean ( $M = 7.3$ ), and substance use (2.1) has the lowest mean.

Table 2: Types of various coping styles for brain disorder patients ( $n = 100$ )

<b>Coping styles</b>	<b>Mean</b>	<b>SD</b>
Self-distraction	6.1	2.0
Active coping	6.2	1.9
Denial	2.6	1.5
Substance use	2.1	0.4
Use of emotional support	6.7	1.8
Use of instrumental support	6.6	1.9
Behavioral disengagement	2.4	1.1
Venting	4.2	2.0
Positive reframing	6.5	1.5
Planning	6.0	2.0
Humor	4.5	1.3
Acceptance	6.9	1.5
Religion	7.3	1.4
Self-blame	3.1	1.9

### 3.2 Predictors of Major Depressive Disorder as Function of Coping Styles in Brain Disorder Patients

Table 3 displays the results of the regression analyses examining the predictors of MDD (dependent variable) as a function of coping styles. The entry of predictors starts with venting, acceptance and self-blame coping styles. The rationale for the selection of these three variables is that it shows a significance of  $p < .05$  in the binary logistic regression model compared to other

variables which are not significant. The final model Nagelkerke  $R^2$  value shows about 25.9% of the variation in the outcome variable of MDD is explained by the logistic model. The correlations between the predictors do not exist. The overall accuracy of this model to predict patients having MDD with a predicted probability of 0.5 or greater is 77.0% with sensitivity of 36.7% and the specificity of 94.3%. Among the predictors the venting coping style (odds ratio = 1.415,  $p = 0.008$ ), acceptance coping style (odds ratio = 0.632,  $p = 0.006$ ) and self-blame (odds ratio = 1.356,  $p = 0.016$ ), were found to be significant and were related to MDD.

Table 3: Predictors of depression status as a function of coping styles

Variable	Simple logistic regression			Multiple logistic regression		
	b	OR (95% CI)	p-value	b	OR (95% CI)	p-value
<b>Venting</b>	0.278	1.321 (1.057, 1.651)	0.014	0.347	1.415 (1.093, 1.832)	0.008
<b>Acceptance</b>	-0.321	0.725 (0.546, 0.962)	0.026	-0.460	0.632 (0.455, 0.877)	0.006
<b>Self-blame</b>	0.299	1.348 (1.077, 1.687)	0.009	0.304	1.356 (1.059, 1.736)	0.016

### 3.3 Between-Group Differences in Coping Score as a Function of Socio-Demographic Profiles in Brain Pathology Patients

Patients who are working used more acceptance ( $p = 0.035$ ) coping styles compared to patients who are not working. The patients who earned more than RM 2500 per month utilized more self-distraction ( $p = 0.019$ ), use of emotional support ( $p = 0.038$ ), instrumental support ( $p=0.042$ ), positive reframing ( $p=0.010$ ), acceptance coping styles ( $p=0.009$ ) and less religion coping styles compared to patients who earned less than or equally to RM 2500 ( $p=0.022$ ). The patients who were married used more venting coping styles than patients who remains single ( $P=0.011$ ). Additionally, patients who had a Malaysian Certificate of Education (SPM) level of education or more reported more active coping ( $p = 0.009$ ), positive reframing ( $p<0.001$ ), planning ( $p=0.003$ ) and acceptance ( $p=0.006$ ) coping styles compared to patients who had less than an SPM level of education. (Table 4).

Table 4: Between-group differences in coping styles as a function of sociodemographic factors among the patients

	Self - distractio n	Active coping	Denial	Substance use	Use of emotional support	Use of instrume ntal support	Behaviou ral disengage ment	Venting	Positive reframing	Planning	Humour	Accept ance	Religion	Self - blame
<b>Not working</b>	6.00(4.00)	7.00(4.00)	2.00(0.00)	2.00(0.00)	8.00(2.50)	7.00(4.00)	2.00(0.00)	4.00(4.00)	6.00(3.00)	6.00(4.50)	5.00(1.50)	<b>7.00(3.00)</b>	8.00(1.00)	2.00(2.00)
<b>Working</b>	7.00(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(2.00)	8.00(2.00)	2.00(0.00)	4.00(4.00)	7.00(2.00)	7.00(3.00)	5.00(1.00)	<b>8.00(2.00)</b>	8.00(1.00)	2.00(2.00)
<b>z</b>	-0.463	-0.992	-0.277	-0.239	-0.864	-1.206	-0.399	-0.110	-1.714	-1.694	-0.815	<b>-2.106</b>	-0.430	-0.013
<b>p-value</b>	0.643	0.321	0.781	0.811	0.388	0.228	0.690	0.913	0.086	0.090	0.415	<b>0.035</b>	0.668	0.990
<b>&gt;RM 2500</b>	<b>7.00(2.00)</b>	7.00(3.00)	2.00(0.00)	2.00(0.00)	<b>8.00(1.00)</b>	<b>8.00(2.00)</b>	2.00(0.00)	5.00(3.00)	<b>8.00(2.00)</b>	7.00(3.00)	5.00(1.00)	<b>8.00(1.00)</b>	<b>8.00(0.00)</b>	2.00(2.00)
<b>≤RM 2500</b>	<b>5.00(4.00)</b>	6.00(3.00)	2.00(0.00)	2.00(0.00)	<b>7.00(2.00)</b>	<b>7.00(3.00)</b>	2.00(0.00)	4.00(4.00)	<b>6.00(2.00)</b>	6.00(4.00)	5.00(1.00)	<b>7.00(3.00)</b>	<b>8.00(2.00)</b>	2.00(2.00)
<b>z</b>	<b>-2.350</b>	-1.529	-0.066	-1.222	<b>-2.070</b>	<b>-2.029</b>	-1.090	-1.357	<b>-2.579</b>	-1.951	-0.202	<b>-2.631</b>	<b>-2.287</b>	-1.021
<b>p-value</b>	<b>0.019</b>	0.126	0.948	0.222	<b>0.038</b>	<b>0.042</b>	0.276	0.175	<b>0.010</b>	0.051	0.840	<b>0.009</b>	<b>0.022</b>	0.307
<b>Single</b>	6.00(4.00)	6.00(3.00)	2.00(0.00)	2.00(0.00)	7.00(2.75)	7.00(4.00)	2.00(0.00)	<b>2.50(2.75)</b>	6.50(3.00)	6.00(3.75)	5.00(1.75)	7.50(2.00)	8.00(2.00)	2.00(1.00)
<b>Married</b>	7.00(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(2.00)	8.00(2.00)	2.00(0.00)	<b>5.00(3.00)</b>	7.00(3.00)	7.00(3.25)	5.00(1.00)	8.00(3.00)	8.00(1.00)	2.00(2.00)
<b>z</b>	-1.367	-0.166	-0.639	-0.271	-0.673	-0.841	-0.733	<b>-2.554</b>	-0.695	-0.722	-0.026	-0.131	-0.862	-0.769
<b>p-value</b>	0.172	0.868	0.523	0.787	0.501	0.401	0.464	<b>0.011</b>	0.487	0.470	0.979	0.896	0.389	0.442
<b>&gt;SPM</b>	6.50(3.00)	<b>8.00(2.00)</b>	2.00(0.00)	2.00(0.00)	8.00(1.00)	8.00(1.75)	2.00(0.00)	4.00(2.75)	<b>8.00(2.00)</b>	<b>8.00(2.75)</b>	5.00(1.75)	<b>8.00(1.00)</b>	8.00(0.00)	2.00(2.00)
<b>≤SPM</b>	7.00(4.00)	<b>6.00(4.00)</b>	2.00(0.75)	2.00(0.00)	7.50(2.00)	7.00(4.00)	2.00(0.00)	4.00(4.00)	<b>6.00(2.00)</b>	<b>6.00(3.00)</b>	5.00(1.00)	<b>7.00(3.00)</b>	8.00(1.75)	2.00(2.00)
<b>z</b>	-0.507	<b>-2.624</b>	-1.205	-0.239	-1.350	-1.979	-0.855	-0.163	<b>-3.572</b>	<b>-2.969</b>	-0.783	<b>-2.748</b>	-1.590	-0.109
<b>p-value</b>	0.612	<b>0.009</b>	0.228	0.811	0.177	0.048	0.392	0.871	<b>&lt;0.001</b>	<b>0.003</b>	0.434	<b>0.006</b>	0.112	0.913

### 3.4 Between-Group Differences in Coping Styles Scores by Depression and Anxiety Status in Brain Pathology Patients

Table 5 displays between-group differences in coping styles as a function of depression and anxiety status among the patients. The results indicated that depressed patients reported significantly higher behavioural disengagement ( $p = 0.003$ ), venting ( $p = 0.016$ ) and self-blame ( $p=0.007$ ) coping styles compared to non-depressed patients. Additionally, acceptance ( $p = 0.027$ ) coping styles found to be more practiced by non-depressed patients compared to depressed patients. Patients with panic disorder lifetime had more behavioural disengagement ( $p=0.001$ ), venting ( $p = 0.002$ ) and self-blame coping ( $p = 0.020$ ) compared to patients without the disorder. Patients with limited symptoms attacks lifetime practised less religion coping styles ( $p=0.043$ ) compared to patients without the disorder. Venting ( $p=0.002$ ), self-blame ( $p=0.020$ ), behavioural disengagement ( $p=0.001$ ) and use of instrumental support ( $p=0.047$ ) were used significantly more often among patients with panic disorder current compared to patients without the disorder. Patients with agoraphobia had more self-distraction ( $p=0.030$ ), venting ( $p=0.037$ ), positive reframing ( $p=0.034$ ) and self-blame ( $p=0.029$ ) coping styles compared to patients without the agoraphobia. Patients with panic disorder with agoraphobia current used more instrument support, ( $p=0.029$ ), behavioural disengagement ( $p=0.024$ ), venting ( $p=0.002$ ) and self-blame ( $p=0.006$ ). Patients with panic disorder without agoraphobia used more behavioural disengagement coping styles ( $p<0.001$ ) (Table 4.38) while patients with agoraphobia current without history of panic disorder used more self-distraction ( $p=0.037$ ) coping styles compared to patients without the disorder. Less humour ( $p=0.019$ ) and have substance use ( $p=0.028$ ) coping styles among the the patients with social phobia current. Patients with Obsessive compulsive disorder (O.C.D) also found with less humour ( $p=0.033$ ) and have substance use ( $p=0.028$ ) coping styles compared to other patients. Behavioral disengagement ( $p=0.008$ ) coping styles found to be more in the Post-Traumatic Stress Disorder (PTSD) patients compared to patients without PTSD. Finally, patient with Generalized Anxiety Disorder GAD found to practice more self-blame coping styles ( $p=0.005$ ) compared to other patients.

Table 5: Between-group differences in coping styles as a function of depression and anxiety status among the patients

	Self - distraction	Active coping	Denial	Substance use	Use of emotional support	Use of instrument al support	Behaviour al disengage ment	Venting	Positive reframing	Planning	Humour	Accepta nce	Religion	Self -blame
<b>Depressed</b>	6.00(3.25)	6.50(4.25)	2.00(2.00)	2.00(0.00)	8.00(3.00)	8.00(4.00)	<b>2.00(1.25)</b>	<b>5.00(4.00)</b>	6.50(3.00)	7.00(4.00)	4.00(2.00)	<b>7.00(3.00)</b>	8.00(0.25)	<b>2.50(3.25)</b>
<b>Non- Depressed</b>	7.00(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	7.50(2.00)	7.50(2.00)	<b>2.00(0.00)</b>	<b>4.00(3.00)</b>	7.00(3.00)	6.00(3.00)	5.00(1.00)	<b>8.00(2.00)</b>	8.00(1.00)	<b>2.00(0.25)</b>
<b>z</b>	-1.009	-0.447	-1.215	-0.488	-0.686	-0.074	<b>-3.012</b>	<b>-2.399</b>	-0.874	-0.015	-1.785	<b>-2.216</b>	-0.552	<b>-2.683</b>
<b>p-value</b>	0.313	0.655	0.224	0.626	0.493	0.941	<b>0.003</b>	<b>0.016</b>	0.382	0.988	0.074	<b>0.027</b>	0.581	<b>0.007</b>
<b>Panic disorder lifetime</b>	7.50(3.50)	8.00(3.50)	2.00(4.75)	2.00(0.00)	8.00(0.00)	8.00(0.00)	<b>2.00(3.50)</b>	<b>6.00(2.75)</b>	7.00(1.75)	7.50(4.00)	5.00(1.75)	7.00(2.75)	8.00(1.50)	<b>4.00(5.25)</b>
<b>No- Panic disorder lifetime</b>	6.50(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(2.00)	7.00(3.00)	<b>2.00(0.00)</b>	<b>4.00(3.00)</b>	6.00(3.00)	6.00(3.00)	5.00(1.00)	8.00(2.00)	8.00(1.00)	<b>2.00(1.00)</b>
<b>z</b>	-0.835	-0.976	-1.542	-0.520	-1.672	-1.984	<b>-3.440</b>	<b>-3.150</b>	-1.189	-0.497	-0.152	-1.230	-0.282	<b>-2.322</b>
<b>p-value</b>	0.404	0.329	0.123	0.603	0.094	0.047	<b>0.001</b>	<b>0.002</b>	0.234	0.619	0.879	0.219	0.778	<b>0.020</b>
<b>Limited symptom attacks lifetime</b>	8.00(3.00)	7.00(2.00)	2.00(0.00)	2.00(0.00)	8.00(1.00)	8.00(2.00)	2.00(0.00)	4.00(3.00)	6.00(3.00)	7.00(3.00)	5.00(1.00)	8.00(2.00)	<b>8.00(0.00)</b>	2.00(3.00)
<b>No- Limited symptom attacks lifetime</b>	6.00(3.50)	6.00(3.50)	2.00(0.50)	2.00(0.00)	7.00(2.00)	8.00(3.00)	2.00(0.00)	4.00(4.00)	7.00(3.00)	6.00(4.00)	5.00(1.00)	8.00(2.00)	<b>8.00(1.50)</b>	2.00(1.00)
<b>z</b>	-1.394	-1.684	-1.466	-0.523	-1.564	-0.458	-0.495	-0.860	-0.015	-1.461	-1.066	-1.376	<b>-2.023</b>	-1.501
<b>p-value</b>	0.163	0.092	0.143	0.601	0.118	0.647	0.620	0.390	0.988	0.144	0.286	0.169	<b>0.043</b>	0.133
<b>Panic disorder current</b>	7.50(3.50)	8.00(3.50)	2.00(4.75)	2.00(0.00)	8.00(0.00)	<b>8.00(0.00)</b>	<b>2.00(3.50)</b>	<b>6.00(2.75)</b>	7.00(1.75)	7.50(4.00)	5.00(1.75)	7.00(2.75)	8.00(1.50)	<b>4.00(5.25)</b>
<b>No-Panic disorder current</b>	6.50(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(2.00)	<b>7.00(3.00)</b>	<b>2.00(0.00)</b>	<b>4.00(3.00)</b>	6.00(3.00)	6.00(3.00)	5.00(1.00)	8.00(2.00)	8.00(1.00)	<b>2.00(1.00)</b>
<b>z</b>	-0.835	-0.976	-1.542	-0.520	-1.672	<b>-1.984</b>	<b>-3.440</b>	<b>-3.150</b>	-1.189	-0.497	-0.152	-1.230	-0.282	<b>-2.322</b>
<b>p-value</b>	0.404	0.329	0.123	0.603	0.094	<b>0.047</b>	<b>0.001</b>	<b>0.002</b>	0.234	0.619	0.879	0.219	0.778	<b>0.020</b>
<b>Agoraphob ia current</b>	<b>8.00(2.00)</b>	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(1.00)	8.00(1.00)	2.00(0.00)	<b>5.00(3.00)</b>	<b>7.00(2.00)</b>	7.00(4.00)	5.00(1.00)	8.00(2.00)	8.00(0.00)	<b>2.00(3.00)</b>

<b>No-Agoraphobia current</b>	<b>6.00(3.50)</b>	6.00(3.00)	2.00(0.00)	2.00(0.00)	7.00(2.00)	7.00(3.00)	2.00(0.00)	<b>4.00(3.00)</b>	<b>6.00(3.00)</b>	6.00(3.00)	5.00(1.00)	8.00(2.00)	8.00(1.00)	<b>2.00(1.00)</b>
<b>z</b>	<b>-2.166</b>	-1.129	-0.649	-0.572	-1.715	-1.718	-1.512	<b>-2.088</b>	<b>-2.117</b>	-0.541	-0.979	-0.180	-1.688	<b>-2.190</b>
<b>p-value</b>	<b>0.030</b>	0.259	0.516	0.567	0.086	0.086	0.130	<b>0.037</b>	<b>0.034</b>	0.589	0.327	0.857	0.091	<b>0.029</b>
<b>Panic disorder with Agoraphobia current</b>	7.00(3.00)	8.00(4.00)	2.00(2.00)	2.00(0.00)	8.00(0.00)	<b>8.00(0.00)</b>	<b>2.00(1.50)</b>	<b>6.00(2.00)</b>	7.00(2.00)	7.00(4.00)	5.00(1.50)	7.00(2.50)	8.00(1.00)	<b>4.00(5.50)</b>
<b>No-Panic disorder with Agoraphobia current</b>	6.00(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(2.00)	<b>7.00(3.00)</b>	<b>2.00(0.00)</b>	<b>4.00(3.00)</b>	6.00(3.00)	6.00(3.00)	5.00(1.00)	8.00(2.00)	8.00(1.00)	<b>2.00(1.00)</b>
<b>z</b>	-0.589	-0.578	-0.490	-0.434	-1.869	<b>-2.179</b>	<b>-2.252</b>	<b>-3.028</b>	-1.027	-0.153	-0.316	-0.935	-0.454	<b>-2.758</b>
<b>p-value</b>	0.556	0.564	0.624	0.664	0.062	<b>0.029</b>	<b>0.024</b>	<b>0.002</b>	0.304	0.878	0.752	0.350	0.650	<b>0.006</b>
<b>Panic disorder without agoraphobia</b>	7.50	8.00(0.00)	5.00	2.00(0.00)	8.00(0.00)	8.00(0.00)	<b>5.50</b>	6.00	7.5	7.50	5.00(0.00)	7.00	8.00(0.00)	2.00(0.00)
<b>No-Panic disorder without agoraphobia</b>	6.50(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(2.00)	8.00(3.00)	<b>2.00(0.00)</b>	4.00(4.00)	7.00(3.00)	6.00(3.25)	5.00(1.00)	8.00(2.00)	8.00(1.00)	2.00(2.00)
<b>z</b>	-0.905	-1.578	-1.314	-0.326	-1.217	-1.259	<b>-3.970</b>	-1.093	-0.992	-0.988	-0.812	-0.014	-0.872	-0.953
<b>p-value</b>	0.365	0.114	0.189	0.744	0.224	0.208	<b>&lt;0.001</b>	0.274	0.321	0.323	0.417	0.989	0.383	0.341
<b>Agoraphobia Current without history of panic disorder</b>	<b>8.00(1.50)</b>	7.00(2.25)	2.00(0.00)	2.00(0.00)	8.00(1.25)	7.50(2.50)	2.00(0.00)	4.00(3.25)	7.00(2.00)	7.00(3.00)	5.00(1.00)	8.00(2.00)	8.00(0.00)	2.00(2.25)
<b>No-Agoraphobia Current without history of panic disorder</b>	<b>6.00(3.25)</b>	7.00(3.25)	2.00(0.00)	2.00(0.00)	8.00(2.00)	8.00(3.00)	2.00(0.00)	4.00(4.00)	6.00(3.00)	6.00(4.00)	5.00(1.00)	8.00(2.00)	8.00(1.00)	2.00(2.00)

<b>z</b>	<b>-2.091</b>	-0.853	-1.210	-1.069	-0.429	-0.161	-0.151	0.137	-1.650	-0.517	-0.902	-1.036	-1.635	-0.222
<b>p-value</b>	<b>0.037</b>	0.393	0.226	0.285	0.668	0.872	0.880	0.891	0.099	0.605	0.367	0.300	0.102	0.824
<b>Social Phobia current</b>	6.00	8.00	2.00(0.00)	<b>2.00</b>	8.00	8.00(0.00)	2.00(0.00)	5.00	8.00	7.00	<b>2.00</b>	7.00	8.00	4.00
<b>No- Social Phobia current</b>	7.00(3.00)	7.00(3.00)	2.00(0.00)	<b>2.00(0.00)</b>	8.00(2.00)	8.00(3.00)	2.00(0.00)	4.00(4.00)	7.00(3.00)	6.00(3.00)	<b>5.00(1.00)</b>	8.00(2.00)	8.00(1.00)	2.00(2.00)
<b>z</b>	-0.188	-0.334	-0.894	<b>-2.194</b>	-0.755	-1.549	-0.645	-0.175	-0.710	-0.010	<b>-2.343</b>	-0.544	-0.371	-1.393
<b>p-value</b>	0.851	0.738	0.371	<b>0.028</b>	0.450	0.121	0.519	0.861	0.478	0.992	<b>0.019</b>	0.586	0.711	0.164
<b>O.C.D</b>	4.00	3.00	2.00(0.00)	<b>2.00</b>	8.00(0.00)	8.00(0.00)	2.00	6.00	6.00	4.00	<b>3.00</b>	5.00	8.00(0.00)	8.00
<b>No-O.C.D</b>	7.00(3.00)	7.00(3.00)	2.00(0.00)	<b>2.00(0.00)</b>	8.00(2.00)	8.00(3.00)	2.00(0.00)	4.00(4.00)	7.00(3.00)	7.00(3.00)	<b>5.00(1.00)</b>	8.00(2.00)	8.00(1.00)	2.00(2.00)
<b>z</b>	-1.518	-1.160	-0.894	<b>-2.194</b>	-1.498	-1.549	-1.343	-1.825	-0.209	-0.780	<b>-2.128</b>	-2.033	-1.074	-1.857
<b>p-value</b>	0.129	0.246	0.371	<b>0.028</b>	0.134	0.121	0.179	0.068	0.835	0.435	<b>0.033</b>	0.042	0.283	0.063
<b>PTSD</b>	5.50(3.75)	5.50(4.50)	2.00(4.50)	2.00(0.00)	8.00(0.75)	7.50(3.25)	<b>4.00(5.50)</b>	6.00(4.75)	6.00(0.75)	4.50(3.25)	4.00(2.00)	6.50(3.75)	8.00(1.50)	4.50(4.75)
<b>No-PTSD</b>	7.00(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(2.00)	8.00(2.75)	<b>2.00(0.00)</b>	4.00(4.00)	7.00(3.00)	7.00(3.00)	5.00(1.00)	8.00(2.00)	8.00(1.00)	2.00(2.00)
<b>z</b>	-0.556	-0.727	-0.420	-0.466	-1.092	-0.057	<b>-2.634</b>	-1.337	-0.509	-0.914	-0.730	-0.686	-0.156	-1.946
<b>p-value</b>	0.578	0.467	0.674	0.641	0.275	0.954	<b>0.008</b>	0.181	0.611	0.361	0.465	0.492	0.876	0.052
<b>Generalized Anxiety</b>	7.00(3.50)	8.00(2.50)	2.00(0.00)	2.00(0.00)	8.00(0.75)	8.00(0.75)	2.00(3.00)	5.50(3.75)	7.50(2.00)	7.00(2.50)	5.00(1.75)	8.00(1.75)	8.00(1.75)	<b>4.00(5.25)</b>
<b>No- Generalized Anxiety</b>	6.50(3.00)	7.00(3.00)	2.00(0.00)	2.00(0.00)	8.00(2.00)	7.50(3.00)	2.00(0.00)	4.00(3.00)	6.50(3.00)	6.00(3.75)	5.00(1.00)	8.00(2.00)	8.00(1.00)	<b>2.00(1.00)</b>
<b>z</b>	-0.418	-1.382	-0.149	-0.520	-1.556	-1.396	-1.682	-1.586	-1.413	-1.152	-0.502	-0.764	-0.349	<b>-2.777</b>
<b>p-value</b>	0.676	0.167	0.882	0.603	0.120	0.163	0.093	0.113	0.158	0.249	0.616	0.445	0.727	<b>0.005</b>

#### 4. Discussion

The study aimed to investigate coping styles among brain pathology patients. The results are comparable with prior study which reported that the cancer patients with impaired psychosocial characteristics have more emotional distress and may exhibit these maladaptive behaviours (Deimling, Bowman, Sterns, Wagner, & Kahana, 2006) (Koehler et al., 2009). However, it was shown the cancer survivors with prolonged duration of illness were found with less depression and anxiety (G. T. Deimling et al., 2006) (insert citation no. 8). These patients exhibit optimism characteristics as they tend to have less worries about their health condition (Gary T. Deimling et al., 2006). The more depressed and anxious cancer patients had drastic discontinuation of positive lifestyles (Sharpley et al., 2009). The treatment regimen was associated with toxicity and overall mood disorder, anxiety or adjustment disorder and increased patients' length of the hospital stay (Prieto et al., 2002). Feelings of uselessness and not needed in the patients may cause higher depression. Emotional distress reflects the patients with feeling of guilt or thought of cancer is punishment from what they did in the past. The significant degrees of depression also associated with suicidal ideation. Therefore the clinician must have concrete understanding of the patient's feelings of worthlessness, hopelessness, guilt and intends to die as the signs in depressed patients (Passik et al., 1998).

The prior study also showed that less problem focused coping styles were found among the chronic depressive symptoms patients with less planning coping styles together with emotional venting coping styles were related to more depressive symptoms in primary care patients (Brown et al., 2001). The finding is comparable with the current study which found the depressed patients and married patients have more venting coping styles compared to patients without the depression. The results also indicated that depressed patients employed less acceptance compared to non-depressed patients. The proclivity for avoidance and acceptance-resignation coping were found among the cancer patients who applied inefficient coping styles (Feifel, Strack, & Nagy, 1987).

With respect to educational attainment, SPM is Malaysian high secondary school level examination. Patients who had an SPM level of education or less, reported less active coping styles, positive reframing, planning and acceptance coping compared to patients who had more than an SPM level of education. In terms of socio-economic status, patients who earned RM 2500 or less per month that considered as poor, employed more self-distraction and use of emotional support and instrumental support, positive reframing acceptance and more religion coping styles compared to patients who earned more than RM 2500. These coping styles were comparable with other studies which found the poor socio-economic status relates with avoidance coping styles, less-self-directed lives and more negative self-perceptions. Patients with a low self-image, external locus of control, negative mood and feelings that they were not coping well with their disease also practiced avoidance coping behaviour. One of reason patients having avoidance coping styles because of lack of information about the medications that will lead to maladaptive coping styles (Feifel et al., 1987).

Patients with limited symptoms attacks lifetime practised less religion coping styles compared to patients without the disorder. Less humour and have substance use coping styles among the patients with social phobia current. Patients with O.C.D also found with less humour and have substance use coping styles compared to other patients

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# Promoting the Media Literacy and Digital Citizenship of TV Series Audiences: Suggestions from Digital Natives

Napat Ruangnapakul

Faculty of Information and Communication, Thailand

Email: [nutyty@gmail.com](mailto:nutyty@gmail.com)

## Abstract

Media literacy is essential for all people, and there is an increasing interest in improving digital citizenship to promote respectful and tolerant behaviours towards others and to increase civic engagement activities. This paper presents the perspectives of students on the improvement of media literacy and digital citizenship for TV series audiences. A qualitative study was done using semi-structured questions in focus groups to collect data from students who are considered digital natives who are studying communication programmes from four universities in Chiang Mai, Thailand. This research found three suggestions on promoting media literacy for Thai TV series audiences: 1) cultivate digital literacy from childhood, 2) encourage citizenship, and 3) promote critical thinking. Moreover, promoting citizenship in TV series audiences should be done by deconstructing social values that do not support critical thinking, by creating campaigns for promoting citizenship, and by inserting citizenship within the media content. This study can be a part of the development of guidelines for promoting media literacy and citizenship in TV series audiences from the perspectives of university students in communication programmes who live in the digital age.

**Keywords:** Digital Citizenship; Digital Native; Media Literacy; TV Series; Thai.

## 1. Introduction

### 1.1 Media Literacy and Digital Citizenship

McGillivray et al. (2015) stated that new media literacy should be considered a critical social skill, especially for young people. Moreover, Koltay (2014) indicated that teenagers use more entertainment media, such as television, internet, music, movies, and video games with increasing of data creation. Therefore, media literacy is necessary. One of the most well-known definitions of media literacy is the ability to use all forms of communication for accessibility, analysis, evaluation, creation, and implementation (National Association for the Study of Media Literacy, 2019). Moreover, technology changes affect the behaviour of people in this era. There are terms for people born in different eras, such as baby boomers, Generation X, and Generation Y. Those born in this digital age (after 1980) are called digital natives because they have been surrounded by technology. Moreover, their technology skills are different from those of previous generations (Palfrey & Gasser, 2013).

Consequently, Lyon (2017) stated that the surveillance culture is a result of the modern environment of digital technology, which is fast and efficient. This culture has been fused from participation in the online society, causing people to exchange ideas and assess themselves. Promoting the citizenship and surveillance culture of the digital native may be useful for promoting media literacy.

## **1.2 Information and Digital Media Literacy and Citizenship Concepts**

Worldwide, internet users are continuously increasing. According to the Internet World Stats of 2019, there are almost 4500,000,000 internet users worldwide. Additionally, Sophontharak (2017) stated that the internet network has transformed the traditional communication model in the real world into digital technology in the virtual world and has created an era of excellent communication. Hence, people from all around the world can rapidly access media and receive information and digital technology. Media and digital media are related to each other and can affect inevitable social change.

According to Koltay (2011), media literacy is important for all people, whether people are aware of it or not. Media has expanded with new digital technologies and with the increase in the participation of people in social media. Thus, media literacy in many forms must be included in primary, secondary, and higher education. Moreover, access to media is considered a fundamental right as a citizen and a human right to protect the right to have enough information from various sources to make decisions and take action. Notably, in a democratic society where citizens live together in the midst of diversity, the access to, understanding of, and use of information and digital technology are important tools to protect fundamental rights to monitor the media business or negotiate with state power (Child and Youth Media Institute, 2016). Therefore, there is increasing interest in improving digital citizenship through education, which can be focused on (1) practising respectful and tolerant behaviours towards others and (2) increasing civic engagement activities (Jones & Mitchell, 2016). The development of digital media literacy and digital citizenship will benefit media users under the media ecology in modern era. It is important to empower the "internet users" to become "citizens" who have the power to create and change their ideas and roles for social development in various dimensions (Weerakultawan, 2019).

## **1.3 Concepts of Digital Natives and Digital Immigrants**

Technology creates significant changes and has created many new terms, such as 'digital native' or 'traditional digital' to describe the lives of people in the new technology era. Prensky (2001) said that digital natives are the new generation of 'native speakers' of digital languages for computers, video games, and the internet. Martina Čut (2017) indicated that 'digital native' can process information quickly and can work multitask. However, digital immigrants perform data processing more slowly and cannot multitask. Thus, digital natives and digital immigrants have different behaviours and ways of thinking.

However, Akçayır (2016) stated that digital natives cannot be determined by their birth date but by their behaviour regarding the time spent and the effort to learn to use digital technology. They can be considered digital natives. He found that the original digital native can be identified by always having lived with technology and digital culture, using computers, tablets, and the internet. One essential factor is their place, country, or state; for example, developed countries often have more digital natives than developing countries.

Moreover, educators and policymakers should pay attention to the characteristics of digital natives because they will be able to access to information and digital media (Akçayır, 2016). Thus, with this feature, digital natives are able to better develop or change media in this digital age than digital immigrants. The importance of learning management in the digital age is to get a new frontier of learning that suits for the digital natives (Gerdruang, 2017)

## **1.4 Media Literacy and Thai TV Series Audiences**

On average, Thai people use the internet 10 hours and 5 minutes a day, mostly using social media, discussing information, watching online movies, listening to online music, playing games, and reading online articles (Electronic Transactions Development Agency, 2018). However, Oranop na Ayutthaya (2017) found that 54.5% of Thais are at a moderate level of media literacy, whereas only 14.75% of Thais have a high level of media literacy. Moreover, from the digital citizenship perspective, Thais have little role in social regulation. In addition, Tanyong (2016) mentioned that some TV series present violence and sexual harassment, which is considered one of the 'sexual fantasy' forms. Furthermore, the TV series is an entertainment medium that easily reaches large audiences. Therefore, if the audiences do not have media literacy skills, it may affect their behaviour. They could accept the myth depicted in TV series that violent behaviour is normal or acceptable. Therefore, the campaign to promote media literacy in the TV series audiences must continue, especially in the younger generations who are important citizens of the country. Thus, this study has examined the suggestion of promoting media literacy and encouraging citizenship for Thai audiences from the perspective of digital natives who have grown up in the digital era. This research investigated the views of university students who are studying in fields related to mass communication in Chiang Mai, which is a city in Thailand with technological utilities. Thus, students in this field and in this environment are likely to have access to media, information, and digital technology and can be considered digital natives.

## **2. Objective**

The objective is to examine the suggestions to promote the media literacy and digital citizenship of TV series audiences from the perspective of students in studies related to communication in Chiang Mai, Thailand.

## **3. Scope of the Study**

This research examined the perspectives of students in journalism, communication, or other programmes related to communication arts from the universities in Chiang Mai that offer these programmes.

## **4. Methodology**

### **4.1 Population**

The researcher selected a purposive sample group to conduct the research. The sample comprised groups of students from four universities in Chiang Mai. The research was conducted with third-year students because they had already passed the course on media production. This study chose Chiang Mai because it is a city that has universities teaching communication and has digital access to create digital citizens. The sample comprised six students in marketing communication from University A, six students in communication arts from University B, seven students in digital communication from University C, and six students in communication arts from University D. This research used a focus group to investigate their perspectives, and the process was conducted separately for each university from September 2018 to October 2018.

## **4.2 Data Collection**

This qualitative study used semi-structured questions in focus groups to collect data on how to promote the media literacy and digital citizenship of Thai TV series audiences from the perspective of the sample of the study.

## **4.3 Data Analysis and Data Validation**

After transcription the tapes of focus group. The data will be analysed using Nvivo software, a qualitative research program for analysing and categorising data. The result will be present in thematic data. Throughout the collection and analysis of the data, the researcher must ensure that the findings are correct. Creswell and Poth (2017) believed that the research should be investigated by a third party to examine the quality of the results. Therefore, two doctorate scholars and one qualitative scholar were invited to check the codes and categories in this study.

## **4.4 Research Ethics**

Ethical issues in protecting the rights and privacy of participants are the responsibility of researchers (Keyton, 2015). Therefore, before starting the interview, all informants will be informed of the research goals and methods, safeguarding the confidentiality of informants. The researcher gave the consent form to all informants to read and sign. This process was designed to ensure that all informants are confident that they will not be named in this research.

## **5. Results**

In the promotion of media literacy for Thai TV series audiences, students in communication arts and mass communication in Chiang Mai made three suggestions for promoting media literacy for Thai TV series audiences, which include cultivating digital literacy from childhood, encouraging citizenship, and promoting critical thinking. Moreover, promoting citizenship of Thais should be done by deconstructing social values that do not support critical thinking, by creating a campaign for citizenship, and by inserting the idea of citizenship into media content.

### **5.1 Promoting Media Literacy for Thai TV Series Audiences**

#### **5.1.1 Cultivate media literacy from childhood**

The informants mentioned that media literacy should be promoted from childhood because audiences currently receive media from childhood. In addition, people who grew up in the earlier era of media literacy may have different mindsets that may not easily change. For example, Student D2 said ‘In my opinion, if we want to re-construct any social value from the Thai society, we should start from a new generation of children because the old generation already has their mindset, which is hard to change’.

Student C1 suggested that the reason media literacy must be promoted from childhood is because children exhibit behaviour that effortlessly imitates media:

Sometimes media presents violence as cool behaviour. However, it depends on the environment of the children, especially friends, like, it can be the value of their friends’ group. For example, we can see that sometimes kids play together like what we see on a TV series. Also, the news presents that teenagers sometimes make live shows or shot video clips on social

media, where they hurt, slap, or do violent behaviour and want to show it to society. (Student C1)

Moreover, the informants mentioned that long-term continuous processes on media literacy campaigns are needed. These campaigns should focus on critical thinking skills because the myths or social values of one era may not be applicable when social conditions change in another era:

I suggest doing a workshop that should be interesting for children and youth. I have seen before that an organisation used a shadow-puppet show to draw attention then added content about media literacy in the show. Whether it is a game or a workshop, it must be fun and communicate with your target and can set up the ideas that we want. Moreover, the activities should promote and support critical thinking. I think it is more effective because, at this time, our values may be right, but in the next 20 years as we grow old, the new generation may have new values because the world has changed at that time. (Student D1)

### **5.1.2 Stakeholders should encourage citizenship of citizens**

The informants suggest that stakeholders should participate in promoting media literacy because various agencies in society are not interested in promoting citizenship, for example: Each relevant agency must join the campaign seriously and sincerely. However, now I feel that it does not exist or [we do] not have anything like this at present. The organisations, including media organisations or public organisations, are not focused on this matter or work on it in the long term. (Student D1)

### **5.1.3 Promote critical thinking among audiences**

The informants in this study suggested that the development of Thai TV series audiences' critical thinking is another important mission:

People grew up in a different society. Therefore, they will have the same ideas that they received from their society. The way of thinking of each person is not the same so that the way he/she uses the media is not the same as well. Hence, we should promote critical thinking to people. Then, whether they use offline or online media, less or more content, they can think about and evaluate the content. (Student B4)

It is more challenging to teach adults than to teach children. I wonder if we are interested in cultivating the wrong generation because we think that we should teach children about media literacy. In my opinion, the TV series' screenplays are not made by children but by adults who wrote them, and they reflect the thoughts of the adult who wrote the script. Thus, I think if adults have media literacy and critical thinking, they may not reproduce violent or lousy content. (Student C2)

## **5.2 Promoting Citizenship of TV Series' Audiences**

### **5.2.1 Deconstructing social values that do not support critical thinking**

From the informants' perspective on promoting the citizenship of Thai TV series audiences, in examining the content in the media, media literacy and digital citizenship must be promoted continuously in society. However, the main difficulty is the cultural or social values in societies that do not allow younger people to express critical opinions:

When I was a high school student, I used to try to campaign to reduce violence in media; it was not a success. It can only notice the media creator knew that there are resistances. However, when we stopped the campaign, the media returned to doing the same things. Moreover, I got backlash from the culture, stating that I was just a child, and how dare I criticise the media? I lived under pressure from many adults around me; then, I thought I was wrong. Now that I have become a university student and have learned about citizenship, I know that I was right and did the right things. So, we need to deconstruct the belief that children must be followers and cannot express their views. (student D5)

Like the other students, Student C3 said that his family did not support him in joining any campaign or social activities according to the belief of non-questioned living:

In my home, there is no support at all. My parent said, ‘do not go to do it, it is difficult for success. Can you just be being normal?’ They used these words. So, if my family teaches me in this way, and I follow their way of thinking, then I get jobs in advertising or TV industries, and I will not go on to polish the customers or the violent content because I believe that it is challenging to produce clean media. ... So why don’t I just be done with it and get the money? (Student C3)

### **5.2.2 Create a campaign for digital citizenship promotion**

In this study, the informants proposed using the campaign to promote digital citizenship using a variety of celebrities as speakers to reach different target groups:

Some people turn off the television when they see public organisations trying to promote their campaign for something, and the audiences do not watch them. However, if it is a celebrity, such as a famous actor who speaks the same message, they will open their mind to listen. However, the celebrity must be qualified, not an internet idol. (Student A6)

Moreover, the informants also proposed using a media channel that is suitable for the target group:

We must divide the target groups, maybe according to their age and media use. Then, manage the content and the channel due to their behaviour. For example, using online media to communicate with online people. How about elderly persons? What kind of media should they receive? We need to create the content due to the types of media and the audiences. (Student D3)

### **5.3.3 Inserting the idea of citizenship within the media content**

The informants of this study believed that inserting the idea of citizenship into the media content is an excellent method of promoting the citizenship of audiences.

For example, there is a policeman in the series; he has to choose between helping his child who is doing something against the law or his police duties. In that scene, there is a choice between family and the ideology of good police. If these TV series present that the policeman chose his duty, it can make the audience learn that it is possible to do that, and this policeman would get good results or might have encountered more problems and the series could show how he deals with it. I think that this kind of content can communicate to the audiences that we can do good things, and it may be difficult, but it does not mean that we cannot. (Student D2)

In addition, Student B1 stated that promoting citizenship should be added to the roles of the characters in the series to give information through the script, as Student B3 said 'I think it would be complicated to make non-violent TV series. So, the screenplay writer should create at least one character to talk about citizenship issues and explain about the effect of violence to the society'.

## 6. Conclusion

This research found that students in communication arts and mass communication in Chiang Mai proposed suggestions for promoting media literacy in Thai TV series audiences. The stakeholders should promote and cultivate the audience to understand media from their childhood. Moreover, there should be continuous and consistent activity on promoting media literacy. In addition, stakeholders should be seriously and continuously involved in supporting the media literacy of people. Moreover, developing the critical thinking skills of the audiences of all ages is needed, especially in adults who are working in the production of media content, who may be conveying ideas or violent behaviours in various forms in the media.

Moreover, to promote the citizenship of Thai TV series audiences, deconstructing the social values that do not support critical thinking is needed. Commonly, these social values can be found in the family or educational institutions, causing children and youth to not be confident of their opinion or to question various phenomena in society. The media and content should be designed differently based on the age of the audience, who receives media, and on the level of understanding of different media content. Moreover, content about citizenship should also be inserted into the media content through the roles of the characters.

The important implication of the study is that media, government, and instructors can use the findings from this research to be a guide to create social awareness for the development of digital skills and digital citizenship. Including campaigning, policymaking, and teaching (Weerakultawan, 2019).

## 7. Acknowledgment

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# The Development of Social Learning Innovation to Thai Youth by Media Lab: Conceptual Framework

Kringkarn Jaroenkul<sup>a\*</sup>, Napat Ruangnapakul<sup>b</sup>

<sup>ab</sup>Faculty of Information and Communication, Maejo University, Thailand

Email: [kring.thong@gmail.com](mailto:kring.thong@gmail.com)

## Abstract

The media influences the learning and behavior of the audience, causing the risk of imitation behavior related to social values, violent behavior, and myth. Hence, media creators should concern about the impact of the media's content, which can change human behavior. This research, therefore, wants to develop social learning innovation, which is a learning process from bringing knowledge and practice from both fields of communication and education to produce media with ethics. In line with this, the development of 4 dimensions of creative media, including self-awareness and life skills, coexistence in the digital age, coexistence in society as a citizen, and living in a multicultural society will be explored. Fifty university students from Media and Communication faculty in Chiang Mai, Thailand will join the Participatory Action Research (PAR), combines participatory research with action research via a movie-based learning process. The samples of this study were divided into five groups of moviemakers based on social issues, and their perspectives through a semi-structured group interview process will be collected. The data was analyzed using Nvivo software. The significances of this study are in providing social innovation, which merges media production and communication skills to reflect and solve social problems through movies for the Thai youth. Moreover, the perspective of Thai youth towards using movies production to highlight social phenomena will be provided.

**Keywords:** Media lab; Movie; Social innovation; Youth

## 1. Introduction

The media influences the learning and behavior of youth, causing unknown risks such as imitating, the using of incorrect language, lying, or insulting. Moreover, having dangerous consumption behavior due to imitation TV, online media, and various media which show violent behavior.

Media la is a social innovation for social transformation. The result of learning is bringing knowledge and practice from the fields of communication and education together. This method uses to find ways to produce media through social laboratories with relevant content are promoting morality, ethics, culture, living skills of youths. Media lab focus to develop youths to be able to analyze, evaluate, and choose media to benefit themselves and their families. Moreover, they can produce digital media to create change for society, be able to live with others in a multicultural society, respect the human right, and manage conflicts with peaceful solutions.

This study will investigate the learning process through film production with the meaningful content that stated in the national strategy or government reports. The five listed issues are

farmers and food security, aging society, equality for the disabled, fake advertisement, and sexual violence against children.

## **2. Literature Review**

### **2.1 Social Learning Strategies**

'Social Learning Strategies' or SLS is a concept that encourages extensive experimental work, integrative theory and empirical discovery, and creates momentum for social and cultural learning (Kendal, R. L., et al., 2018). However, the SLS concept requires an update to support the discovery of psychological, behavioral analysis, and the demographic pattern that occurs. SLS is a useful tool for building bridges between psychology, cognitive neuroscience, and evolutionary biology. It also uses positive youth development. PYD concerned with the implementation of policies and practices that help students and adults receive and use their knowledge, skills, and attitudes that promote personal development, social relationships, behavior, ethics, and work (Taylor et al., 2017).

### **2.2 Social phenomena**

Thai government tends to create a society of opportunity which needs to adjust the social structure to raise the quality of society in every aspect. Moreover, the strategy aims to develop the nation without leaving anyone behind which creating economic and social stability for all groups in society. In this study, the researchers chose five issues that are used in learning social problems through learning using movies-based learning from Thailand's twenty years strategy (Office of the National Economic and Social Development Council, 2018.) the national reform plans of Thailand include politics, public administration, laws, justice procedures, the economy, natural resources, and environment, public health, mass media and IT, social issues, energy and anti-corruption (Office of the National Economic and Social Development Council, 2019). Moreover, national reports were studied to select the issues. Hence, this study selects five critical social phenomena which are;

- 1) Aging society; the change in population structure of decreasing in children and labor age while the elderly will increase rapidly. Thailand will face many challenges by that demographic changes that Thailand will enter into an aging society in the year 2036, with a proportion of 30% of the elderly. The country needs to develop the education system, health and welfare system, and infrastructure in all aspects for the older people.
- 2) The social disparity of the disabled; the enhancement of quality of social services and quality infrastructure thoroughly society is needed for investment. However, it should be developed by the lens of equality of humanity, not victimization.
- 3) Fake advertisement; the media still lacks ethics in acting, causing inappropriate news rather than presenting useful news for the public, including fake advertisement. If media users are not able to distinguish the reality of the media, it will make many people support the wrong information.
- 4) Farmers and food security; some unskilled farmers are poor people and living at the grass-root level. To help farmers become smart farmers is essential because it can increase employment opportunities and income for farmers. Increasing the potential for farmers will raise their opportunity and knowledge; thus, the consumer will gain the chance to consume quality food as well.
- 5) Sexual violence against children; the act of verbal harassment, speech, touch the body, or rape children. Annual sexual violence situation reported in 2017 (Suvetwethin, 2018) found a

total of 317 sexual violence in children and youth aged 5-20 years. Moreover, over half of the violent actors are familiar with acquaintances or family members.

### **2.3 Movie Production Process (3P)**

Production process drama or movie It consists mainly of three phases. Zettl (2011) and Akbar, Rante, Damastuti, and Pramadihanto (2018) states that the main stages are pre-production process, production process, and post-production process

- 1) Pre-production, the significant step before starting production, including data preparation. Defining or outline the coordination of the production site and shooting location. At this stage, the work will be designed and planned carefully. This step is a step of preparation and various activities. Before beginning to shoot either in the studio or on-site
- 2) Production, the production of movies is created in this stage. There will be additional team selection at this stage, such as director, assistant director, cameraman, and other positions. For this production process will begin the shooting in the outdoor field or the studio.
- 3) Post Production, the final stage before movies are released to theaters or sometimes directly to consumer media such as VHS, VCD, DVD, Blu-ray or downloaded directly from the service provider. The main activities of this step are audio and video editing, color adjustment, sound, and music selection.

### **2.4 Perspective**

Flores & Day (2006) stated that surveying is the key to social science education, which is closely linked to the speech and actions of people and help to promote participation as citizens in society. This is consistent with Fergusson (2015) who stated that a study of the perspectives of people in a society tends to gain insights into feelings and actions about a particular social issue through the method of thinking of those directly in the situation. The study of perspective is needed in order to exchange knowledge between groups people. However, the viewpoint from local people will help to solve problems in each area better than those from outside the area (Ruchaiphanit, 2016).

### **3. Objectives of this study**

1. To develop learning processes through Movie-Based Learning
2. To study the attitudes and viewpoints of youth towards media innovation and social issues

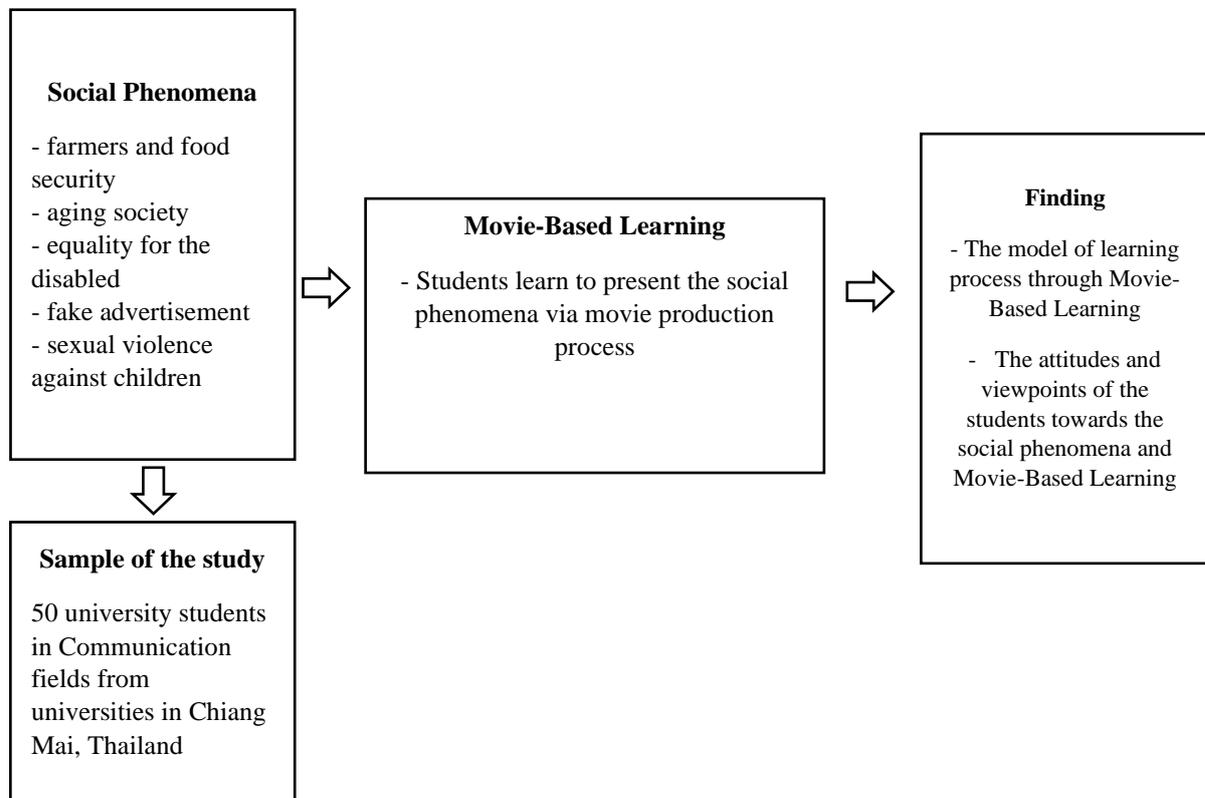
### **4. Methodology**

This study will apply the Participatory Action Research (PAR), combines participatory research with action research via a movie-based learning process. The sample of this study are fifty university students from Media and Communication fields in Chiang Mai, Thailand. The samples of this study were divided into five groups and learn about social phenomena base on their impressive. Then, they will participate in the movie production learning and produce movies to reflect the social phenomena that they chose.

After they produced their movies to the society or community, finally, their perspectives through a semi-structured group interview process will be collected. The researcher will examine their views and experiences on the social phenomena they selected to produce the

movie. The data will be analyzed using Nvivo software. The result will be present in thematic data.

## 5. Conceptual Framework



## 6. Contribution of the study

This study expected that youths would have experimented with using social situations and present them through the production of the movie. Moreover, this study is one of the studies that support the social learning process. The significances of this study are in providing social innovation, which merges media production and communication skills to reflect and solve social problems through movies for the Thai youth. Moreover, the perspective of Thai youth towards using movies production to highlight social phenomena will be provided.

## 7. Acknowledgment

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# Landscaping as a Good Factor in the Built Environment Through Planting of Trees

Mekwa Eme Mekwa<sup>a</sup> & Iwuagwu Ben Ugochukwu<sup>b</sup>

<sup>a</sup> Universiti Sains, Malaysia.

<sup>b</sup> Federal University of Technology Owerri, Imo State Nigeria.

Email: [arcmayor@yahoo.com](mailto:arcmayor@yahoo.com)

## Abstract

This study is aimed at discussing Landscaping as the science of protecting and beautification of the environment. It preserves the environment from the agents of denudations such as wind, erosions, and soil movement. The research method adopted was the mix used method involving observations from visited sites (Universiti Sains Malaysia Landscape Environment and Federal University of Technology Owerri Nigeria Environmental LandScape Planning.), interviews and the use of questionnaires. Through tree planting the environment have gotten its good look and protectiveness as this serves as wind break to the buildings in existence. The tree planting will help in protection, conservation and preservation or the built environments. This tree is nice and attractive in looking, bright and colorful architecturally and naturally. Plants help in organic life in the life cycle of water, soil and animals. Environmental flowers, hedges and shade trees help to enrich the built environments. Through tree planting, timbers used for constructions and in the building, industry are gotten and it also helps as organic matter, noise pollution control agent, refreshes the air mass we breathe and also absorbs water from the soil through planting of buffers and lawns. There should be good consideration in the tree planting through the soil requirements, fertilizer applications, climatic analysis and maintenance of the trees by shaping and cutting of it. Hence tree planting constraints can be seen in cost of purchasing of the different types of trees used in the built environments, land forms, soil nutrients and its managements. For the success of tree planting, there must be good tree quality, fertile environment or land, good planting, transplanting and post planting of the trees.

**Keywords:** Landscaping; Trees; Planting; Built Environment.

## 1. Introduction

Tree planting is a vital solution to the actualization of aesthetics in the built environment. From the perspective of Laurie (1975), The land becomes a landscape when it is described or viewed in terms of the earth and environmental features (physiographic and environmental characteristics). It has also serve as a good solution to the environmental hazards such as soil movement and erosions. By tree planting ecological environmental protection is gotten. Plants are variable and textured architecturally and colorful. According to the institute of landscape architect Malaysia (1995), Landscape architecture is the art and science of design, planning or management of land, natural and man – made structures, objects, when soil is utilized through the application of scientific knowledge and culture in the study of ecology and behavior, with concern for natural resources conservation and stewardship of the land and which enables improvements in the quality of out door spaces for human use and appreciation.

They balanced in nature and may be shaking by weather. Plants and trees have the relationship between the organic life and matter from the water, animals in the life cycle.

The agriculture and wild life nature have the hedges, flowers, gardens, grasses, shade trees, ornamental plants and buffer with lawns in it. Human beings and natural plants are biologically related by the green chlorophyll of plants to the blood of human beings.

Landscape is the part of the land where the human beings can easily visualize. This is the process of harmonizing and controlling man's immediate and giving environment to bring out his natural being. The materials needed for this natural environment includes trees and plants which includes grasses, shades, trees, shrubs, paving, water and buildings. Scape means the graphical representation of the horizon of the earth.

The building and environment have the problem of cooling, heating lighting and ventilation. Plants are used for this ventilation, cooling and heating of the buildings in the built environment. This plant is mostly used aesthetics rather than the main functionalities of cooling and ventilation of the environment. Plants and trees protect the built environments during the winter and cooler in the summer. Trees increases the quality of the air. Good landscaping devices and shading materials are the deciduous plants, as a result of their responds to temperature differences. This deciduous tree are cheap to purchase, aesthetically standard and cools the environments by evaporation.

But these trees have disadvantages of growing slowly and insects destroys it easily. It should be planted in the right and left side elevations of the buildings and in the back side. Evergreen plants can also be used in the landscaping of the built environments. These trees protect environments from the heavy winds and the cold winter wind. Low crown trees should be used to block the wind from destroying the buildings. Summer cooling and winter heating can be minimized by proper selection of good environmental landscaping trees. These good trees improve the lights and air that comes to the buildings. Good landscape is seen in the nature and sizes of the planted trees. It is good to select fast growing trees with appropriate strength required. Vegetation around the buildings helps to regulate the intensity of the sun in that environment. Proper landscape is used to control noise pollution in the built environments. Hence a good design must have all the elements of landscaping which includes grasses, shrubs and trees.

## **2. The Literature Review on Idea of Tree Planting in Institutions**

The reason for tree planting, conservation and protection are monitored by the town and country planners. This tree planting is ceremonially launched every year by the government. In Nigeria tree planting is controlled by federal, state and Local government.

### **2.1 Trees**

Plants, shrubs, grasses are the highest components used in landscaping. These are elements that are bigger than 3meters. Trees can be from 3meters to 9meters in height. It can fall in the categories of small trees, medium trees and large trees.

### **2.1.1 Ground Covers**

These are plants that are used to check erosions and to protect the ground. It gives aesthetics to the environments. This plant has 0.5m height to 30cm high. Some of these plants are evergreen plants that maintains foliage all the year round. They photosynthesized in the period of winter and dry season too.

### **2.2.2 Landscaping of the Built Environment**

The good use of landscaping elements and components gives clarity in the isolation (energy) needed to be present in the building. This plants, grasses, shrubs and hedges can moderate the changing condition of the atmosphere in our environment and maintains the heat gotten in the summer and in the winter.

The buildings and environment have the problem of cooling, heating, lighting and ventilation. These plants are used for aesthetics rather than the main functionality of protecting our surroundings. Trees increases the quality of air that we breath. Landscaping devices and shading materials are the deciduous plants, as a result of their response to the temperature differences. These trees are cheap to purchase, aesthetically standard and cools the environments by evaporation.

But its disadvantages is that it grows slowly and insects destroys it easily. Trees should be planted in the right and left side of the building's elevations. Evergreen plants can also be used in the landscaping of the built environments. These trees protects the heavy winds and the cold winter wind. Low crown trees should be used to block the wind from destroying the buildings.

## **3. Methodology**

The research method of study used is the mix use method (Qualitative and Quantitative) This is the research instrument used in acquiring data primarily and secondary. This data is gotten from existing literature, Landscape visitation, oral interview, questionnaire, internet browsing, journals and visualization.

This study was conducted from two universities, the University of science Malaysia and Federal University of Technology Owerri Imo State Nigeria environmental sites.

## **4. Result and Discussion of Findings**

The act of landscaping is not only for the beautification of the built environment but to create psychological awareness to the occupants of the buildings and to also have a good livable surroundings with all the components to give an ecology at the environments.

The heat transfer in the structure happens in three given ways: Transmission of solar radiation, heat conduction and breeze infiltration (Walker and Newman 2009). During the winter, heat are lost by air infiltration through the passage of velocity at the building. Another heat exchange is heat conduction by material from which structures are built. The total heat conduction is based on the insulating property of the structural material, temperature relationship at the inner and surface structure and the nature of the materials

This study has given the principles of tree planting to the allied professions such as the architects, Builders, Geographers, town planners and the Estate Surveyors. Land scape is vital to our built environment. It becomes very necessary as human beings improves their technological advancements and new innovations in science have affected the environments in the following ways Pollutions, erosions and waste disposals.

Tree planting, conservation and protection are very important and necessary to the built environment. By tree planting the environment has gotten its good look and protectiveness as this serves as wind break to the buildings in existence. In this tree planting, Timbers used for constructions and in building industry are gotten. This help in organic matter, noise pollution control agent, refreshes the air mass that we breath. Trees and plants absorb water from the soil by the lawns and buffer zones. They are colorful, attractive architecturally and naturally. Soil requirements for trees should be considered with fertilizer applications, climatic analysis and its maintenance

#### **4.1 Advantages of Tree Planting to the Built Environment.**

Trees are used as shades. It protects the built environments from agents of denudations such as erosion, wind and leaching of the soil. They are used to demarcate boundaries of certain regions. It is the source of raw materials for constructional materials. The roots of the trees hold the soil. It beautifies the built environment. Trees provides oxygen during the photosynthesis and also food for man. Trees and forest sustain the wild life and improves the tourism. It improves the vegetation and have color harmony to the eyes. It serves as wind break to the buildings. For the proper tree planting considerations, emphasis must be on the maintenance of the trees, spacings, soil requirements, climate and fertilizer applications. It serves as an outdoor relaxation place.

#### **4.2 Disadvantages of Tree Planting to the Built Environments.**

Trees prevents the use of the particular land where they are planted to be used for other purposes and activities. It damages buildings when the fall. It is cost expensive in its trimming and maintenance, cost of purchasing good quality trees, fertilizer application and its transplanting stages. Boundary disputes can occur where they are planted.



Figure 1. Picture of Universiti Sains Malaysia Landscape



Figure 2. Pictures of Federal University of Technology Owerri Landscape

Table 1. Names of Trees Used for Landscaping

**Public Environments**

s/no	Common Name	Botanical Name	Type of Foliage
1	Fera Tree	Jacarindra Astofolia	Dense Shade
2	Saint Thomas Tree	Boulama Monadira	Large Leaves

Table 2. Recreation Areas, Parks, Open Spaces and Play Ground

s/no	Common Name	Botanical Name	Type of Foliage
1	Shower Tree	Cassia Grandis	Fine Texture
2	Bongan Villea	Bongan Villea	Thick leaves

Table 3. Residential Area

s/no	Common Name	Botanical Name	Type of Foliage
1	Mango	Magnifera India	Dense shade with fine texture.
2	India Almond	Terminalia Catappa	Dense shade with large leaves

## 5. Conclusion

All good landscape designs depend on certain principles. This principle makes it possible to build standard landscape. Balance, Pattern, Shape, Scale and simplicity are art terms. Green lawns, recreational lakes, Urban and local parks are important facilities to be considered.

There should be good laws on tree planting. This concept should be biological, nature preserving and protecting. Many trees are used to drive away the deadly attack by insects, diseases and act as science practical specimen. Trees are used as botanical and allied courses at the primary, secondary and tertiary institutions. It helps in the human living standards. Trees and plants have helped in the environmental orderliness. There should be good awareness and habit in the tree planting principles as our environments are attacked by the agents of denudation.

Therefore, planting of trees constraints can be seen in the cost of purchasing of the different types of good quality trees used in the landscaping of built environments, land forms soil nutrients and its managements. For the good outcome or success of tree planting, there must be good quality specimens of trees, fertile soil (Land) and environments, good plantings, transplanting and post planting of the trees.

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# Go Green Project with Community for Sustainable Waste Management and Bio-economy Initiatives

**Siti Rahyla Rahmat**

School of Social Sciences,  
Universiti Sains Malaysia, Malaysia  
Email: [rahyla@usm.my](mailto:rahyla@usm.my)

## **Abstract**

Villagers are keen to do slash and burn of open fields or bushes. They believe that these activities are the easiest way and the most effective method to clear up places or a forest or woodland area. They burn trunks, leaves, grasses, waste of foods as routines activities in their farm fields and at their houses. Usually, villagers do not have a proper and systematic method to dispose waste. They do not recycle, segregate waste or composting of waste. Some villagers have no idea as to how to recycle waste and generate value added product from waste. This study shares our case study project title “Go Green Project with Local Community” to transfer knowledge on sustainable waste management to under-privileged community in Kampong Chennah and Kampong Puom, in Negeri Sembilan. Our paper lay out the objectives as follows 1) To identify the important of Waste Management 2) To lay out a simple step by step composting technique using domestic and farm waste. 3) To lay out a simple step by step Azolla breeding technique for value added product and income generation. Fifty participants are involved in this micro fund project. Both breadwinners as in the men in their roles as head of family and women who are in their roles as housewife are participated in this project. Most of our participants in this project are villagers who work in their farm fields. Housewives are the ones who manage their chores and house cleaning. They are the ones who will implement this knowledge transfer on waste management. With zero waste and by way of creating value added product, they are capable to generate extra income and produce sustainable waste management. They do not have to buy chemical fertilisers which are also harmful for the environment and health as these chemical fertilisers produce carbon emission and not sustainable for the environment. Bio fertilisers can be sold up to 4 Euro (MYR18) per kg on Alibaba online market. Azolla can be sold up to 11 Euro (MYR 52) per kg in local market in Negeri Sembilan. This initiative will benefit local community for sustainable waste management and livelihood strategies in terms of income generation.

**Keywords:** waste management; composting; livelihood strategies; zero waste; value added product

## **1. Bio-economy Initiatives and Waste Management**

According to Jordan et al (2007), “bio-economy based on agricultural biomass is emerging in the United States that offers an avenue toward energy independence and a more green economy”. Bio-economy has different interpretations in different countries. In the USA, bio-economy emerged in the early 2000s as a result of pursuing independence and security, greenhouse gas emission mitigation and sustainable development (Guo and Song 2019). Bio-economy in the USA refers to economic activities using renewable biological resources to produce energy and domestic consumables by intensive research and development (R&D) that focus on efficient biomass production, conversion, and valorisation via biotechnology

approaches (Guo and Song 2019). Europe focuses on bio-based economy, which is defined as a concept that uses renewable bioresources, efficient bio-processes and eco-industrial clusters to produce sustainable bio products, jobs and income, using environmental benefits as core factor while increasing positive impact on industrial biotechnology (Patermann and Aguilar 2018). Malaysia, on the other hand, approaches its bioeconomy through the establishment of R&D programs and commercialization in agriculture and industrial bio-based industries (“Biotechnology Corp is now called Bioeconomy Corp”, n.d).

Converting waste into value added product is one of bio-economy initiative. Miezah et al (2017) found that waste generation in Ghana was 0.47 kg/person/day, which translates into about 12,710 tons of waste per day per the current population of 27, 043, 093. Nationally, biodegradable waste (organics and papers) was 0.318 kg/person/day and non-biodegradable or recyclables (metals, glass, textiles, leather and rubbers) was 0.096 kg/person/day. Seshie (2016) concluded that 80% of the waste had the potential for reuse (potentially recyclable) and of the usable material, 22.67 % can be recycled and 63.64 % for composting. The average per capita waste generated was 0.70 kg/ca/day. The average moisture of biodegradables waste was 54.99 %.

### **1.1 Case Analysis**

Go Green Project with Community is a collaboration between School of Social Sciences, Universiti Sains Malaysia, Eco Pro and Unit Peladang Chennah. This international community grant is funded by the Federal Republic of Germany Embassy. This is a micro fund project with 9 months of duration. The project has three (3) main phases namely pre-workshop (the preparation part), during the workshop (the implementation part) and post-workshop (the monitoring part). This study only will discuss on phases 1 and 2. The objectives of this study are 1) To identify the important of Waste Management 2) To lay out a simple step by step composting technique using domestic and farm waste. 3) To lay out a simple step by step Azolla breeding technique for value added product and income generation.

### **1.2 Composting as Zero Waste and Bio-economy Initiative**

Compost is the product of decomposition of organic matter that can be produced from domestic waste, food waste, farm waste and livestock waste. The examples of organic matter are hay, dry leaves, twigs, kitchen waste, vegetable waste, fruits and farm waste. Microorganisms such as bacteria are inevitable accelerate this composting process. Organic materials that have been decomposed will release nutrients to improve weoil structure and its fertility and also stimulate plant growth (EcoPro, 2019). The application of composting and azolla breeding may reduce the input cost up to 75 % (EcoPro, 2019). Some benefits of composting to the environment are to nourish soil with nutrients and improve the soil structure, to maintain the soil moisture, to increase the health stimulate plant growth. The Reduction of the amount of organic waste delivered to the landfill site. In Malaysia, organic waste disposal at garbage disposal sites is close to 15,000 tons / day, 2018 (The Solid Waste management and Public Cleansing Corporation, SWCORP). Reduce the dependency on chemical fertilizers and fertilizer cost.

### **1.3 Ex-ante of the Workshop**

As for the ex-ante of the workshop the main organizer (School of Social Sciences, USM) together with collaborators, Eco-Pro, School of Technology Industry and Unit Peladang Chennah have brainstormed together on the planning of the Go Green Project with community.

The hardest part of the ex-ante stage is to get participants who are seriously committed and involved in the program and willing to give their full commitment and sustain to applied what they had learnt from the workshop. We did prepare banner and flyers to promote this program to villagers both offline and online.

#### **1.4 During the workshop**

During the workshop Yang Teramat mulia Dato' Mendika Menteri Akhirulzaman, Dato' Haji Maarof Bin Haji Mat Rashad had come for the opening ceremony. The German Embassy (main sponsor) had also come to evaluate the workshop.

There were two sessions were designed for the workshop namely theoretical and practical for both composting and Azolla breeding. In the theoretical part, participants learned the concept of composting and Azolla breeding. The practical part teaches the step by step technique on how to do composting and Azolla breeding. Initially, this project only open up for 50 participants. But more communities requested to be participated in this program thus it turns out to be 63 participants. The participants are divided into five groups thus the practical part could be well trained by the Eco Pro Trainers.

### **2. Case Implementation**

#### **2.1 Composting Technique**

There are various techniques that can be used to produce compost such as pile composting, cage composting chamber Composting, vermicomposting and simple Composting System (SKM). However, in Go Green Project with Community, our collaborator ECOPRO used a simple technique and not costly namely the simple composting system. The simple composting system is a system which uses a bin or drum with holes at the side and composting is done in layering to produce quality compost. The system is easy to be used and maintained. This system can be implemented outside houses, schools, cafeteria, canteen offices or factories (EcoPro, 2019).

#### **2.2 Simple Composting System or *Sistem Kompos Mudah* (SKM)**

The simple composting system is a system which uses a bin with holes (at least 32 holes) at each side (front, back, left and right) and composting is done in layering to produce quality compost. The system is easy to be used and maintained. This system can be implemented outside houses, schools, offices or factories.

The design of the SKM bin is based on the “*MAMU*” in Malay acronyms which stands for 1. *makanan* (food consist of green and brown resource) 2. *Air* (Water) 3. *Microorganisma* (microorganism) 4. *Udara* (Air)

#### **2.3 Organic Waste**

The organic waste that can be used in the SKM bins is divided into two types: Green resources (high in nitrogen) and Brown resources (high in carbon). Both green and brown resources can be used in layers. Examples of green resources are dung (from Herbivor), green leaves, food waste, kitchen waste, fruit waste and others. Examples of brown resources are dried leaves, sawdust, rice straw and others. Non- decomposing materials such as plastic bottles, glass

bottles, plastic straws are not allowed to be placed in SKM bin.

## 2.4 A Simple Compost Bin

A simple compost bin technique was designed by the co-researcher and eco-pro team from School of technology industry, Universiti Sains Malaysia. A simple compost bin step by step preparation are as follows:-

Choose a new or used bin 1.6 liters or 200 liters in volume. SKM bin of other sizes can be modified according to SKM design.

Make holes at least eight holes for each surface around the bin using a drill. The holes are to allow aeration for the composting process. The hole diameter is around 0.5 cm-1.0 cm. Make a window (at least 8cm length x 6 cm width) to harvest the compost at the bottom area. The distance of the door from the bin base is about 4 cm.

## 2.5 Steps to do composting

The materials required to start the SKM are: Bin, Soil or compost, Green material (food waste, farm waste, livestock waste, kitchen waste, fruit waste), Brown Material (dry leaves, saw dust, rice straw, egg carton) . Following are steps by steps technique to do composting.

### 1. Bins

The bottom of SKM bins is filled with soil or compost up to the top of the door level (about 12-inch high). This soil is to absorb excess water and is also are the home for the microorganism.

### 2. First layer (Brown Resource)

The dried leaves are placed into the SKM about 6-inch high. Dried leaves are used to absorb excess water and absorb the smell from the food waste.

### Second layer (Green Resources).

The next layer is green leaf or food waste that is put on the first layer surface. This layer is placed about 3-inch high. The green material is functioning as the materials that emit heat and accelerate decomposition.

### 4. Soil Layer or Compost

The soil or compost is sprinkled on the surface of the second layer. This layer is thinly spread to cover the overall surface of the green sources. The function of this soil or compost is to provide microorganism to accelerate the composting process.

### Top layer (Brown Resources)

Steps 2 to 5 are repeated according to the amount of domestic or farm waste available and can also be done frequently or day to day as needed. If there is a lot of waste, the layer in the bin can be increased. The last layer is dried leaves. Lastly, shut the bin's cover. The compost can be harvested after 2 to 3 months. After the first harvest and the system is properly maintained, the compost can be harvested every day or every week.

## 2.6 Azolla as an Alternative for Animal Feed and Bio- Fertiliser

Another q1 value-added product that can be produced using domestic waste is Azolla. Azolla is a type of water fern which content up to 30 % protein. Azolla contains vitamin A and Vitamin B12. Azolla can be produced as green fertiliser to be breed and a source of animal feed. The growth rate is from 30 % to 35 % every day. Azolla mix with pellet or normal feed may reduce 75 % of input cost to livestock such as duck, chicken, goat, cow, freshwater lobster, catfish, tilapia fish and rabbit. Azolla needs a fiber glass tank, container or basin and four important bio-resources namely water, soil or compost, Azolla and sunlight (EcoPro, 2019). Following are steps by steps to do Azolla breeding.

Steps by steps technique to do Azolla breeding are as follows:

- Fill in water into the container up to 10 cm height.
- Add in soil or compost into the container
- Stir and mix up the water with soil
- Spread the Azolla which floating in the water surface
- Place the container under the sunlight
- Azolla will multiply and fill the container surface after a week (EcoPro, 2019b).





Figure 1.0 Go Green Project with Community in Jelebu, Negeri Sembilan

### 3. Conclusion

In conclusion, collective action between universities, industries and other actors are needed for knowledge sharing. Collaboration and support system for community project are is needed in term of cost, knowledge, services, technical support and emotional support. Community are willing to learn from the experts namely academia or industry on innovation or new knowledge for waste management and potential permaculture method in precision agricultural practice but there must be a pivotal actor who will initiate the community service program and monitoring the project to ensure the sustainability of the project. Big effort and courage are needed as some community have their own mind set and expectation such as incentives or allowance will be given if they join any community work initiated by the academia or industries. Meticulous and strategic plan are also needed to attract communities to involved and fully committed in any community work program.

### 4. Acknowledgement

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# **Authoritarianism Decay Through Elections: Case Study of Malaysia and the Philippines**

**John Fong Wai Kinn**

Universiti Sains Malaysia, Malaysia

Email: [jfwk77@gmail.com](mailto:jfwk77@gmail.com)

## **Abstract**

Since the end of the Second World War and the Cold War, many developing nations particularly, in Asia and Africa were released from the shackles of their imperialist masters and flourished themselves with democratic rule. Elections being the crucial part of any democratic ruling, were held to determine who should filled the vacuum of power and lead the nation. Nevertheless, within a number of elections, elected leader began abusing such power given by the people. This article explores the theory of “electoral authoritarianism” and its legitimacy in the context of Malaysia and the Philippines. Its intention is to provide analysts of how elections are being held differently and its manipulation to forge legitimacy at a different level for the regime. Elections in both nations that practiced some sort of authoritarian ruling were being heavily manipulated to prolong the regimes longevity and even to an extend elections became fictional and merely a democratic convention to fool international observers just to obtain legitimacy to rule; resulting in an “electoral authoritarianism”. It examines the more artificial its electoral legitimacy is, the shorter live the regime. This article uses two “electoral authoritarianism” cases from two countries to support its theoretical argument; the competitive electoral regime in Malaysia before and during GE-14 and the highly authoritative Marcos regime after the martial law in the Philippines. Sustaining those authoritarian regimes by gaining the people’s legitimacy through electoral authoritarianism would soon lead to the regime demise. In conclusion, the people would still have the upper hand over the regime through the ballots as time progressed.

**Keywords:** Electoral authoritarianism; Authoritarianism; Semi-authoritarianism, Malaysia GE-14, Philippines

## **1. Introduction**

A change of regime has often proven almost impossible in many developing countries. Elections and even protests are important to facilitate better chances of such regime change to happen, but as so most the cases, incumbent regimes are able to withstand such pressures, prolonging their longevity. Elections were then being manipulated through the developmentalism approach and constitutional authoritarianism, and people were often given a perception that a change of regime or government would lead to chaos and instability. Such manipulation and perception would mostly occur and feed through nations, which are rule either through semi-authoritarian or authoritarian regime regardless of their approaches towards sustaining their regime.

Electoral authoritarianism is being defined as states where regimes permit electoral competition but fails to address basic principles of democratic governance such as ensuring fair and impartial rules for the opposition and tabulating the election results (Kinne & Marinov, 2012).

Schedler (2012) show such electoral system practiced by these regimes fall into a “the wide and foggy zone between liberal democracy and closed authoritarianism”.

Regimes that practice electoral authoritarianism can be divided into two categories, closed regimes and electoral regimes. Closed regimes are regimes that reject elections, or limited participation in elections which only one party from the incumbent is allowed to contest. Electoral regime on the other hand, provides some forms of multiparty polling, although closely restricted. Electoral regimes can be then subdivided into competitive and hegemonic regimes, which their differences can tell apart through their degree of competition in their respective elections (Shirah, 2016).

Competitive authoritarianism, where elections in Taiwan, Russia, Kenya, Mexico, Malaysia and etc. may be undemocratic, impartial and electoral competition in favor of the incumbent and against the opposition, but leaders nonetheless stand for elections and thus give oppositions a chance to take over the executive power and at time they emerge successful (Levitsky & Way, 2010).

In this paper, the focus would be on competitive authoritarian regimes as its resistance is nearly as frequently as democracies, which indicates a possibility for credible signaling. Hegemonic authoritarian regimes on the other hand, meet almost to none resistance similarly to closed autocracies, which then suggest its inability to plausibly signal, resolve (Kinne & Marinov, 2012).

## **1.2 Electoral authoritarianism**

Electoral authoritarianism has always led to election being manipulated at some level – political candidates being barred from participating; news media being censored and to a certain extent, being used for the governing regime’s propaganda, gerrymandering or elections’ results being heavily tampered. Such frequent manipulations have cost outrage and most of it are being expressed as political unrest and mass dissent or some forms of anti-regime mobilization (Shirah, 2016).

Despite electoral bias, its uncertainty still does exist for such regimes although it is not as high as in democracies by neither it is low as in a closed authoritarian regime. Hegemonic authoritarianism however implies that opposition can win representation but the regime’s clasp on power never dithers, as stated by Sartori (as cited in Kinne & Marinov, 2012). It usually features one party effective control over the state institutions and dominance at the polls, as stated by Greene and Magaloni (as cited in Kinne and Marinov, 2012).

Nevertheless, Shirah (2016) study suggested that while electoral authoritarianism may secure dictators and their government, it also carries significant trade-offs in terms of mobilizing mass resistance to the policies of the regime. In other words, any elections being held even in an authoritarian manner are able to democratize the nation’s current political system.

Lindberg (2007) found that the institution and repetition of elections in non-democratic nations may change the political landscape and its institutions, which indirectly promote political liberalization. Fundamentally, elections in non-democratic regimes may give the opposition an opportunity to challenge and possibly remove incumbents, despite the odds and success rates are not at their side. If the regime miscalculates its popularity, elections could become a

crippling tool to undercut the regime (Ong, 2018). Baturu (as cited in Khoo, 2014) stated when the regime's survival is on the line, elections become the real contestations.

Lindberg (2007) further argued that when such regimes offer the citizens the opportunity to vote, even in a tightly controlled elections or subjected to massive fraud, citizens can begin to contemplate their participatory role as voters, putting some form of belief that the regime should have accountability to the people rather than treating them as mere subjects of the regime. The voters later gained awareness as being part of the equal participant in a sovereign state and possesses the rights to choose during elections. Even after election, the awareness retain itself among the voters.

Schedler (2012) also highlighted that electoral competitiveness that remains under electoral authoritarianism could lead from 'regime-sustaining' to 'regime-subverting'; and as a result, a new government is installed and perhaps 'democratization via election' process takes place (Case, 2017).

Despite all kinds of threats posed by electoral authoritarianism to democratic system, even continuous partial elections could even threaten regime stability serving as a double-edged sword in authoritarian regimes. Elections done in an authoritarian manner might allow the leader to gain legitimacy for their authority, however they are also likely to undermine the regime political stability.

### **1.3 Malaysia's Competitive Electoral Regime**

Some scholars and observers referred Malaysia political system as semi-democracy while others referred it as semi-authoritarianism. Either way, both terms have been used interchangeably and more or less both have similar definitions. Malaysia's holistic approach towards semi-authoritarianism or semi-democracy can be argued that such approach was gained during the British colonialism of division and conquest till the Second World War (Case, 1993).

Despite consistent election and stability throughout the decades since independence, the ruling and dominant party United Malay National Organisation (UMNO) was able to withstand the pressures for regime change and even fallen short of understanding the procedural democracy. O'Donnell and Schmitter (as cited in Case, 1993) described such condition as *dictablanda* (or also known as soft dictatorship) as political liberalism without full democracy while tolerating the establishment of opposition parties and civil movement even as it closes off the electoral and lobbying routes to the government.

On the contrary, *democradura* (as known as hard democracy) involves democratic process without liberalization, the state rigorously calling for elections while opposition were prevented to organize effectively to participate in such elections. The scholars describe the UMNO government having both interwoven characteristics of both terms leading to a synthesized and robust pattern of semi-authoritarianism.

Despite its counterpart in neighboring Philippines, the downfall of President Marcos has shown how elections dismiss dictatorship, Malaysia on the other hand have shown the ruling party survived poll after poll even with rigorous campaigns from the oppositions to break UMNO's dominion throughout the years (Brownlee, 2008).

The support given to UMNO or its coalition Barisan Nasional (BN) would mean a support not just for political stability but also to attract foreign investment, better economic growth and finally leading to a higher standard of living and consumption among the people. As such, UMNO equates itself as a party that indorses developmentalism, bringing better living conditions to the people especially the middle classes as a result of economic growth which the party has brought. Undemocratic means engaged by the UMNO's robust developmental state to preserve political stability and peace among the multi-ethnic community became the necessary evil accepted and embedded into Malaysians (Loh F. K., 2009).

Overall, Malaysia politics being classified as semi-authoritarian or semi-democratic can be due to the government inhibition (but did not ban) of civil society and movement and also prevented the transfer of federal-level governance through election that being hold regularly. Therefore, opposition and civil society serve as the people's discontents and dissatisfaction rather than as organizations that could wield autonomous political power.

According to Huntington (as cited in Case, 1993) unlike any other distinctive authoritarian regimes which they often lack on "feedback mechanisms", the Malaysian government led by UMNO hold election regularly to measure and reenergize the mass support towards the incumbent. With such mechanism, UMNO and its coalition partners were able to retain their unshakable power on federal level and to assert with some probability that they held office with majoritarian approval, despite there is some degree of discontent. Thus, leading to a higher level of legitimacy from the people.

In addition with such mechanism, Lee and Ong (as cited in Case, 1993) stated that the opposition parties were too incapable to win power and does not see any viable alternative other than the incumbent ruling party in charge of the federal power, therefore, seceding to the fact that the opposition will remain as it is.

Still, the ruling regime relies on low complexity and greatly noticeable manipulation to secure electoral wins. The binary problems of "phantom" and missing voters, due to extensive error by the Election Commission on the voter list, has been the continuous highlight and fear for NGOs and analysts committed in electoral fraud study (Ong, 2018).

From the 1980s till recent years, UMNO has increased their dominance, tightening authoritarian rule further, jailing members of the civil societies and the opposition, while strengthening electoral manipulation through gerrymandering (Slater, 2003). Although the change of leadership in 2003 by Abdullah Badawi which during his tenure, political liberties, elections competitiveness, parliamentary representative and democracy have been gradually improve, the change of government is still nowhere near to be achieved.

Rather than a complete breakdown of democracy, the nation under UMNO leadership settled down with electoral authoritarianism, either halting their democratizing development or reversing any progress made before (Case, 2011). The longevity of the UMNO regime throughout 61 years of ruling can be due to its hybridism of electoral authoritarianism that limits civil rights but also features multiparty elections through developmentalism that includes some fundamentals democratic legitimacy.

#### **1.4 Philippines' Marcos Authoritarian Rule**

The year of 1986 was the turning point for Philippines political landscape and a path towards

better democracy, so they said. The Philippine regime from 1972 till 1986 was authoritarian in nature; which the president had consumed a great constitutional concentration of power and in practice, the power invested in him was far greater.

President Marcos regime is considered to be highly authoritarian in nature, can be due to its implementation of martial law in 1972 for almost 10 years. Marcos later introduced a new form of parliamentary system to make way for his prime ministership, thus removing the term limits on presidents.

Although, many of the delegates and elites were very much won through bribery and false promises over assembly seats, Marcos's presidency draws near. Fearing that unable to obtain support from delegates and the loss of his presidency, martial law was declared in 1972, carefully citing the Communist attack in central Luzon as his reason. In no surprise, such suspension in Philippine democracy were not opposed by most of the elites, only as long as their state positions and resources were not compromised (Case, 2002)

President Marcos was not anyhow accountable in a meaningful way towards his party, congress or his people, but somehow able to be responsive towards particular critical groups' expectations and demands, which their position and influence could undermine his presidential stand. Although the military has developed a close alliance with the president, the alliance still required regular cultivation (Wurfel, 1998).

As President Marcos seeks for a greater autonomy and legitimacy, a large link of patronage system was forged with the primacy of money. The opposition on the other hand, were just merely tolerated by President Marcos, as long they don't pose a threat to unite the mass and having the intention of replacing him. In addition, with the implementation of martial law in 1972 and President Marcos' masterful skill in spreading dissension among his opponents, the opposition 'emerged, cleaved, and faded with great rapidity' in national and local levels (Wurfel, 1998).

Marcos's martial law was even justified by the judiciary; the martial law was then regarded as "constitutional authoritarianism". A new Assembly was even set up and also a new party, the New Society Movement or also known as (KBL, Kilusan Bagong Lipunan). Throughout the martial law, an estimated of 70,000 Filipinos were detained as political prisoners. To maintain the martial law and his coercion power; military budget, promotional opportunities and salaries were increased significantly, and its top positions were mostly filled by Marcos' inner circle.

Despite a strong coercion power held by a single individual, elections still remain a source of power and legitimacy for such authoritarian leader. After the martial law, Marcos took a risk in enhancing his legitimacy in the state and to among his American counterpart, by calling for new elections in April 1978, and created a new political party the KBL or New Society Movement to run the polls. The later struggle for power in the military forces between Juan Ponce Enrile with General Fidel Ramos, and Fabian Ver, had Marcos losing his power grip on the military. He then called for another early national election, hoping to renew his legitimacy based on the state wealth distribution rather than his popularity (Slater, 2005).

President Marcos' electoral authoritarianism may have given him the victory he needed but it also carries weighty cost in terms of mobilizing mass resistance at the final stages to the policies of his regime (Shirah, 2016). His success became short-lived when the oppositions unified itself together with the people after the assassinations of Benigno Aquino in 1983 and Marcos

overconfidence in remaining the people's President right after being elected in the 1986 presidential election.

### **1.5 Artificial Electoral Legitimacy**

The distinction between Malaysia and the Philippines electoral legitimacy depending on the intensity of its electoral authoritarianism is quite clear at the point of departure of their respective regime. The factors that determine such differences in the level of electoral authoritarianism are as follow: a) Implementation of martial law for a long period b) semi-authoritarian and authoritarian governance c) either regime or systemic change as the regime arrived at its conclusion.

The implementation of martial law within a decade has directly eradicated almost all kind of opposition towards Marcos regime. As for Malaysia, no such martial law has declared for a long period and if so, it's for an entirely different reason. Marcos authoritarian governance has reach to a point that Philippines competitive electoral regime almost become a hegemonic one. Malaysia on the other hand remained competitive as oppositions remained formidable despite uneven playing field as seen in GE-12 onwards.

Changes seen in respective states were also vastly different. One experience regime change, while the other systemic change. Regime change is distinctively different from systemic change as fundamental institutions and policies undergo comprehensive changes such as formulating new constitution and massive reforms (Loh, 2018).

Therefore, a strong state but weak society in exist Malaysia while a weak state but strong society exist in the Philippines. Such circumstances would lead to why exactly regime change or systemic change took place in their respective countries. A stronger society and people being repressed or killed accompanied with inefficient government control would then push for systemic change while a weaker society and people which has a gradual increased participation and awareness accompanied by a strong government but being succumb to contentment and the lack of rejuvenation, will then lead to regime change.

As for this case, regime change is witness in a less authoritarian government in Malaysia where the society is weaker while systemic change happened in an authoritative state during Marcos regime which its society is stronger and the state institutions require more significant reforms after the regime departure.

The higher the intensity of electoral authoritarianism, the lower the electoral legitimacy and the greater the changes will be, resulting in either regime or systemic change. Nevertheless, once the electoral legitimacy became to a point of artificiality due to extensive electoral authoritarianism, the regime demise will soon follow.

## **2. Conclusion**

The higher electoral authoritarianism applied by the regime would then reduce electoral legitimacy sharply; it would also mean lower support and higher opposition from the people towards the regime. Through both cases, one could see the differences in their respective pragmatic use of electoral authoritarianism in different approaches to sustain the regimes and its legitimacy.

Nonetheless, regardless of any forms of dissension and subjugation towards democracy, the power would still eventually return to the people through electoral reform movement and continuous elections. As this article is highly based on secondary sources, its recommendation to improve the preliminary results would require more qualitative or quantitative survey and analysis.

### 3. Acknowledgement

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# **A Study of the Effect of Government Infrastructure and Cost of Assistive Technology on the Digital Divide Phenomenon among Disabled People**

**Nur Ajrun Khalid**

School of Social Sciences,  
Universiti Sains Malaysia, Malaysia  
Email: [nurajrun@usm.my](mailto:nurajrun@usm.my)

## **Abstract**

The digital divide is a gap in access to information communication technology (ICT). Currently, without ICT accessibility people who are incapable of accessing information, representing delayed inclusiveness in social activity, and are left behind in education, making them unable to compete in the economy and unable to obtain a professional job. Digital divide issues affect people with disabilities more than others. A common understanding of people with disabilities is that they are left behind in accessing ICT due to their limitations in performing normal activities. This phenomenon has gained worldwide attention. The Malaysian government has provided ICT infrastructure to Malaysian citizens; nonetheless, some groups are left behind, such as disabled people. To access ICT, disabled people need assistive technology, and many of the tools are expensive. The situation is difficult because most of these disabled people live with less than an affordable income and do not receive higher education. Accordingly, this study aims to examine the effect of government infrastructure and the cost of assistive technology to bridge the digital divide for people with disabilities. This study conducted quantitative survey research through the distribution of personally administered questionnaires. To analyse the data, we use structural equation modelling with partial least squares (PLS) to examine new hypotheses regarding the effect of government infrastructure and the cost of assistive technology on the digital divide. A total of 438 disabled people participated, and the response rate was above 90%. SEM analysis of the model effect found that government infrastructure showed a significant relation and medium effect on the digital divide. The cost of assistive technology only had a small effect but had a significant relationship with the digital divide. The digital divide should not be neglected in ensuring the transformation of Malaysia into a developed country and to ensure fairness for all citizens without anyone left behind.

**Keywords:** Assistive technology; government infrastructure; structural equation modelling; disabled people; digital divide

## **1. Introduction**

The dichotomy “have or have not” is the foundation for defining the digital divide, and it is about access to information communication technology (ICT). Inadequate access to ICT may create absenteeism, and it is normally known as the digital divide. In 1990, the term digital divide became very popular and started entering the public discourse among countries (Hacker and Dijk, 2000). In 1990, the digital divide was defined as the gap that separates people who have access to ICT from those who do not have access. Inadequate or inaccessible ICT occurs when a specific segment of people in a country cannot access the same amount of ICT. For example, a situation that people in developing countries encounter is the problem of less information due to inaccessibility; even though most ICT resources are available worldwide,

the degree of accessibility varies for people living in developing countries (Rashid et al. 2011). With the current use of ICT in society, people need to catch up with its rapid development. This situation forces people to seek information, and different strengths of ICT lead to different segments of the digital divide that involves a divide between quality information and poor information. The level of quality information is easily measured by a person's status or class in society. For example, upper-class society, characterized by high income, is educated and knowledgeable and can receive and differentiate information quality.

The disparity among people, households, economic levels, education and geography highlights the scope of the digital divide phenomenon. The digital divide is explained in three distinct aspects. According to Chalita (2012 p.10), the first aspect is the digital divide between countries (which is between developed and developing countries and between urban and rural areas). A second aspect is the digital divide among groups of people in society (for example, among upper-class, medium-class, and lower-class groups and between able-bodied and disabled people). Normally, groups in society are classified based on their level of income and educational background. The third aspect is the digital divide due to the different government administrations of each country (either the government provides the channel to access ICT and allows people to connect or the government disallows people access to ICT and does not provide ICT resources). Therefore, this study aims to examine the digital divide phenomenon among disabled people. It is very important to study issues that affect disabled people due to their increasing numbers in society. The number of disabled people is 15% of the world's total population, and a report by the World Bank disclosed that more than 1 billion people are experiencing at least one form of disability (Dineshkumar et al, 2016).

Deficient chances to access ICT are closely related to different abilities in using ICT, which also create digital divide problems. Therefore, the digital divide phenomenon has produced social inequalities between disabled and normal people. Usually, inequalities have occurred because normal people have the ability to use ICT tools such as searching for information on the internet, reading and responding to emails, connecting through online applications and being able to engage in activities without limitations and help from other people. The ICT infrastructure provided by the Malaysian government is acceptable and beneficial to people, especially for normal people. However, this infrastructure might not be acceptable or compatible for disabled people, who may be incapable of using it (Osman 2015). Disabled people's limitations in accessing ICT or using technology tools make them incapable of participating in online activities and cause them to miss updates or information; these limitations also create difficulty for them to live independently and cause them to be left behind in accessing electronic news from the government (Liangzhi, 2006). To use technology tools and access ICT, disabled people need assistive technology that can suit their different disabilities; sometimes, they also face difficulty in finding what is best for them, and the cost can be high (Herselman and Britton, 2002). Accordingly, the objective of this study is to investigate whether government infrastructure and the cost of assistive technology have a significant effect or not on bridging the digital divide for disabled people. ICT equipment, machines or any facilities used by non-disabled people have to look the same to disabled people to ensure their equality and inclusion in society. Assistive technology is important to help disabled people improve their performance. Examples of assistive technology tools include head wands, eye trackers, screen trackers, screen readers, sip-and-puff switches, speech synthesizers, experimental thought-controlled devices and voice recognition technology (VRT), voice fingers, and freedom scientific (JAWS) and orca open source screen readers. This hardware and software are designed to meet the needs of people with different disabilities.

However, assistive technology tools are costly and require strong skills to learn and operate them (Ramakrishan, 2007).

## **2. Literature review**

### **2.1 Government infrastructure**

Disabled people face many difficulties and barriers that prevent them from participating in society, such as inadequate infrastructure (Burns & Haller, 2015). A prior study by Haq (2003) found that infrastructure for disabled people was overlooked in Malaysia; the study stated that most disabled people faced challenges adjusting to their workplace environment because of limited infrastructure that is friendly to disabled people. A study by Olatokun (2008) also found significant effects of infrastructure on access to ICT, including the limitations of proper infrastructure provided by the government, and some policy maker considered that providing better infrastructure for ICT is unaffordable and expensive. Therefore, adequate infrastructure is very important to achieve full accessibility of information, and closing the gap between disabled and non-disabled people and ICT with proper infrastructure will be useful to disabled people (Zillien & Hargittai, 2009). A recent study by Biancarosa & Griffiths (2012) found that most disabled people were stressed about the lack of appropriate ICT infrastructure, which directly causes the digital divide. The lack of infrastructure causes poor connectivity to computers and telecommunications. The government should work on providing better infrastructure (Olatokun, 2008). Similarly, in terms of providing ICT infrastructure in Malaysia, the government has very weak initiatives (Osman 2015). Moreover, according to Torenli (2006), limited accessibility to technology due to insufficient infrastructure is a problem for disabled people. However, many governments in industrialized or developed countries have fully concentrated on providing better ICT infrastructure to all segments of society, including disabled people, to ensure that their citizens gain access to ICT and that no one is left behind. In this situation, infrastructure is crucial for people to participate in the globalized world of information and knowledge (Racherla & Mandviwalla, 2013). Accordingly, one of the barriers to ICT accessibility is that the provided infrastructure does not accommodate different types of disabilities (Agarwal and Steele, 2016). In view of this discussion, the following hypothesis is proposed:

*H1: Government infrastructure has a significant influence on the digital divide.*

### **2.2 Cost of assistive technology**

Technological application or assistive technology is a powerful tool for disabled people because it may enable them to live their lives like normal people. Assistive technologies such as hearing aids, reading with the aid of large print, the Braille system, speech added to a computer and a keyboard for data entry, and speaking with a telephone transmitter eliminate the barriers faced by disabled people and have changed their perception of life. Alper and Raharinirina (2006) indicated that inequality in access to assistive technology occurs for disabled people because of limited financial resources. Numerous studies by Barnes (2014), Raskind (1993), Parette *et al.* (2010), Lee & Templeton (2008), Borg *et al* (2011), and Holmes and Silvestri (2012) found that the cost of assistive technology had significant effects on the digital divide. Similarly, a study by Nurulnadwan *et al.* (2011) indicated that disabled people could not afford to buy assistive technology because most of the assistive technology tools available on the market are very expensive. In addition, Barnes (2014) stated that funding is a main problem for disabled people to obtain assistive technology and that no systematic funding

is provided to help disabled people to obtain assistive technology tools. Similarly, only 5% to 15% of disabled people can afford to buy assistive technology in low-income, middle-income, and developing countries, showing that the cost of assistive technology may be unaffordable and of low production quality exorbitant costs are barriers to accessing ICT among disabled people (Torenli, 2006). The high cost of assistive technology is a major barrier of the digital divide (Alper & Raharinirina, 2006). Similarly, 20% of the world population's disabled people are among the poorest individuals (Abidi & Sharma, 2014). According to a recent study by Osman (2015), disabled people in Malaysia face financial difficulties in accessing ICT. Thus, if disabled people can afford to buy assistive technology, this will bridge the gap of accessibility of information. According to Borg et al. (2011), providing affordable technological tools and ICT is a basic human right, and access to ICT assists disabled people in having better lives.

The affordability of technology tools as a human right has been supported by Borg et al. (2009), who confirmed that technology is not the ultimate way to overcome problems associated with disabilities, but technology should be recognized as assisting disabled people in their daily lives, and the problem of the high cost of assistive technology should be discussed by responsible bodies, especially government agencies and private agencies that produce assistive technology. A study by Penton (2015) disclosed that the high costs of assistive technologies is one of the barriers that hinder disabled people from accessing ICT, and it directly affects the digital divide. In view of this discussion, the following hypothesis is proposed:

*H2. Cost significantly influences assistive technology.*

### **3.0 Research Method**

#### **3.1 Population and Sampling**

The population of disabled people is 24,348 located in 12 districts in Kedah (Welfare Department, 2013). To find an accurate number of respondents without bias, a two-stage cluster sampling under the probability of a restricted sampling design is chosen. The detailed population of disabled people in Kedah are illustrated in the *Supporting Information* in Table S1. At the first step of cluster sampling, the researcher applied simple random sampling by selecting the odd number from the listed district in Kedah. However, the number from the 6 chosen districts is 13,217. The details of the sampling size based on 6 districts are illustrated in the *Supporting Information* in Table S2. In the second stage, from the population of 13,217, based on a sampling table provided by Krejcie and Morgan (1970), a sample of 375 is sufficient to conduct a survey analysis. In the second stage, the population from the 6 districts is divided based on the sampling size of 400. The sampling size is increased by the researcher to make this study reliable and to ensure that the sampling is homogenous. The detailed calculations of the sampling size of each district are illustrated in the *Supporting Information* in Table S3. The data were collected via a self-administered survey questionnaire. The number of distributed questionnaires is 450, and the number of returned questionnaires is 438. This shows a good response rate of 97.33%. This rate is actually higher than the typical 90% rate for self-administered surveys (Doyle, 2005).

#### **3.2 Conceptual Framework**

According to Maxwell (2013), a conceptual framework is a combination framework that consists of the concepts, expectations, beliefs and relevant theories that assist researchers in

study design. Government infrastructure shows a relationship with the digital divide, and this is relationship represented hypothesis one (H1), positing that government infrastructure has a significant influence on the digital divide. The second independent variable is the cost of assistive technology represented by hypothesis two (H2), proposing that the cost of assistive technology significantly influences the digital divide. The proposed conceptual framework illustrates the relationship of the variables in two ways. First, there is a proposed relationship between government infrastructure and the digital divide. Second, there is a proposed relationship between the cost of assistive technology and the digital divide. The framework is illustrated in Figure 1.

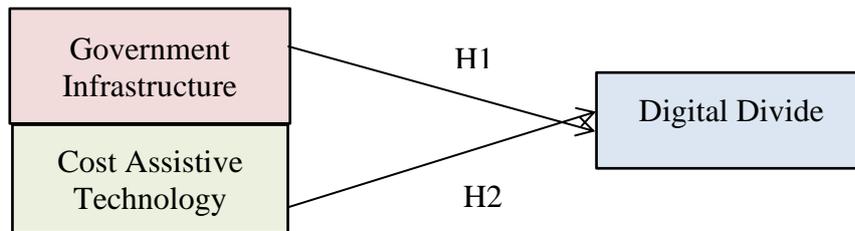


Figure 1: Conceptual Framework

## 4. Data analysis and results

### 4.1 Respondents' background

After conducting data screening, the total number of respondents in this study was 438, 273 (62.3%) are male, and the remaining 165 (37.7%) are female. Most of the respondents are single, approximately 264 (60.3%); 166 (37.9%) are married; and 8 (1.8%) are divorced. Regarding race, Malay respondents are the majority, including 82.6% or 362 respondents; Chinese are approximately 10.7% or 47 respondents; Indians are approximately 5.3% or 23 respondents; and other races are only 1.4% or 6 respondents. Approximately 372 respondents are Muslim (84.9%), followed by 43 Buddhists (9.8%), 4 Christians (0.9%), 17 Hindus (3.9%), and 2 with other religions (0.5%). Meanwhile, for the level of education, most respondents had a secondary-level education, approximately 291 or 66.4% of the respondents; 80 or 18.3% of the respondents had only a primary school-level education; and the remaining 67 or 15.3% of the respondents had a college- or university-level education. From the education and occupation levels, it can be observed that most of the respondents were able to understand the questions and had the ability to answer the questionnaire according to the given instructions. Education level is an important factor to determine individuals' understanding of any issues surrounding them. It was important to acknowledge the respondents' educational background to ensure that full cooperation was given in this study. From the data, it can be concluded that a large number of the respondents had a secondary education and that they had basic knowledge to understand the things around them. However, the small number of respondents at a university level shows that there is still a long way to go for disabled people to achieve higher education. The knowledge and education of disabled people are key factors in bridging the digital divide.

For occupation, approximately 42 (9.59%) of the respondents work in the government sector, and approximately 237 (54.11%) work in the private sector; 108 respondents (24.66%) are unemployed, 5 (1.14%) are self-employed, and the remaining 46 (10.50%) respondents are students. The private sector is an opportunity for disabled people to become employed as administrative workers, for example, as clerical and supportive staff, and work as cleaners. This demonstrates that the private sector creates chances for less educated and unskilled

disabled people to obtain employment, but only at lower levels. Next, the unemployed respondents numbered approximately 108 or (24.66%). This unemployment is due to their disabilities, such as physical disabilities and blindness. Employers are often reluctant to offer appropriate jobs because they have to pay high costs for assistive technology, and most of the respondents are poorly educated and have weak ICT literacy. Another reason for unemployment is age; older respondents are incapable of working. Unemployed respondents depend on their families to take care of their wellbeing, as well as monthly funds from government agencies. Meanwhile, approximately five respondents (1.14%) are self-employed. They perform work such as selling food and working as tailors. Their physical impairments, such as deafness and minor physical disabilities because of injury, are not barriers to their jobs. The remaining 46 (10.50%) respondents are students at government universities and institutes such as *kolej komuniti*.

An important reason for profiling the respondents of this study is to identify the type of disabilities that they have. Most respondents are physically disabled, approximately 280 or 63.93%, 132 or 30.14% are hearing-impaired or deaf, and the remaining 26 or 5.94% are blind. All respondents were qualified to participate in this study. It was also important to determine the level of the respondents' knowledge and awareness of ICT tools to ensure that they were able to provide information and share their ideas and opinions on and experience with technological tools to answer the questions of this study. From the data, a total of 26 respondents (5.94%) use computers. Meanwhile, respondents who use a computer and smart phone number approximately 19 (4.34%); respondents who use a computer, smart phone and technology aid number 32 (7.31%); and only 5(1.14%) of the respondents use a computer and technology aid. Accordingly, 159 respondents or 36.30% are smart phone users. Thus, approximately 62 (14.16%) respondents use smart phones and a technology aid. Meanwhile, 73 (16.67%) respondents use a technology aid, and the remaining 62 (14.16%) respondents do not use any ICT tools.

A majority of the respondents in this study are 31-40 years old (128 respondents or 29.2%), followed by respondents who are 21-30 years old (126 or 28.8%), respondents under 21 years old (79 or 18.0%), respondents 41-50 years old (63 or 14.4%), and respondents who are at least 51 years old (42 or 9.6%). Determining the age of the respondents was crucial to ensure their maturity level to understand particular issues or problems. Respondents over 50 years old were not included because they were considered to be old and usually reluctant to use ICT. Table 1 illustrates the details about the respondents' profile.

Table 1: Respondents' profile

Respondents Profile		Frequency	Percentage (100%)
Gender	Male	273	62.3
	Female	165	37.7
Marital Status	Single	264	60.3
	Married	166	37.9
	Divorced	8	1.8
Race	Malay	362	82.6
	Chinese	47	10.7
	Indians	23	5.3
	Others	6	1.4

Table 1: Respondents' profile

Respondents Profile		Frequency	Percentage (100%)
Religion	Islam	372	84.9
	Buddhism	43	9.8
	Christianity	4	.9
	Hinduism	17	3.9
	Others	2	5
Education Level	Primary School	80	18.3
	Secondary School	291	66.4
	College of University	67	15.3
Occupation	Government Sector	42	9.6
	Private Sector	237	54.1
	Unemployed	108	24.7
	Self-employed	5	1.1
	Student	46	10.5
Types of Disabilities	Physical	280	63.9
	Hearing and Deaf	132	30.1
	Blind	26	.6
ICT Tools	Computer	26	.6
	Computer, Smart phone	19	4.3
	Computer, Smart Phone, Technology Aid	32	7.3
	Aid	5	.1
	Computer, Technology Aid	159	36.3
	Smart Phone	62	14.2
	Smart Phone and technology Aid	73	16.7
	Technology Aid	62	14.2
	None		

#### 4.2 Assessment of the measurement model

In PLS (SEM), validation of the proposed model is a priority before proceeding to model analysis. This first step is to identify and determine the construct validity, and a two-step approach was conducted, which consists of convergent validity and reliability, followed by discriminant validity and then internal consistency reliability (Anderson and Gerbing, 1998). As a rule of thumb, based on this two-stage approach, several items with low loadings were deleted. Low items below 0.7 normally should not be deleted if the outer loading can increase the composite reliability; however, if the item falls below 0.4, the item should be deleted (Hair et al. 2014). The results of the measurement model (validation) are shown in Table 2. This table shows that construct validity is demonstrated when the loadings are greater than 0.7 and that composite reliability is greater when the average variance extracted is greater than 0.5 and Cronbach's alpha is greater than 0.7 (Bagozzi et al, 1991; Fornell and Larcker, 1981; Hair et al. 1998; Nunnally, 1978). Meanwhile, the image of the model with item loading is shown in Figure 2.

Table 2: Result of Measurement Model (validation)

Items	Items	Loadings	AVE	CR	Cronbach' Alpha
Government Initiative	IF1	0.919	0.86	0.95	0.921791
	IF2	0.948			
	IF3	0.922			
Assistive Technology	C2	0.965	0.95	0.97	0.925233
	C3	0.984			
Digital Divide	SC1	0.914	0.73	0.92	0.875161
	SC2	0.733			
	SC3	0.919			
	SC4	0.840			

Note: Items C1,C4,C5,C6 were respectively deleted because of the factor loading is at 0.6 which is not meet the condition to examine the data accurately and is less than the threshold value.

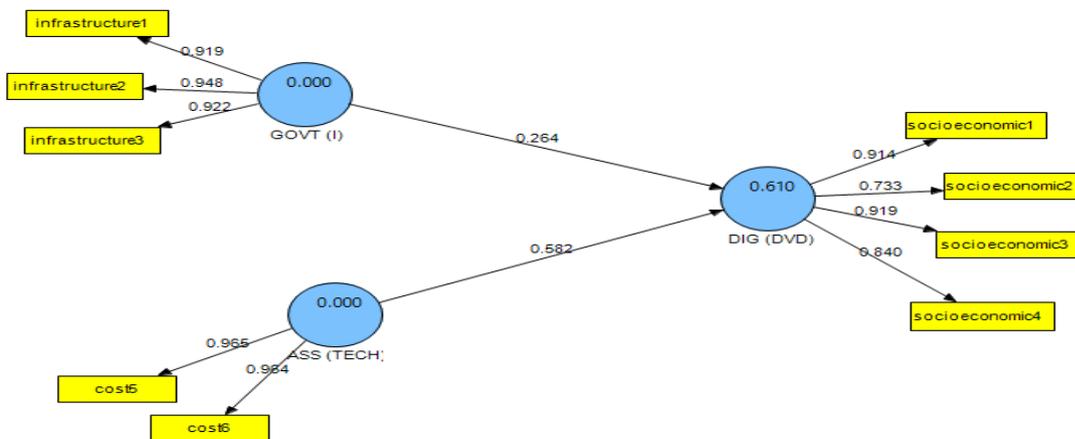


Figure 2: Measurement Model

Accordingly, discriminant validity was examined through the average variance between each construct, and the measurement should exceed the variance between each construct and another construct (Fornell and Larcker, 1981). Discriminant validity can be examined by comparing the correlations between the latent variables and the square root of the average variance extracted (AVE); for the latent variables, the square root of the average variance extracted should be greater than 0.50, or more than 50% of the variance of the indicators should be accounted for (Fornell and Larcker 1981). The results of the discriminant validity test are shown below in Table 3.

Table 3: Discriminant Validity of the study constructs

Construct	1	2	3
Assistive technology	<b>0.911</b>		
Digital Divide	0.577	<b>0.892</b>	
Government Initiative	0.611	0.668	<b>0.930</b>

Note: The bold face is representing the diagonals of square root of the AVE while the other entries represent the correlations. Based on the result presented in Table 3, it shown the data has fulfill the condition of discriminant validity, which is each construct correlation is than the square root of AVE (Hair, et al., 1998; Hair, Black, Babin & Anderson, 2010).

### 4.3 Hypothesis Testing

This study applied bootstrapping techniques in Smart PLS version 3 to identify the significance of the path coefficients and to examine the significance of the hypotheses; i.e., either a

hypothesis is accepted or rejected. The results of bootstrapping can be identified from the t-statistics value, which is  $>+1.96$  or  $<-1.96$ . The results in Table 4 and Figure 3 showed that the proposed model is significant with a t-value of 4.805 for assistive technology and a t-value of 8.92 for government initiative. The effect sizes ( $f^2$ ) were also examined in this study. Based on Gefen and Ringdon (2011), the effect size ( $f^2$ ) determines the impact of the exogenous latent constructs (whether weak, moderate, or substantial) on the endogenous latent constructs. The obtained  $f^2$  value of 0.35 denotes a large effect, 0.15 denotes a medium effect, and 0.02 denotes a small effect (Cohen, 1988). Table 4 shows all  $f^2$  results according to the effect sizes, and government initiative has a medium effect size on the digital divide. Assistive technology only has a small effect on the digital divide. In the assessment of predictive relevance for the proposed research model, the researchers implemented the blindfolding technique. Based on O'Brien (2007), multicollinearity presents a problem because it points to an overlapping of variances that the exogenous constructs will describe in terms of endogenous constructs. Consequently, each variance cannot be justified in the presence of multicollinearity. The variance inflation factor (VIF) is broadly utilized in measurements to determine the degree of multicollinearity present (O'Brien, 2007). A value exceeding 10 for the largest VIF indicates a problem (Myers, 1990; Bowerman, 1990). Meanwhile, Hair et al. (2017) suggested that a value exceeding 5 for the largest VIF indicates a multicollinearity problem. The VIF values in this study are less than 5, and hence, multicollinearity is not an issue in this study (see Table 4).

Table 4: Significant of path coefficients model

Hypothesis	Relationship	Std beta	Std error	t-value	p-value	decision	$f^2$	VIF
H1	G.Int- DD	0.865	0.054	8.920	0.000	Supported	0.313	1.595
H2	As.Tec-DD	0.831	0.055	4.805	0.000	Supported	0.089	1.595

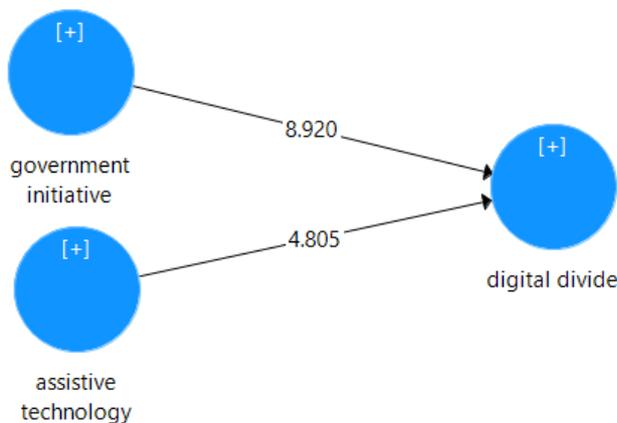


Figure 3: measurement model (t-value)

## 5. Findings and recommendations

The digital divide phenomenon is a disconnected world for people with disabilities. Accessibility issues occur not only in Malaysia but also throughout the entire world. Therefore, even though this research was conducted in Malaysia, the findings of this study and its implications might be suitable as references or for implementation in other countries, especially Asian countries, whose culture and demographics are practically similar to Malaysia. This study aims to bridge the digital divide by proposing a model of government infrastructure and low costs of assistive technology. The analysis through SEM showed that both factors have a positive and significant relationship in bridging the digital divide (see Table 4 and Figure 3).

However, the established infrastructure should be used to understand and realize the different needs of people with disabilities to ensure that they receive benefits from it. A strong relationship with infrastructure can assist and support disabled people in participating in technology, which would then enable them to receive more information to increase their knowledge of the economy and their educational level (Adkins et al. 2012). An infrastructure of technology device assistance can help a large share of the disabled population to gain access to the world of ICT (Cumming and Rodriguez 2013; Cumming and Rodriguez, 2017). Consequently, it is important to enhance public infrastructure and to provide comprehensive guidelines, such as the requirement for all public websites to establish infrastructure that enables access to disabled people (Duplaga, 2017). Adequate infrastructure is very important to achieve full information accessibility and to close the gap between disabled and non-disabled people (Zillien and Hargittai, 2009). It is important for the government to protect disabled people's rights equally and to recognize their needs to gain access to ICT. The findings of the proposed model (see Figure 3) shows that government infrastructure has a strong significant relationship in bridging the digital divide and that the hypothesis is accepted. Meanwhile, the SEM analysis of the effect size (see Table 4) shows that the effect of government infrastructure is medium compared to the effect of the cost of assistive technology.

This finding indicates that government infrastructure is the potential solution to bridge the digital divide between disabled and normal people; however, the influence of the cost of assistive technology on the digital divide is not negligible, as a lack of consideration of this factor may threaten the progress towards equality between disabled and normal people in Malaysia. The cost of assistive technology has a small effect, but the relationship is significant to the digital divide. To bridge the digital divide concerning the cost of assistive technology, the technology needs to be scrutinised to ensure that it is affordable. Assistive technology is a powerful tool for disabled people because it can enable them to live their lives like normal people. The cost of assistive technology needs to be controlled by organizations and government agencies due to the limited financial resources among disabled people. Numerous studies by Barnes (2014), Raskind (1993), Parette et al. (2010), Lee and Templeton (2008), Borg et al. (2011), and Holmes and Silvestri (2012) found that the cost of assistive technology has significant effects on the digital divide. This study was significantly different from many studies of disabled people in Malaysia because of its investigation showing that disabled people are less involved in ICT because assistive technology is unaffordable. That is, this study (see Table 1) indicates that only 0.1% of respondents could afford to use computer and assistive technology.

## **5.1 Policy recommendations**

The policy for disabled people in Malaysia is provided to protect their rights. However, based on the findings of this study, several crucial recommendations are offered to enhance this policy. Disabled people can be more productive if opportunities to increase their capability and knowledge are provided to them. Currently, all job professions involve the usage of ICT as a work management tool, and this situation forces people to improve their ICT skills and knowledge. People who are unable to keep up with the current situation will be living in a separate world with no information, no education, no job, no income, and no involvement to society and the economy. Rogers (2001) found that the most important part of reducing the digital divide as clarified in the policy is to ensure that the programme and any subsidy assistance is specifically targeted to the right group to guarantee social equality. According to Clark and Gorski (2002) and Norhasyikin (2017), disabled people need sufficient information to participate in society and apply for jobs. The Disabilities Act 2008 is the law issued by the

government to prioritize the rights of every disabled person. Part four of the Disabilities Act 2008 clearly emphasizes the promotion and development of the wellbeing and quality of life for disabled people, focusing on accessibility; under part four, clause number five emphasizes disabled people's access to ICT. Undoubtedly, the Malaysian government regards the rights of disabled people highly, especially concerning ICT. However, several things still need to be considered by the government.

Even though having ICT skills will increase the independence level of disabled people, attention and contributions from the government are still needed because many ICT tools such as assistive technology can cost a great deal and are thus inaccessible for most disabled people, who are usually unemployed or poor; this then hinders them from using this technology. Through reduced production cost, ICT tools can be made available to all disabled people. Less access to ICT can also be reflected in the unavailability of assistive technology equipment due to the high maintenance costs for computers, software and hardware, which has resulted in a complicated situation for disabled people when using ICT. Disabled people depend on assistive technology in their daily life to perform a task or job like normal people do. To further facilitate disabled people's ICT usage, their computers should be fully equipped with assistive technology, such as the Braille system, a monitor cover suitable for different types of disabilities, and hearing aids to help mute and deaf people. The government should reinforce the implementation of assistive technology to be applicable to all types of disabilities. To implement this technology in an effective way, the government should work together with manufacturers to identify the barriers and problems faced by disabled people regarding assistive technology tools.

Moreover, the government should provide more infrastructure such as training centres for using assistive technology and ICT tools because the findings show that ICT has limited accessibility due to a lack of training and the requirement of a caretaker to help and teach ICT use to disabled people. Hence, the government should enforce the policy that provides more training centres that are fully equipped with ICT facilities for disabled people. In addition, the government should also be responsible for finding appropriate trainers with the right set of skills to expose disabled people to the world of ICT. Experienced trainers are highly recommended to ensure the effectiveness of the training process. By providing the appropriate training, the government actually creates opportunities for disabled people to receive education and knowledge, apply for jobs and increase their quality of life. According to the International Labor Organization (ILO), disabled people will receive benefits and be able to work if the appropriate networks are provided for them to learn ICT skills with assistive technology.

## **5.2 Practical recommendations**

Based on the results of this study, government infrastructure and the cost of assistive technology are strongly regarded as having significant impacts on the digital divide issues of disabled people. This means that every government agency and manufacturer (privatization agency) should work together to deliver high-quality services and products to people and to ensure the suitability of products in assisting disabled people and less fortunate people. Lack of cooperation between the government and manufacturers might bring the effort to help disabled people to a halt, which would result in a waste of energy, money and resources. The initial stage in managing this situation involves empowerment through the law and regulations by the government to control the production of assistive technology and to require every manufacturer to follow the restrictions and requirements. Furthermore, manufacturers should provide after-sale services to their disabled customers to help them use the technology tools

appropriately and correctly. Accordingly, the government should also give full attention to providing facilitators or trainers to train disabled people on technology use without any extra charge.

This study also suggests an awareness of the importance of technology to disabled people. The results show that lack of knowledge of assistive technology affects and restrains disabled people from using technology. Through an awareness campaign, disabled people might be able to receive the required ICT knowledge, and this campaign should be held in both urban and rural areas, with more priority to communities in rural areas because they have greater accessibility issues. Last, it is important to emphasize that hard work and good cooperation between manufacturers (or privatization agencies) and government will bridge the digital divide for disabled people. This in turn will place the government in the international arena along with other welfare countries that give equal services to all citizens.

## 6.0 Conclusions

In reference to the findings of this study, this study's aim was to investigate the issues of the digital divide among disabled people by employing a quantitative method. Prior to the analysis, the conceptual framework formed was based on a literature review, an underpinning theory and previous studies. The digital divide issues among disabled people in Malaysia are often overlooked; however, they have been regarded as worldwide issues. These issues have been less discussed by the people. As a result, this study aspired to find the link and relationship between government initiatives and assistive technology regarding the digital divide. The variables and conceptual framework model were analysed using SEM through PLS software.

The validity and reliability of the framework were tested. The findings of this study contribute to improving our understanding of the digital divide phenomenon by examining and establishing a conceptual research model linking all the variables relating to government initiatives and assistive technology. The research model was then validated and found to be reliable by analysing the structural relationships and its contribution to the framework to ensure maximum reliability. To conclude, in order to bridge the digital divide, it is important not to overlook the effects of government initiatives and assistive technology.

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## Supporting Information

Table S1: *Population of the Disabled People in Kedah*

District	Number of Disabled People
1. Bandar Baharu	990
2. Baling	2051
3. Kubang Pasu	2531
4. Kulim	3366
5. Kuala Muda	6688
6. Kota Setar	3315
7. Pulau Langkawi	863
8. Padang Terap	946
9. Pendang	978
10. Pokok Sena	646
11. Sik	1185
12. Yan	789
TOTAL	24348

Sources: (<http://www.jkm.kedah.gov.my>, 2013)

Table S2: *Sampling Based on Six Districts in Kedah*

District	Number of Disabled People
1. Bandar Baharu	990
2. Kubang Pasu	2513
3. Kuala Muda	6688
4. Pulau Langkawi	863
5. Pendang	978
6. Sik	1185
TOTAL	13217

Table S3: *Sampling Size*

District	Population	Sample Size	Required Sample for Each States
Bandar Baharu	990	400	30
Kubang Pasu	2513		76
Kuala Muda	6688		202
Pulau Langkawi	863		26
Pendang	978		30
Sik	1185		36
TOTAL	13217		400

Required Sample for Each District (A)  $A = \text{Population in Each District} / \text{Total Population} * 400$

# Online Oppositions in General Elections in Malaysia

Aria Hajjafari<sup>a\*</sup>, Wan Asna Wan Mohd.Nor<sup>b</sup>, Faridah Jaafar<sup>c</sup>

<sup>abc</sup>Political Science Section, School of Distance Education, Universiti Sains Malaysia,  
11800, Pulau Pinang, Malaysia

Email: [aria.hajjafari@yahoo.co.uk](mailto:aria.hajjafari@yahoo.co.uk)

## Abstract

This article evaluates the impact of the Internet on Malaysia's political environment and how new media contribute to the development of democracy in the country. In Malaysia, while the opposition parties had a small share of mainstream media, they were able to sway the hearts of Malaysian voters through the use of the Internet and alternative media. The method of data collection employed in this research involves thorough in-depth interviews with Malaysian informants who are directly or indirectly related to the media. The results show that the effects of new media have enabled opposition parties to make a spectacular electoral gain. Initially, the paper assesses the observations made by the international institutions about the freedom of expression and also evaluates the influence of the Internet on the democracy in Malaysia which caused the opposition coalition, Pakatan Harapan to emerge as winners which marks an unexpected comeback not only for Tun Mahathir Mohamad but also for democracy.

**Keywords:** Democracy, Election, Internet, Freedom of speech, Malaysia.

## 1. Introduction

In today's borderless world, the Internet not only has become a vital part of the democratic process (Wilhelm, 2000) also is known as an important instigator in enhancing democracy (Dahlberg, 2001). Additionally, the impact of online political content on politics is questioned since the Internet can be utilised to create opportunities to spread political information, especially during elections which have received much attention from the scholars (George, 2006; Sani and Zengeni, 2010; Leong, 2015; Tan, 2018; Chin and Welsh, 2018). However, international institutions such as Freedom House (2018) and Reporters without borders (2018) recently reported a negative growth in the democratic process due to the criticality of media freedom in Malaysia. But, a regular flow of information through critical and independent websites has not only caused the previous government in failing to control the spread of political information, but a new life was also given to the oppositions to mobilise pro-oppositions and influence the hearts of Malaysian voters during the general election through the use of blogs (12th General election), news websites, Facebook (13th General Election), and WhatsApp (14th General Election). The Internet and social media played the main role in influencing Malaysian voters in the historical 14th general election which enabled Malaysia to experience a political system transition towards democracy (Tan, 2018). While this article does not claim to represent a definitive and comprehensive overview of GE14, we nevertheless hope that evaluate the impact of the Internet in the 14th Malaysia's general election which caused the opposition coalition, Pakatan Harapan to emerge as winners which marks an unexpected comeback not only for Tun Mahathir Mohamad but also for democracy.

## 1. Internet and Democracy

With the evolution of Information Technology (IT), the connection between the development of democracy and IT was identified as an important niche among scholars which can potentially force the breakdown of political control in authoritarian systems (Kalathil and Boas, 2003; Leong, 2015; Ross, 2018). In other words, the Internet has played an increasingly important role in political changes through mobile phones, broadcasting on Facebook, and smart phones which will likely the acceleration in creating new opportunities for people to declare them freely, even under authoritarian regimes. In turn, Freedom House (2016), an independent watchdog organization in the annual survey, states that global democracy is in the “decade of decline”. In 2017, the basic and main principles containing guarantees of free and fair elections, the rights of minorities, freedom of the press, and the rule of law came under assault and pressure around the world. In addition, 71% of countries in the world suffered net declines in political rights and civil liberties. New reports have highlighted that 113 countries have faced a net decline while only 62 countries have experienced a net improvement since 2006 (Freedom House, 2018). Furthermore, while Freedom in the World (Table of Country Scores) in 2018 located the number of electoral democracies at 116 out of 195 that thoughtfully the number of countries designated as Free stands at 88. Statistics indicated that the number of countries which qualified as Partly Free stands at 58(30%) which shows the number of Partly Free countries reduced by only one country from the previous year. A total of 49 countries were deemed Not Free (25%) which shows that the number of Not Free countries did not change from last year (Freedom House, 2018).

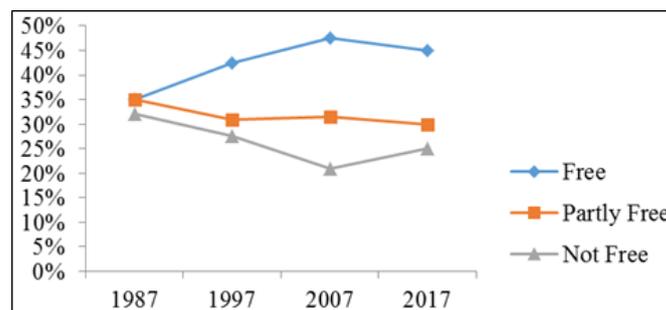


Figure 1: Freedom in the Balance, 1998-2017 (Freedom House, 2018)

Figure 1 shows that despite the years of brilliant growth of freedom and its achievements, the outcomes show that the share of free countries has declined over the past decade while the share of Not Free countries has increased. Also, according to the Economist Intelligence Unit (2017), the average regional score in the media freedom ranking of Asia is 5.5, and also its average ranking is 79.4. Many Asian governments and powerful political and business interests utilize defamation and slander regulations and also related criminal laws to punish criticisms in the media, clamping down on critical commentary on social media. The increasing pressure on social media platforms is worrying, given the lack of independent reporting from the mainstream press in these countries. Moreover, The Human Development Report (2016) points out to voice and participation and believes those are both a means and an end. In fact, participatory democracy is much wider than a voting process. According to the Economist Intelligence Unit (EIU) (2017), the condition and requirement of holding free and fair competitive elections and also satisfying and gratification related features of political freedom are obviously the sine qua non of democracy which is not possible without the fundamental human rights and freedoms such as freedom of speech, expression and of the press; freedom of religion; freedom of assembly, and association; and etc.

## 2. Malaysia as a Case Study

Although Malaysia has been ruled by the same coalition of parties since the country's independence in 1957 (Hajjafari, 2013), the historical 14th General Election has witnessed the loss of the ruling party after 61 years (Malaysiakini Team, 2018). Looking back, considering the rapid development of Internet in 1995 and basing a variety of programs and policies in connection to domestic digital divides to support widespread information and communication technology (ICT) implementation among people, the Malaysian government introduced a Bill of Guarantees that comprised a promise as a pledge to not censor the Internet to attract companies to this high-tech hub (Smeltzer, 2008). In turn, the sacking and following arrest of Anwar and denied access to the traditional media led increasing numbers of Malaysian people to turn to the web in protest which caused the internet not only became the main way of communication for the opposition parties but also increasingly a source of news for Malays (Abbott, 2001). Furthermore, Koh (2008) believe that the 1998 Communications and Multimedia Bill is known as the greatest gift given by the government to the Malaysian civil society in ensuring there would be no Internet censorship. This has caused a spike in the number of Internet users in the country from 467,000 in 1998 to 24.5 million in 2017 (Povera, 2018). It is important to note that the role of the Internet in countries with democratic manners can be completely dissimilar from its role in less democratic countries. In the countries where freedom of expression is not guaranteed and the government controls the mainstream media, the Internet can be a catalyst for dramatic consequences and play a crucial role (Gong, 2011). In fact, a range of critical websites such as Malaysiakini, Aliran, Merdeka Review, Malaysia Today, The Free Media have taken advantage of the Internet law in the MSC Malaysia's Bill of Guarantee that there should be no censorship of the Internet (Hajjafari, Nor, and Jaafar, 2018). In addition, the increased number of Internet users has promoted the appearance of blogs (George, 2007) which had a significant impact in mobilizing thoughts (Drezner and Farrel, 2007), especially the mobilization of Malaysian citizens to participate in mass rallies through the news and dissemination of information on rallies such as the BERSIH Rally (Pandi, 2011). In addition, the influence of political candidates' blogs before the general election had a significant impact in the election results in 2008. The investigations show that fifty-seven of the candidates had made blogs prior to the general election where a quarter of them were incumbents. While more than two-thirds of bloggers won a parliamentary seat in the general election, 77 percent of the blogs were owned by candidates from the opposition (Gong, 2011). In fact, the Internet opens up a space for the Malaysian people to deliberate political issues and provide opportunities for the political opposition to influence and control the election outcome. On the other hand, Daim Zainuddin as the former Finance Minister pointed out to two reasons why the BN lost in the 2008 general election. First, ruling party' leaders, instead of directing their efforts toward a large stake in the election outcome, were overconfidence due to a big win in the 2004 election and second, the general election was held at the wrong time. In fact, the government still did not solve or end their difficulties as sensitive issues such as "the Hindraf riot case on demolition of Hindu temples and marginalization of Indian minority, Bersih demands and rallies on free and fair election, V.K. Lingam tape on judicial selection scandal, and increase of essential goods prices" (Sani and Zengeni, 2010. p.2). Although BN returned to power in the 2008 general election, they experienced one of the worst election results in the coalition's history as not only the opposition won 82 seats in the 222-seat Dewan Rakyat but also attain control of five state governments. The Pakatan Rakyat won 36.9% of the parliamentary seats while BN only succeeded in securing the remaining 140 seats or 63.1% (The Malaysian Insider, 2009). In other words, the opposition groups went online and efficiently utilized blogs, news portals, and YouTube to obtain and win the hearts and minds of the youth during general election which was an unprecedented political development in the political history of Malaysia (Yangyue,

2014). In the 2013 election, BN had made a competitive position and strong inroads into the social media. During the 2008 General Election, ruling parties and opposition leaders only used YouTube as their only social media platform yet, the 2013 general election witnessed an increase in the use of social media where leaders of both parties exploited and joined social media platforms such as Facebook and Twitter (Gomez, 2014). However, the results show that the ruling party became weaker compared to the 2008 election and the opposition parties were able to deny the ruling BN a two-thirds majority in Parliament in both the 2008 and 2013 elections (Noh, 2014). Sani (2014) states that the 2013 general election was historically important because the BN as ruling party won with a slightly decreased majority compared to the 12th general election in 2008 and unexpectedly lost the popular votes to Pakatan Rakyat for the first time since 1969. In fact, similar to what happened in the 12th general election, social media in the 13th general election is known as one of the major and main contributors to the result that was once more controlled by the Pakatan Rakyat. In other words, Malaysian youths as the main users of social media in the 13th general election (GE13) of 2013 had an important and significant role because they accounted for half of the voters totalling 13.3 million (Sani, 2014). On the other hand, compared to GE12 and GE13, BN's social media strategy has improved in Malaysia's 14th general election and managed "far savvier campaigns featuring viral videos, influencers, and trending slogans like #Negarakru (a play on Negaraku) and #Hebatkan Negaraku (Make My Country Great)" but were unable to convince enough voters. In fact, the dissemination of corruption information about the 1MDB scandal in the PH's social media campaign and the mobilization of people support for good governance citizens of Malaysia to demand transparency from the government (Abdullah and Anuar, 2018). A majority of scholars believed the effective function of social media in determining the winners in Malaysia's 14th general election (Capri, 2018; Abdullah and Anuar, 2018; Tan, 2018; Welsh, 2018). Capri (2018) points out to Malaysian smart phone penetration rate which is over 75%, with over 40% of the country's 15 million voters under the age of forty and believes these "digital natives" receive their news almost exclusively via social media. According to The Diplomat, Malaysia's 14th general election campaigns experienced the social media's power as an excelled space and also as an alternative hue which introduced it as an effective tool and a new tactic to reach out to first-time and young voters. Furthermore, social media has allowed political parties to cast their election messaging nets further. In other words, through social media, oppositions have been able to better target coastal belts, especially in semi-rural areas which now enjoy better internet coverage compared with the 2013 general election. Most importantly, it allows silent voters to remain informed while exercising covert support for chosen parties and candidates (Abdullah and Anuar, 2018). In turn, the role of social media especially WhatsApp has been so significant in the 2018 general election which was known as the preferred medium of communication in dishing out political news and views on the general election. According to Zaidel Baharuddin as Barisan Nasional Youth executive secretary, the biggest challenge with WhatsApp is that there are no application programming interfaces (APIs) that political strategists can use for analysis because its communications are encrypted. This is the reason why Zaidel believes that the 2018 election is known as "encrypted election". He quoted: "Even if we have access to WhatsApp, we still can't gauge the sentiment of the public. We wouldn't know what is shared among Malaysians because WhatsApp is encrypted from end-to-end" (Tan, 2018). Chin and Welsh (2018) state that in 14th General Election Malaysia which labelled as "Malaysia's WhatsApp" election, social media not only allows Malaysians in the rural and semi-rural to receive further information as alternative news nationwide but also allowed for even greater geographic inclusion. In addition, Facebook was known as the central place to see images of Mahathir at rallies and watch his speeches live.

### **3. Methodology**

This study is a broad qualitative research which involves mainly interviews that took place from October 2017 to November 2018. To provide more nuance and context to the research, a textual analysis of primary and secondary sources counting blog-sites, newspaper articles, speeches, interviews, and other public documents made by politicians and media practitioners was also conducted, to answer the why and how questions (Rubin, et al., 2010) and realize the respondents' experience, knowledge and viewpoint which are known as the core of the research (Lindlof and Taylor, 2011). The selection of the respondents was based on the researcher's observations of their media use or their reputations as Net-savvy communicators. In addition, the selected interviewees had the relevant source of knowledge because of their expertise, opinion or knowledge in a skill or discipline or involvement in a scene or critical occasions. The snowball sampling was utilized by inquiring the interviewees to recommend other potential respondents. The researcher utilized partially-structured interviews as the objective was to realize the respondents' structure of sense and views. Furthermore, semi-structured interviews provided a framework for the researcher and respondents, but permitted the freedom to investigate and explore new areas. Finally, the interviews were recorded, transcribed and analyzed. The researcher recognized the key elements and recurring subjects in the data, and categorized them.

### **4. Findings**

Based on the findings of the study, the interviewees about effective use of the internet pointed out to mobilize the public to participate in rallies to promoting the democracy in Malaysia. They believed that not only Internet caused to access people to more knowledge and information especially political information which enable people to monitoring the governments especially through social media but also caused to much easier to have political participation in the country. In addition, they believed that the target of the online media was urban areas where access to internet and connections through social media is more common such as Penang, Johor and KL. On the contrary, the interviewees indicated to propaganda in the country. They mentioned that there is a lot of information in new media where sometimes the people are being confused against these information and truth of it. Furthermore, the vast majority of interviewees attention has focused on WhatsApp as one of the important application on mobile and computers that used as a tool to mobilize people to send up political messages during elections events. Moreover, the interviewees pointed out to the dissemination of corruption information about the 1MDB scandal in new media as the most important issues which largely ignored or denied by traditional media. In addition, some of them emphasized to the emergence of the two coalition party system in Malaysia, where Malaysians now have an alternative to select either BN or PR to be the government. They believed that this will bring further democratization in the country when both parties represent the interest of all segments of society.

### **5. Discussion**

This article evaluated how new media contribute to the development of democracy which caused to end the domination of the ruling party in Malaysia. The results confirm that the Internet played an important role in political changes in Malaysia which create new opportunities for Malaysians to declare them freely. Although international institutions such as Freedom House and Reporters without Borders have been pessimistic in their recent reports, permanent information flow through of critical and independent websites caused the

government to fail in controlling the communication channels which enabled the oppositions to successfully mobilize pro-oppositions. Pakatan Harapan as the main opposition coalition influenced and mobilized the voters in the 2008 general election through blogs, news websites and SMS messages as alternative media and while oppositions had a small share of mainstream media which was controlled by ruling parties in the 2013 general elections, Facebook played an essential role for them and also as the main platform for Malaysians to seek opinions and news. In the 14th General Election WhatsApp and Facebook show how social media, in particular, had dished out political news and views in the general elections.

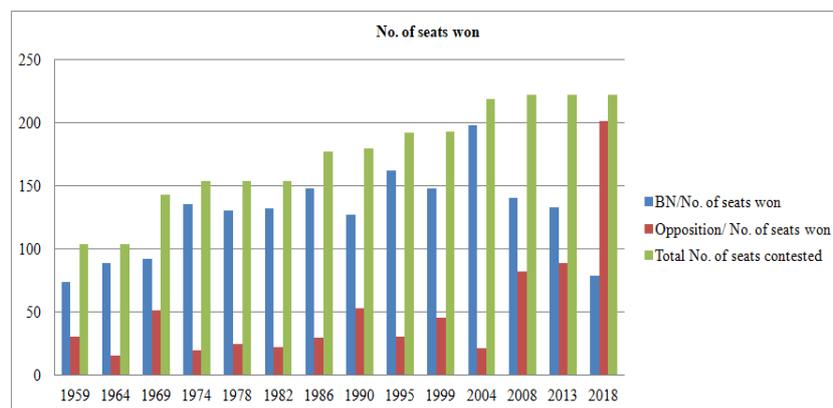


Figure 2: Performance of contesting political parties from 1959-2018 general elections

According to Figure 2, the results confirm that the 2018 Malaysian general election campaigns experienced the social media's power as an excelled space and also as an alternative hue which introduced it as an effective tool and a new tactic to reach out to first-time and young voters. Malaysia's 14th general election campaigns experienced the social media's power as an excelled space and also as an alternative hue which introduced it as an effective tool and a new tactic to reach out to first-time and young voters. Furthermore, social media has allowed political parties to cast their election messaging nets further, for example, the dissemination of corruption information about the 1MDB scandal. In other words, through social media, oppositions have been able to better target coastal belts, especially in semi-rural areas which now enjoy better internet coverage compared with the 2013 general election. Most importantly, it allows silent voters to remain informed while exercising covert support for chosen parties and candidates.

## 6. Conclusion

In conclusion, based on the arguments presented above, the 14th General Election will be regarded a watershed moment in political history of Malaysia when BN as a ruling coalition lost its majority in the parliament and only retained two of the 12 state governments contested. According to the findings, the social media has allowed political parties to cast their election messaging nets further. In other words, through social media, oppositions have been able to better target coastal belts, especially in semi-rural areas which now enjoy better internet coverage compared with the 2013 general election. Furthermore, the social media's power as an alternative and effective tool caused to reach out to first-time and young voters in 2018 General Election. Most importantly, it allows silent voters to remain informed while exercising covert support for chosen parties and candidates. In striking contrast to previous elections, accessing information and using it was a significant factor in the elections which not only caused Malaysians to experience a better understanding of democracy but also has prompted the end to UMNO's long rule that has been in power for the past 60 years.

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# Ciri-ciri Keselamatan Kediaman Berhampiran Lebuhraya Baru Pantai (NPE)

## *Residential Safety Features Near New Pantai Expressway (NPE)*

Marzilla M<sup>a\*</sup>, Rosniza Aznie C R<sup>a,b</sup> & Zaini S<sup>a,b</sup>

<sup>a</sup>Program Pengurusan Persekitaran, Fakulti Sains Sosial dan Kemanusiaan, Universiti Kebangsaan Malaysia

<sup>b</sup>Program Geografi, Pusat Sosial, Pembangunan dan Persekitaran (SEEDS), Fakulti Sains Sosial dan Kemanusiaan, Universiti Kebangsaan Malaysia.

Email: [marzilla\\_2302@yahoo.com](mailto:marzilla_2302@yahoo.com)

### Abstrak

Kawasan perumahan Seksyen Petaling Jaya Selatan 2 (Seksyen PJS 2) menjadi sasaran kegiatan jenayah pecah rumah. Masalah jenayah pecah rumah merupakan salah satu masalah sosial yang boleh mengancam keselamatan di kediaman. Penduduk setempat terdedah kepada risiko menjadi sasaran mangsa penjenayah pecah rumah dan kecurian disebabkan oleh kemudahan akses yang disediakan oleh Lebuhraya Baru Pantai (NPE) telah memudahkan pergerakan penjenayah. Kajian ini bertujuan untuk mengenal pasti ciri-ciri keselamatan kediaman yang dilakukan oleh penduduk yang tinggal berhampiran Lebuhraya Baru Pantai (NPE) agar terselamat daripada ancaman jenayah pecah rumah dan kecurian. Data yang diperolehi daripada borang soal selidik dan di analisis menggunakan statistik deskriptif iaitu frekuensi dan peratusan. Seramai 357 responden yang terdiri daripada penduduk Seksyen PJS 2 dipilih secara rawak. Masalah pecah rumah menimbulkan pelbagai rasa kebimbangan dalam kalangan penduduk setempat yang boleh mengugat kualiti hidup mereka. Kebimbangan penduduk setempat terhadap masalah pecah rumah dan kecurian menyebabkan mereka mengambil inisiatif sendiri iaitu meningkatkan ciri-ciri keselamatan di rumah seperti pagar atau tembok sekeliling rumah, lampu halaman, pintu dan tingkap bergril, CCTV dan loceng keselamatan agar terselamat daripada ancaman jenayah. Diharap dengan kajian ini dapat meningkatkan kesedaran kepada penduduk setempat dan Pihak Berkuasa Tempatan mengenai keseriusan masalah jenayah pecah rumah yang berlaku di kawasan kediaman ini agar tindakan pencegahan jenayah pecah rumah dapat diambil secara menyeluruh supaya kawasan ini menjadi perumahan bebas jenayah.

**Kata kunci:** Jenayah; Keselamatan; Lebuhraya.

### Abstract

*The residential area of Seksyen Petaling Jaya Selatan 2 (Seksyen PJS 2) become the target of housebreaking criminal activity. This crime is one of the social problems that could affect the residential safety. Those local people are exposed to the risk of being the housebreaking target and theft due to the facilities access provided by the New Pantai Expressway (NPE) that makes the criminal movement easier. This research is to identify safety resident criteria made by the resident that lives within the area of New Pantai Expressway (NPE) to be safe from the housebreaking threat and theft. The data obtained form the questionnaire will be analyzed using descriptive statistic includes frequency and percentage. A number of 357 respondent that consist of the Seksyen PJS 2 resident were chosen randomly. The housebreaking issue raise*

*the concerns within the residents that could affect their life quality. The residents concern towards this issue make them to their own initiative to improve the home security includes the house fence or wall surrounds the house, street light, door and grinding window, CCTV and house alarm so that to ensure its safeties against crime. This research will be used to improve the residents awareness and Local Authorities regarding the seriousness of the housebreaking issue that occurs in the resident area so that the prevention of housebreaking could be taken as a whole to make this area crime free.*

**Keywords:** *Crime; Safety; Highway.*

## **1. Pengenalan**

Aspek keselamatan di kawasan kediaman di Seksyen Petaling Jaya Selatan (PJS) 2 merupakan elemen penting dalam menjamin kualiti kehidupan penduduk. Masalah jenayah pecah rumah merupakan salah satu masalah sosial yang boleh mengancam keselamatan di kediaman. Berdasarkan statistik dari Ibu Pejabat Polis Diraja Malaysia (2018), trend indeks jenayah di Seksyen PJS 2 bagi tempoh 2005-2018, jenayah harta benda sentiasa melebihi jenayah kekerasan. Pada tahun 2018, sebanyak 415 kes jenayah harta benda dilaporkan berbanding 148 kes jenayah kekerasan dan ia dipengaruhi oleh pelbagai faktor. Masalah ini perlu dititikberatkan kerana ia melibatkan kerugian yang banyak. Namun, demikian tidak dapat dinafikan bahawa masalah jenayah pecah rumah berkait rapat dengan pembinaan Lebuhraya Baru Pantai (NPE).

Kawasan perumahan Seksyen Petaling Jaya Selatan 2 (Seksyen PJS 2) menjadi sasaran kegiatan jenayah pecah rumah. Penduduk setempat terdedah kepada risiko menjadi sasaran mangsa penjenayah pecah rumah disebabkan oleh kemudahan akses yang disediakan oleh Lebuhraya Baru Pantai (NPE) telah memudahkan pergerakan penjenayah. Masalah pecah rumah menjejaskan kualiti kehidupan penduduk setempat dan seterusnya mempengaruhi kehidupan fizikal dan emosional mereka. Masalah ini telah mengakibatkan tercetusnya perasaan sering berasa bimbang, susah hati, sering berasa tidak selamat, takut dan sentiasa berwaspada. Kebimbangan penduduk terhadap jenayah pecah rumah menyebabkan masyarakat mengambil inisiatif sendiri iaitu meningkatkan ciri-ciri keselamatan di rumah seperti pagar atau tembok sekeliling rumah, lampu halaman, pintu dan tingkap bergiril, kamera litar tertutup (cctv) dan loceng keselamatan agar terselamat daripada ancaman jenayah. Oleh demikian, kajian ini bertujuan untuk mengenal pasti ciri-ciri keselamatan kediaman yang dilakukan oleh penduduk yang tinggal berhampiran Lebuhraya Baru Pantai (NPE) agar terselamat daripada ancaman jenayah pecah rumah dan kecurian. Diharap dengan kajian ini dapat meningkatkan kesedaran kepada penduduk setempat dan Pihak Berkuasa Tempatan mengenai keseriusan masalah jenayah pecah rumah yang berlaku di kawasan kediaman ini agar tindakan pencegahan jenayah pecah rumah dapat diambil secara menyeluruh supaya kawasan ini menjadi perumahan bebas jenayah.

## **2. Kajian lepas**

Lebuhraya memainkan peranan penting dalam kepesatan bandar yang sedang membangun agar trafik dapat berjalan dengan lancar. Kini, banyak lebuhraya bandar di bina berdekatan kawasan kediaman disebabkan oleh tuntutan pembangunan infrastruktur jalan untuk menampung peningkatan jumlah pengangkutan dan kemudahan aksesibiliti seperti Lebuhraya Baru Pantai, Lebuhraya Bertingkat Ampang-Kuala Lumpur dan Lebuhraya Duta-Ulu Kelang. Kawasan kediaman berdekatan dengan laluan lebuhraya berisiko untuk menjadi sasaran

penjenayah. Kebiasaannya, penjenayah melakukan jenayah di kawasan berhampiran dengan lebuh raya arteri utama (Fink, 1969). Secara umumnya, kemudahan akses menyumbang kepada peningkatan jenayah (Jeffery, 1990; Hennessy & Pallone, 1992). Kemudahan akses yang disediakan oleh sesebuah lebuh raya akan memudahkan pergerakan penjenayah untuk memerhati keadaan sekeliling kawasan kediaman tersebut dan melarikan diri. Walau bagaimanapun, ia bergantung kepada jarak antara laluan keluar masuk lebuh raya dan lokasi rumah. Jika lebuh raya dibina berhampiran dengan lokasi rumah tetapi lorong akses terdekat ke lebuh raya tersebut berada pada jarak yang jauh, maka impak kemudahnya dari rumah ke lebuh raya tersebut mungkin terhad dan secara tidak langsung kawasan tersebut kurang berlaku kejadian pecah rumah.

Jenayah didefinisikan sebagai sebarang perbuatan atau kesalahan yang membahayakan masyarakat dan boleh disabitkan kesalahannya di sisi undang-undang seperti hukuman denda atau penjara (Aslie, 1990). Jenayah pecah rumah merupakan salah satu kategori jenayah harta benda. Kamus Dewan Edisi keempat menyatakan bahawa jenayah pecah rumah merupakan tindakan seseorang sama ada secara individu atau berkumpulan yang memasuki rumah seseorang tanpa kebenaran untuk tujuan rompakan (DBP, 2019). Berdasarkan teori aktiviti harian, kejadian pecah rumah timbul apabila terdapatnya perhubungan antara wujud peluang dan membolehkan penjenayah bersedia untuk menghadapi situasi tersebut. Menurut Ekblom (1995), ia melibatkan tiga faktor utama iaitu sasaran mangsa, wujud peluang dan motivasi untuk melakukan jenayah. Kewujudan kombinasi tiga faktor tersebut di sesebuah kawasan kediaman memberikan peluang tinggi kepada penjenayah untuk bertindak (Jensen & Anderson, 2004).

Rumah merupakan salah satu keperluan asas manusia selain daripada makanan. Persekitaran yang terbina pada hari ini tidak hanya berfungsi sebagai tempat tinggal, tetapi juga merupakan keperluan asas manusia (Lawrence, 2004). Sesebuah rumah ditakrifkan sebagai pembangunan fizikal yang memberi tempat berlindung atau tempat berteduh bagi penggunaannya (Mokhtar, 2008). Perumahan sempurna akan memberi kesan positif manakala perumahan tidak sempurna akan memberi kesan negatif kepada kehidupan penghuninya. Hal ini kerana perumahan merupakan faktor penting yang menyumbang kepada kesejahteraan hidup secara keseluruhannya.

Kualiti perumahan bukan sahaja merangkumi aspek fizikal seperti lokasi, reka bentuk rumah, jenis rumah dan keselesaan penduduk, tetapi juga merangkumi aspek bukan fizikal iaitu sosioekonomi, penduduk setempat dan kadar jenayah (Bujang, 2010). Kajian masalah jenayah pecah rumah di kawasan kediaman telah menarik minat beberapa penyelidik untuk mengkajinya. Kajian kebimbangan masyarakat terhadap pelakuan jenayah telah dikaji oleh pengkaji lepas seperti Taylor dan Hale (1986), Ferraro dan LaGrange (1985), Warr (2000), dan Ranzijn et al. (2002). Sementara itu, terdapat juga beberapa kajian yang meneliti senario trend dan faktor peningkatan jenayah serta hubungkait trend peningkatan jenayah dengan situasi ekonomi, pengangguran, urbanisasi dan jenayah dari aspek bandar selamat (Mohd Reduan, 1990; Sidhu, 2005).

Masalah jenayah pecah rumah mempengaruhi emosional dan kehidupan fizikal masyarakatnya. Tumpuan penduduk tempatan terhadap persepsi dan rasa takut terhadap jenayah adalah tidak sama seperti tumpuan oleh pihak polis (Khan, 2015). Pihak polis lebih menfokuskan usaha-usaha terhadap mengurangkan jenayah dan secara faktanya, pihak polis berjaya mengurangkan indeks jenayah dalam tempoh masa tertentu. Manakala, kebimbangan masyarakat tertumpu kepada mesej jenayah yang disampaikan kepada mereka sama ada menerusi saluran media dan

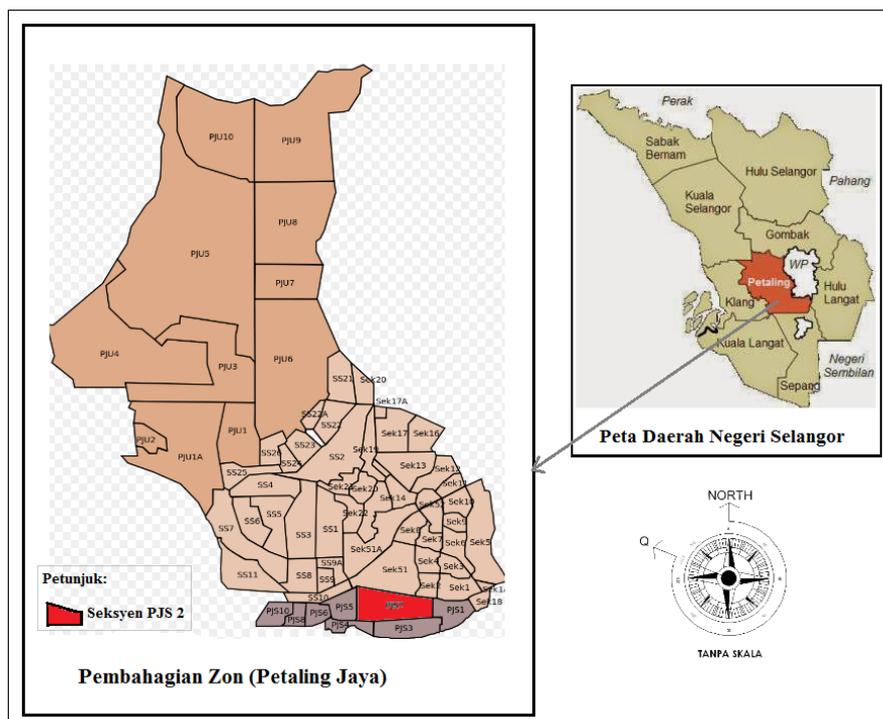
isyarat atau petunjuk yang kita terima daripada ruang atau persekitaran kediaman. Kebimbangan tersebut menjurus kepada rasa takut penghuni terhadap jenayah.

Keselamatan kediaman yang lebih terkawal adalah dilengkapi dengan ciri-ciri keselamatan seperti lampu di halaman rumah, rondaan keselamatan, sisten kawalan keselamatan, dan kamera litar tertutup (CCTV). Kajian oleh Tahir & Hussin (2012) menunjukkan bahawa kawalan keselamatan dalam bentuk pagar, tembok atau pengawal memberi kesan positif kepada perasaan selamat dan dilindungi.

### 3. Latar belakang kawasan kajian

Kawasan kajian ini ialah Seksyen Petaling Jaya Selatan 2 (PJS 2). Seksyen PJS 2 merupakan salah satu kawasan sensitif di sepanjang Lebuhraya NPE yang terdedah kepada masalah jenayah pecah rumah. Kawasan ini dipilih kerana kedudukan lokasinya berdekatan dengan laluan lebuhraya bandar iaitu Lebuhraya Baru Pantai (NPE). Laluan Lebuhraya NPE berdekatan dengan lokasi rumah seperti anggaran jarak minimum antara rumah teres di Jalan Dua dengan jajaran Lebuhraya NPE ialah 16.0 meter.

Seksyen PJS 2 adalah salah satu seksyen di Petaling Jaya Selatan yang termaju dan padat. Petaling Jaya Selatan merupakan salah sebuah mukim yang terletak di dalam negeri Selangor dan dalam pentadbiran Daerah Petaling (Rajah 1). Seksyen PJS 2 merangkumi tiga taman perumahan iaitu Taman Dato Harun, Taman Maju Jaya dan Taman Medan. Panjang jajaran Lebuhraya NPE yang dikaji ialah 1.65 kilometer daripada panjang keseluruhannya 19.6 kilometer dengan jarak zon impaknya ialah 900 meter iaitu dari jajaran Lebuhraya NPE ke kawasan perumahan Seksyen PJS 2. Pada tahun 2004 lebuhraya ini dibuka kepada lalu lintas. Disamping itu, kawasan ini juga mempunyai penduduk yang padat dan kawasan paling luas berbanding seksyen Petaling Jaya Selatan lain (iaitu seluas 412.66 ekar) dan diikuti oleh PJS 1 dan PJS 3 (iaitu masing-masing seluas 229.80 ekar) (MBPJ, 2017).



Rajah 1. Peta Seksyen PJS 2

#### **4. Metodologi**

Kajian ini menggunakan pendekatan kuantitatif iaitu menggunakan borang soal selidik. Data tersebut hanya diambil sekali sahaja sepanjang tempoh kajian ini dan tidak melibatkan tempoh masa yang panjang oleh pengkaji. Seramai 357 penghuni Seksyen PJS 2 telah dipilih secara rawak mudah untuk dijadikan responden. Dapatan kajian daripada borang soal selidik telah dianalisis dengan menggunakan perisian SPSS versi 22.0 untuk mendapatkan nilai kekerapan dan peratusan. Kajian ini menggunakan pendekatan kuantitatif iaitu dengan melibatkan borang soal selidik. Data tersebut hanya akan diambil sekali sahaja sepanjang tempoh kajian ini dan tidak melibatkan tempoh masa yang panjang oleh pengkaji. Seramai 357 orang sampel penghuni Seksyen Petaling Jaya Selatan 2 (PJS 2) yang tinggal berhampiran dengan jajaran Lebuhraya NPE telah dipilih secara rawak mudah untuk dijadikan responden. Dapatan kajian daripada borang soal selidik telah dianalisis dengan menggunakan perisian SPSS versi 22.0 untuk mendapatkan nilai frekuensi dan peratusan.

#### **5. Hasil kajian**

Bahagian ini membincangkan tentang persepsi penduduk setempat tentang masalah pecah rumah dan ciri-ciri keselamatan kediaman yang ada di rumah mereka.

##### **5.1 Persepsi penduduk setempat terhadap masalah pecah rumah**

Hasil kajian persepsi responden terhadap masalah pecah rumah di kawasan perumahan Seksyen PJS 2 mendapati bahawa sebanyak 23.2 peratus responden Setuju dan 58.8 peratus responden Sangat Setuju bahawa kediaman dan harta benda pemilik rumah (mereka) dalam keadaan tidak selamat daripada menjadi mangsa penjenayah pecah rumah. Hal ini memberi gambaran bahawa semakin kerap berlaku jenayah pecah rumah, semakin tidak selamat harta benda pemilik rumah. Manakala terdapat sebanyak 10.6 peratus responden tidak setuju dan 7.3 peratus sangat tidak setuju bahawa kediaman dan harta benda mereka tidak selamat daripada menjadi sasaran penjenayah. Mereka berasa kediaman dan harta benda pemilik rumah (mereka) selamat mungkin kerana rumah mereka mempunyai ciri-ciri keselamatan dan tahap keselamatan di kawasan perumahan yang terjamin.

Seterusnya, terdapat sebanyak 52.1 peratus responden Sangat Setuju dan 23.5 peratus responden Setuju bahawa masalah ini menyebabkan responden berasa risau apabila hendak meninggalkan rumah terutama untuk tempoh masa yang lama. Keadaan persekitaran perumahan kurang selamat menyebabkan penduduk setempat berasa bimbang atau risau jika hendak meninggalkan rumah lama seperti balik kampung, bercuti dan bekerja di luar kawasan. Manakala sebanyak 10.4 peratus Sangat Tidak Setuju dan 14.0 peratus Tidak Setuju bahawa mereka risau apabila hendak meninggalkan rumah kerana mereka yakin dengan ciri-ciri keselamatan di rumah.

Masalah pecah rumah telah menyebabkan responden selalu berasa tidak selamat ketika bersendirian di rumah iaitu sebanyak 51.3 peratus responden Sangat Setuju dan 23.0 peratus responden Setuju dengan kenyataan itu. Perasaan tidak selamat tersebut ditonjolkan melalui memasang gril di pintu dan tingkap rumah dan sebagainya. Manakala 15.4 peratus responden Tidak Setuju dan 10.4 peratus responden Sangat Tidak Setuju bahawa impak masalah pecah rumah dari aspek keselamatan telah menyebabkan responden selalu berasa tidak selamat ketika bersendirian di rumah.

Persepsi responden tentang masalah pecah rumah yang terakhir ialah responden berasa curiga melihat kelibat orang luar yang tidak dikenali' iaitu mencatatkan sebanyak 41.7 peratus responden Sangat Bersetuju dan 23.2 peratus responden Setuju. Perkhidmatan dan kemudahan asas yang disediakan di kawasan perumahan ini menjadi tarikan kemasukan orang luar ke kawasan ini. Apabila terdapat orang luar yang tidak dikenali berada di kawasan perumahan tersebut telah menyebabkan penduduk terasa tahap keselamatan mereka terganggu dan hidup dalam keadaan tidak tenteram kerana sering berasa curiga. Namun, terdapat sebanyak 22.4 peratus responden Tidak Setuju dan 12.6 peratus responden Sangat Tidak Setuju bahawa mereka berasa curiga melihat kelibat orang yang tidak dikenali adalah impak daripada masalah pecah rumah.

Jelas menunjukkan bahawa masalah pecah rumah boleh mempengaruhi psikologi seseorang seperti sering berasa tidak selamat, bimbang dan curiga walaupun kadar jenayah pecah rumah mengalami penurunan sejak beberapa tahun kebelakangan ini.

## **5.2 Ciri-ciri keselamatan di kawasan kediaman**

Kebimbangan penduduk terhadap jenayah pecah rumah menyebabkan mereka mengambil inisiatif sendiri iaitu meningkatkan ciri-ciri keselamatan di rumah agar terselamat daripada ancaman jenayah.

### **a. Pagar atau tembok**

Rumah yang mempunyai pagar menutupi bahagian hadapan atau sisi halaman rumah dan pagar melindungi sekeliling kawasan rumah juga antara langkah keselamatan yang terbaik untuk mencegah kejadian pecah rumah. Hasil kajian mendapati 65.3 peratus sangat bersetuju dan 32.5 peratus bersetuju bahawa rumah mereka mempunyai pagar rumah atau tembok dapat mencegah kejadian pecah rumah berlaku. Kewujudan pagar dapat memberikan halangan terhadap penjenayah untuk melakukan aktiviti jenayah pecah rumah. Manakala responden selebihnya iaitu sebanyak 2.2 peratus menyatakan tidak bersetuju bahawa rumah mereka mempunyai pagar rumah atau tembok dapat mencegah kejadian pecah rumah berlaku.

Hasil pemerhatian di lapangan mendapati bahawa terdapat sebanyak 43 buah rumah daripada 51 buah rumah teres adalah mempunyai pagar dan selebihnya lapan buah rumah teres tidak berpagar. Manakala kawasan perumahan pangsapuri keseluruhannya mempunyai pagar. Sebaliknya kawasan perumahan Flat Taman Maju Jaya tidak mempunyai tembok atau pagar dibina di sekeliling kawasan perumahan tersebut. Kawasan perumahan yang tidak mempunyai pagar atau tembok akan memudahkan kerja penjenayah untuk memerhati keadaan sekeliling kawasan kediaman tersebut dan melarikan diri. Bagaimanapun, ia bergantung kepada keupayaan pagar tersebut untuk menghalang kejadian jenayah seperti jenis binaan, struktur binaan dan sebagainya.

### **b. Memasang lampu di halaman rumah**

Keadaan halaman rumah yang gelap memberi peluang terhadap rancangan penjenayah untuk menceroboh. Hasil kajian didapati setelah lebuhraya ini beroperasi terdapat sebanyak 61.1 peratus responden menyatakan mereka telah memasang lampu di halaman rumah sebagai langkah keselamatan yang terbaik bagi mencegah kejadian jenayah pecah rumah berlaku. Pemasangan lampu di kawasan depan pintu masuk dan pintu belakang rumah dapat menerangi

halaman rumah. Pencahayaan yang baik di halaman rumah dapat mengelakkan rumah daripada di pecah masuk. Bagaimanapun, masih terdapat sebanyak 38.9 peratus responden yang tidak memasang lampu di halaman rumah dengan alasan untuk mengelakkan daripada berlaku pembaziran tenaga elektrik dan membayar bil elektrik yang tinggi.

c. Pintu dan tingkap rumah bergril

Di samping itu, pintu dan tingkap rumah bergril dapat menjamin keselamatan rumah daripada dimasuki oleh penjenayah. Kebanyakan rumah sekarang sudah dilengkapi dengan gril (jeriji besi) pada pintu dan tingkap rumah. Hasil kajian menunjukkan bahawa terdapat sebanyak 328 buah rumah (91.9%) daripada keseluruhan rumah (357 buah) mempunyai gril pada pintu rumah dan sebanyak 86.3 peratus buah rumah mempunyai gril pada tingkap rumah setelah lebuhraya ini beroperasi. Keadaan pintu dan tingkap rumah yang bergril dapat melambatkan masa dan kerja-kerja penjenayah untuk memecah masuk melalui pintu atau tingkap rumah. Manakala terdapat sebanyak 8.1 peratus buah rumah tidak mempunyai gril pada pintu rumah dan 13.8 peratus buah rumah tidak mempunyai gril pada tingkap rumah. Keadaan pintu dan tingkap rumah tidak bergril memudahkan penjenayah untuk memecah masuk melalui pintu atau tingkap rumah.

d. Memasang CCTV

Penggunaan kamera litar tertutup (CCTV) pada masa kini bukan menjadi benda mewah tetapi dijadikan benda keperluan. Penggunaan CCTV di rumah dapat membantu meningkatkan keselamatan di kawasan kediaman mereka. Penggunaan CCTV di rumah dapat membantu mengawasi keadaan dan kegiatan di kawasan kediaman. Namun, hasil kajian menunjukkan bahawa hanya terdapat sebanyak 36.7 peratus rumah responden di Seksyen PJS 2 yang memasang CCTV di rumah selepas lebuhraya ini beroperasi. Hasil rakaman CCTV dapat dijadikan bukti jenayah yang berlaku. Oleh itu, rumah yang tidak memasang CCTV menjadi sasaran mangsa penjenayah pecah rumah. Bagaimanapun, terdapat sebanyak 63.3 peratus responden di Seksyen PJS 2 adalah tidak memasang CCTV di rumah mereka kerana ia memerlukan kos yang tinggi.

e. Memasang loceng keselamatan di rumah

Penggunaan loceng keselamatan atau sistem penggera juga memainkan peranan penting untuk mencegah masalah pecah rumah. Hasil kajian menunjukkan setelah lebuhraya ini beroperasi terdapat sebanyak 32.8 peratus rumah responden mempunyai alat penggera keselamatan berbanding sebanyak 67.2 peratus rumah responden masih tidak mempunyai alat penggera keselamatan. Lebih separuh rumah responden masih tidak mempunyai alat penggera keselamatan disebabkan faktor kewangan. Keadaan ini menyebabkan rumah mereka tidak dilindungi secukupnya dan menjadi sasaran mangsa penjenayah pecah rumah.

Ciri-ciri keselamatan di rumah penduduk di Seksyen PJS 2 adalah tinggi bagi pelaksanaan yang tidak memerlukan kos yang tinggi dalam melaksanakannya. Manakala, ciri-ciri keselamatan di rumah adalah rendah bagi penggunaan CCTV dan loceng keselamatan disebabkan ia memerlukan kos yang tinggi dalam melaksanakannya.

## 6. Kesimpulan

Masalah pecah rumah menimbulkan pelbagai rasa kebimbangan dalam kalangan penduduk setempat seperti harta benda tidak selamat, risau apabila hendak meninggalkan rumah untuk tempoh masa yang lama, selalu berasa tidak selamat tinggal di rumah dan curiga melihat kelibat orang tidak dikenali. Perasaan tidak selamat dan bimbang di kalangan penduduk terhadap masalah pecah rumah dan kecurian menyebabkan mereka mengambil inisiatif sendiri dengan cara meningkatkan ciri-ciri keselamatan di rumah seperti pagar atau tembok sekeliling rumah, lampu halaman, pintu dan tingkap bergril, CCTV dan loceng keselamatan agar terselamat daripada ancaman jenayah. Diharap dengan kajian ini dapat meningkatkan kesedaran kepada penduduk setempat dan Pihak Berkuasa Tempatan mengenai keseriusan masalah jenayah pecah rumah yang berlaku di kawasan kediaman ini agar tindakan pencegahan jenayah pecah rumah dapat diambil secara menyeluruh supaya kawasan ini menjadi perumahan bebas jenayah.

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# Positive Relationship and Well-being in Malaysian Multicultural Communities

Mitshel Lino<sup>a\*</sup> & Intan H.M. Hashim<sup>b</sup>

School of Social Sciences, Universiti Sains Malaysia. Penang – Malaysia.

Email: [mitshel.mitshel@gmail.com](mailto:mitshel.mitshel@gmail.com)

## Abstract

This paper presents a study on the positive relationship and well-being within multicultural and pluralistic local communities in Malaysia using a positive psychology lens. Participants were 163 undergraduates from a Malaysian public university, consisted of both males (41) and females (122) from diverse cultural backgrounds. The participants responded to an online survey consisted of open-ended qualitative questions on the positive relationship and well-being in multicultural communities. They generally reported positive relationships in their communities, whereby they described the people in the communities to be well-connected. Using the PERMA model of wellbeing, participants were asked to report aspects of wellbeing across positive emotions, engagement, relationship, meaning, and accomplishment. They generally reported a high level across these aspects. This study provides insights into Malaysians' relations with their multicultural communities and their well-being.

**Keywords:** Positive Multicultural Relationship; Relationship in Malaysian Community; Well-being in Malaysian Community.

## 1. Introduction

Malaysia is a heterogeneous society with a population comprises of multiple ethnicities, religions, languages, cultures, and others living and interacting in close-knitted communities (The National Department of Culture and Arts (JKKN), 2018). Interethnic relations have always been part of the national interest, which has sparked numerous studies. For instance, KAJIDATA Research (2017) conducted a nationwide survey to measure Malaysians' support for government initiatives, which included Malaysians' perspective in terms of culture, ethnicity, religion, education system, and patriotic value. The results indicated that Malaysians, in general, feel proud of their multi-ethnic and multi-cultural society (92.8%), and are respectful towards people of different ethnicities (96.9%).

However, despite positive assessment with regards to the multi-ethnic and multi-cultural society they live in, friendships and interactions among people of different ethnic groups remain low. Many Malaysians are inclined to maintain same-ethnic or in-group friendships (Lee, 2017). This phenomenon can be attributed to power dynamics due to racial, ethnic, gender, religious, and socio-economic status differences within close-knitted communities, which may create a gap between the in-group and out-group. The demographic composition may also play a role. For example, Malays living in rural areas may be less exposed to other ethnic groups; thus, having less opportunities and needs to develop close relationships with them (Ananthi Al Ramiah, Miles Hewstone and Ralf Wölfer, 2017) The combination of personal choice, religion, language, cultural differences, as well as the government interference

such political manipulation and preferential policies may widen the cultural gap of Malaysia's ethnic groups (Lee, 2017).

Such a contradiction in findings often requires a more comprehensive understanding of Malaysia's multicultural society that may not be fully accomplished through a quantitative study. A qualitative study is needed to examine the extent of interethnic relationships and their relations to people's well-being in local communities, which is conducted in the present study.

## **2. Positive Psychology, Positive Relationship, and Well-being**

Martin Seligman reintroduced positive psychology, aiming for a more balanced and well-rounded perspective to the problem-oriented approach by exploring people's strengths in addition to their weaknesses (Lopez and Gallagher, 2009; Snyder, Lopez and Pedrotti, 2011). He defined positive psychology as 'the scientific study of optimal human functioning that aims to discover and promote the factors that allow individuals and communities to thrive (Seligman and Csikszentmihalyi, 2000).

One of the vital ingredients of thriving is positive relationships. In order to establish a healthy relationship, it is imperative to address the needs and perspectives of others and oneself (Roffey, 2012). A positive relationship may only bring about authentic well-being when no party attempts to control the relationship for personal interest (Roffey, 2012), as well as to find suitable and ethical solutions to tensions that may arise from differences and unfamiliar cultural expressions (Kastel, 2012). In the present study, a positive relationship is operationally defined as the ability of the members of multiple cultural groups to have cordial bonds and a sense of connectedness with others. It is achieved through equal rights in decision making and the ability to respond ethically in the event of cultural conflict.

A positive relationship, in turn, contributes to sustainable happiness and leads to a sense of communal well-being. In positive psychology, subjective well-being has been defined as 'a person's cognitive and affective evaluations of his or her life' (Diener, Lucas and Oishi, 2002). It is related to various factors, such as social adjustment and social support (Larson, 1993), social well-being, social integration, social contribution, social coherence, social actualization, and social acceptance (Keyes, 1998). Well-being is one of the critical theories in positive psychology, with the five core features known as PERMA: (i) **P**ositive emotion, (ii) **E**ngagement (flow), (iii) **P**ositive **R**elationship, (iv) **M**eaning, and (v) **A**ccomplishment (Seligman, 2011). The present research utilizes PERMA to measure people's well-being in local multicultural communities.

## **3. Malaysian Communities**

According to Khairi and Mior Jamaluddin (2017), community-based peacebuilding should start from the grassroots level to ensure the authenticity of the public interest. In Malaysia, neighborhood associations or Rukun Tetangga (RT) was formed by the National Unity and Integration Department to encourage unity and harmony among the population in the local communities (Ahmad Farouk and Abu Bakar, 2007). The RT encourages neighborliness (Ahmad Sabri and Mohammad, 2016), fosters direct interaction, cooperation, builds trust among residents (Ahmad Farouk and Abu Bakar, 2007), and promotes unity (Khairi and Mior Jamaluddin, 2017).

Khairi and Mior Jamaluddin (2017) also conducted a study in RT from the Northern states in Malaysia, including Perlis, Kedah, Pulau Pinang, and Perak. Some of the common issues that threaten peace and harmony within an RT are racism, especially among younger generations and disrespect towards other religions. RT plays a vital role in fostering unity through conducting activities and being a mediator or negotiator in resolving conflict within their communities.

The study on RT roles provides a closer look at the incidence of multicultural relationships in local Malaysian communities. However, the data was mostly from the RT key players with few accounts from the residents. It also does not examine the positive relationship among residents and how such a relationship may contribute to their well-being.

#### 4. Research Objective

The present study aims to explore locals' experiences of positive relationships and well-being in diverse communities.

#### 5. Methods

Participants were 163 undergraduates from a public university in the northern region of Malaysia. They were Malaysians, 41 males, and 122 females, consisting of 83 ethnic Malay, 69 ethnic Chinese, nine ethnic Indian, and two ethnic 'others.' The majority of 124 participants were living in multicultural residence. Participants were recruited from a university-wide course through convenient sampling. All participants answered a bilingual English and Malay online survey through the course e-learning whereby an URL link was provided. The online survey consisted of demographic background and open-ended qualitative short questions (positive relationship and well-being items). The authors created the questions. Upon completion of the survey, the participants were given bonus marks as compensation. Participants' responses were analyzed based on the frequency and the topic of each question.

#### 6. Results

Most participants answered the open-ended questions in sentences. They did not explicitly answer the questions with "Yes," "Neutral," or "No" per se. For ease of presentation and summarization of responses, the authors utilized these terms to outline the trend of responses and later provided the qualitative details and verbatim of the responses.

The following table 1 indicates the frequency of participants' responses to their experience of positive relationship and well-being in multicultural communities in Malaysia.

Table 1: Summary of participants' responses to positive relationship questions

No.	Positive Relationship Questions	Frequencies		
		Yes	Neutral	No
1.	"Do you think people in your community are connected?"	141	9	13
2.	"Do you feel like you belong in your community?"	151	2	10
3.	"Do you see yourself as part of a bigger group?"	116	8	39
4.	"Are there any conflicts in your community? Are there intercultural conflicts? How did people in your community react? How were they managed/ resolved?"	35	12	116

From table 1, most participants reported that they had a positive relationship. The following indicated people's responses and sample transcripts to positive relationship questions. Four questions investigated the level of people's connectedness, their sense of belonging, their membership in a bigger group, and the conflict in the community.

#### Question 1: Connectedness

(141) Participants recalled the people in their communities were connected through shared activities, frequent interaction, or helping out each other. The minority (9) said "depends" or "sometimes" and (13) were not connected due to a busy schedule.

*"Yes, this is because they were involved in an organization or a club. Thus, we are frequently in touch. Besides, we are connected through Whatsapp group and Social Media."*

*"Well, I will say partially, the older people like above 45 years old are more connected to each other compared to the younger ones. Blame it on technology; everyone is so caught up with their social life on smartphones."*

*"We hardly interacted because we rarely meet people from other ethnicities as their number is too few."*

*"No, it is because I feel that everyone is busy with their academic and co-curricular activities; they hardly spend time to connect with others, especially those from other ethnicities."*

#### Question 2: Belonging

(151) Participants claimed that they belong to their communities through communal activities, shared concerns, and establishing a relationship. The rest (2) said "sometimes" or "not really," and (10) did not experience a sense of belonging in their communities due to a busy schedule or pre-occupation with personal gadgets.

*"Yes. I feel like a part of the community because they were concerned when I encountered difficulty."*

*"Yes, because they always included me in various community activities."*

*"Not really. I fall under the generation where technology has a major influence in my daily life, so I think I tend to be more occupied with my phone at all times."*

*"No, because I think we do not have much interaction with each other. We are always busy with our assignment or society activities."*

#### Question 3: Part of a bigger group

(116) Many participants saw themselves as part of a bigger group in their communities because they mainly perceived their neighborhood consisted of people from a similar ethnic group. The remaining (8) thought they "need to adapt" or "unsure" and (39) did not see themselves as part of a bigger group.

*"Yes, I would say that the region consists of the majority of ethnic Malay. Thus, I feel that this is a big group, but other ethnic groups have the freedom to interact (with each other)"*

*"No, I would prefer to be in a small group or being alone."*

#### Question 4: Conflict in communities

Only (35) participants reported that they had witnessed conflicts in their communities, but only (15) of them said that there were cultural conflicts. The remaining (9) were conflicts not related to cultural issues, and (11) conflicts, without any description of the type of disputes, were resolved. Only (12) participants occasionally witnessed a disagreement, while most of the participants (116) had never encountered any conflict.

*"Intercultural conflict must have existed, but we try to be open-minded and understanding towards others."*

*"Conflict within the community must have existed but there was no element of culture; it was conflict related to the trash disposal and others. The neighborhood community is usually apt in taking actions and solving the problems."*

*“There are rarely any conflicts happened. However, if the conflicts happened, people try to calm down first and try not to abuse others' cultural practices. After that, they will try to seek solutions together.”*

Table 2: Summary of participants' responses to well-being questions

No.	Well-being Questions	Frequencies		
		Yes	Neutral	No
1.	“How do you generally feel? Do you feel happy?”	150	7	6
2.	“Are you actively engaged in intercultural activities?”	105	18	41
3.	“Do you have positive relationships with people from a diverse cultural background in your community?”	154	4	5
4.	“Do you think your life is meaningful?”	155	4	3
5.	“Do you feel that you have achieved something in your life?”	92	44	27

Based on table 2, most participants generally reported a high level of well-being. The following indicates the participants' responses and sample transcripts to the well-being questions. Five questions were presented to inquire about well-being based on PERMA: Positive emotion, Engagement, Relationships, Meaning, and Accomplishment.

### Question 1: Positive Emotion

The majority of (150) participants reported that they felt happy because of living in harmonious, helpful, respectful, and conflict-free communities. The minority (7) said that they felt “normal” or “neutral” as long as they did not negatively affect others in their community, while (6) were unhappy without stating any reason.

*“Generally, I'm happy because I was introduced to various ethnicities and cultures.”*

*“Yes, I feel very happy because the members in my community are kind and helpful towards one another.”*

*“Happy because we do not practice racist attitude and prejudice.”*

*“(I'm) not happy, but (I do not) hurt others' feelings.”*

### Question 2: Engagement

(105) Participants had engaged in intercultural activities, such as visiting and celebrating different cultural festivals. Some of them (18) was only involved indirectly by sending wishes or gifting food. The rest (41) were not involved in those activities due to a lack of intercultural activities or invitation to celebrate cultural festivals from other ethnic groups. The latter group of participants may remain passive observers of the celebrations.

*“Yes, as long as it does not clash with (my) religious values.”*

*“Yes, during the cultural festival seasons, they will share festive foods with us and sometimes we will visit their home to celebrate with them.”*

*“I'm not directly involved, but usually, I will give a celebration wishes and send festive food to my neighbors.”*

*“No, because there are no intercultural activities as I know. Therefore, I do not actively engage.”*

### Question 3: Relationship

(154) Participants had a positive relationship with people of different cultural backgrounds in the communities. They expressed a preference to mingle with people of diverse cultural backgrounds or frequent engagement in university activities that exposed them to various people. Meanwhile, (4) participants said "hardly had the opportunity to mingle with others," or just an average relationship with others. The rest (5) reported “no” due to some undisclosed reason or lack of diversity in the population.

*"Yes, we have a positive relationship with each other. The people in the community always respect and understand each other's culture, and we are living in a very peaceful environment."*

*"Yes, to me, they are unique because we share different opinions and ideas."*

*"It's a normal relationship; we are not actively (involved)."*

*"No, because there are not many (people from) various cultural backgrounds except for ethnic Malay."*

#### Question 4: Meaning

(155) Participants thought their lives were meaningful resulted from having loving friends and family, as well as living in diverse communities. (4) Participants said "depends" or "unsure" while (3) participants felt that their life is not meaningful.

*"Yes, as a human being, we feel our life is meaningful when others, such as family, love us. I also appreciate that I'm living in a peaceful country without war and discrimination."*

*"Yes, I feel that life is meaningful if I can respect other cultural groups."*

*"I am 23, and all I can do is study so, for now, nope, at least not yet. I'll find a purpose when I can do so."*

#### Question 5: Accomplishment

Only (92) participants responded that they had accomplished something in their lives. Many (44) said that they are on their way to achieving something in their lives, as they are still university students. The rest (27) perceived that they had not achieved anything in life.

*"Yes, I achieved my dreams that I want to study in (this university). However, there are still many things that I wish to achieve in the future."*

*"Better things are yet to come. However, I am grateful for what I have achieved so far."*

*"I have not successfully accomplished my goal in life.."*

## 7. Discussion

The present study provides some exploration and insights into the positive relationship and well-being of Malaysian university students. They were assessed based on the operational definition of positive relationship and PERMA for well-being. The analysis indicated that participants generally had a positive relationship with members of their communities from different cultural backgrounds and experienced well-being. This study provides valuable information about positive relationships and well-being from a positive psychology perspective.

However, some participants reported a low level of positive relationship (low level of sense of belonging to the community and not being a part of a bigger group) and yet experienced an overall high level of well-being (positive emotion). Such a scenario indicates that the level of positive relationships may not always positively correlated with the level of well-being. Participants' happiness may not be affected by their sense of belonging or group membership. Few participants' responses to positive relationship questions such as low connectedness or lack of belonging do not necessarily indicate a negative relationship. They recounted a busy schedule or preoccupation with university activities and personal gadgets as reasons for not having a cordial relationship with people in their community. Also, some reported being a part of a bigger group because their ethnicity is the majority in the group. Such a scenario indicates deeper nuance to a positive relationship in the multicultural community that requires further study.

Also, participants responded to well-being questions such as neutral emotion, low engagement due to lack of opportunity or invitation to participate in intercultural activities, and average or

no close relationship with people of different groups. Such a situation does not necessarily indicate negative well-being. Instead, this may imply participants' passive approach when relating to people in a multicultural community. For accomplishment, many of them defined it as "career success." Since they are still studying in the university, they are yet to achieve success in life.

In comparison to past literature (Khairi and Mior Jamaluddin, 2017), the present study provides a more precise operational definition and measurement of positive relationship and well-being. It also examined the perspective directly from the grassroots level, i.e., the residents in the communities instead of key players. The present study also attempted to establish a link between positive relationships and well-being in the community, which was uncommon in past studies.

In the context of multicultural society such as Malaysia, positive relationships and well-being among the young generation should be viewed as part of societal strengths. Such strengths should be developed further to build stronger connections between people of different cultural groups. Programs should be created to provide opportunities for various ethnic and cultural groups to work together. Such programs may strengthen positive relationships into more meaningful connections and improve well-being. Ideally, this can contribute towards a more unified Malaysia, but one that still allows for cultural diversity to flourish.

There are limitations to the study. The sample of university students may not be representative of the whole population. This study relied heavily on self-report data. There might be bias in reporting due to social desirability bias. Future studies may consider examining a more extensive sample to obtain a broader demographic representation of the Malaysian population and employing a more sophisticated method to minimize the social desirability bias. Implicit measurements may be used to reduce biases; hence, to capture the phenomenon more accurately. Quantitative studies may also be conducted to gather statistically significant data when these positive psychology constructs are well-established in the Malaysian context.

## **8. Conclusion**

This study provides in-depth insight and nuances related to the positive relationship and well-being in a multicultural society such as Malaysia from a positive psychology perspective.

## **9. Acknowledgment**

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# The Capitalisation of Knowledge in Malaysia's Science System: A Case Study of Tunku Abdul Rahman University College (TARUC) in Penang

Azmil Mohd Tayeb<sup>a\*</sup>, Siti Rahyla Rahmat<sup>b</sup> Farah Puwaningrum<sup>c</sup>

<sup>ab</sup>School of Social Sciences Universiti Sains Malaysia, Malaysia

<sup>c</sup>Sydney Asia Pacific Migration Centre and School of Social and Political Sciences – the University of Sydney, Australia

Email: [azmil@usm.my](mailto:azmil@usm.my)

## Abstract

The paper investigates how knowledge is capitalised in a micro-case study in the context of Malaysia's science system. Think tanks such as Overseas Development Institute in the UK and Penang Institute in Malaysia are also producing scientific knowledge. They may well have a better strategy in terms of science communication of their scientific knowledge-related outputs due to their organisational orientation. Nevertheless, scientific knowledge is a type of knowledge that is often assigned to a university as a knowledge-producing organisation. There have been scholarly contributions with regard to the role of universities in terms of the triple helix innovation, science policy, and transnational higher education in Malaysia. The proposed paper builds further from these studies by asking: *what are the ways in which knowledge is capitalised by a university in the context of Malaysia's Science System?* The paper will offer empirical findings from qualitative fieldwork carried out in Tunku Abdul Rahman University College (TARUC) in 2015. In-depth interviews with lecturers and senior lecturers were conducted in 2015. In addition to the interviews, data analysis was carried out using documents and government reports from 2011-2017. The study highlights the ways knowledge production are aligned disciplinary orientation of knowledge production and work process at a university level. Our TARUC case study shows how knowledge production is linked between two locations: Penang and Kuala Lumpur. Organisationally, changes that TARUC experienced reflects the overall conditions of the Malaysian science system due to its growing marketisation, the dynamics of ethnic politics, and historical trajectory.

**Keywords:** Malaysia; Penang; Science system; Scientific Knowledge

## 1. Introduction

The paper is a micro-case study investigating how knowledge is capitalised in the context of Malaysia's science system. Scientific knowledge are indeed produced by think tanks such as Overseas Development Institute in the UK and Penang Institute in Malaysia. Scientific knowledge is a type of knowledge that is often assigned to a university as a knowledge-producing organisation. Work-process knowledge is another typology of knowledge that is often overlooked in universities' science studies. Indeed, there have been scholarly contributions with regard to the role of universities in terms of the triple helix innovation, science policy, and transnational higher education in Malaysia (Lee et al., 2017b, Sirat, 2008b, IPPTN, 2010, Gerke and Evers, 2012, Gerke et al., 2008) . The proposed paper builds further on these studies by asking: *what are the ways in which knowledge is capitalised by a university that attempts to evolve from teaching-based and vocation-based to more research-based in the*

*context of Malaysia's Science System?* The paper is divided into several sections. The first discusses the transformative capacity of science and technology. Next, the Methods section describes the fieldwork, analysis and ways in which research was conducted for the paper. The paper then discusses an empirical case study concerning the Tunku Abdul Rahman University College (TARUC). The last section provides a summary of the paper.

In this paper, we contend that TARUC's collaboration with nearby organisations in Penang is harnessed by alumnae-based social ties and may well be limited by TARUC's main branch in Kuala Lumpur. Knowledge sharing is chiefly conducted face-to-face. Work-process knowledge is the key typology of knowledge being produced by TARUC lecturers: this is augmented by the discipline-based orientation of knowledge production, and the emphasis of life experiences of the application of knowledge attained in the classroom, as well as TARUC lecturers' work and profession-related knowledge.

## **2. The Transformative Capacity of Knowledge and Science and Technology**

Knowledge, science and technology can have a transformative capacity in society. New realms of possibilities are offered for human action, and technological and scientific progress give rise to fresh capabilities, all of which are pertinent today (Krings BJ, 2016, De La Mothe, 2001, Tayeb, 2018). Science in democratic societies, nonetheless, faces several challenges. Scientists have long adopted advisory roles for a variety of political organisations. Alternatively, there could be more linking between science and politics within this process (Weingart et al., 2000). Secondly, blurring boundaries between science and politics is often conceptualised as 'science medialisation', through which both media and science are ever more related. In such a process, the authority of science is likely to be subjected to an external process of media scrutiny. Third is the character of modern science itself: science is facing the emergence of interdisciplinary fields. Sociologically speaking, this means that science is facing restructuring from within its boundaries (Scheufele, 2014).

Nevertheless, science communication, risk of science communication and technological progress are vital for scientists to be able to communicate their research findings (Scheufele 2014; Weingart, Engels, and Pansegrau, 2000; Rahmat and Purwaningrum, 2018). Societal impact is made possible through such engagement. In a way, science and scientific progress assist us to understand the future through a better lens (Rahmat and Purwaningrum, 2018). Science as a 'mediated' reality is a model that builds further on traditional engagement approaches. It acknowledges the fact that the majority of encounters that members of the non-scientific public have with scientific issues – outside of formal education environments – do not include any form of straightforward public engagement (Dietram, 2014, pp.1357). Citizens gain access to this kind of reality mainly through online and offline media.

It is pertinent to discuss science communication as this is a way a university communicates its output to the society wherein it operates or to professional societies. There are also other models of such communication. Science communication would need to make use of artefacts that are both conceptual and physical, and generally reflect the cultural assumptions and orientations of their designers (Medin and Megan, 2014). Consequently, science communication must pay heed to culture and its associated divergent ways of viewing the world (ibid). Furthermore, there is another alternative for a rational and instrumental model of communication commonly practiced in the communication of environmental risks. It subscribes to a linear information flow among the spheres of science, politics and the public. It assumes that 'the content of the

information passes on unchanged and initiates political action almost automatically, following the 'rational logic' of the information obtained' (Weingart et al., 2000, pp.262). Better cognitive learning processes and information are seen as the solution to ineffective communication. Another model that attempts to deal with the communication of risks is a system-informed example. This model assumes that 'the character of environmental risk communication is essentially different in each of the distinct spheres that are the focus of our research, and that disturbances of communication among these spheres are hence the rule rather than the exception' (ibid. pp.262). In this process of communication, there is inevitably a juxtaposition of experts-versus-laymen or experts-versus-the public. Experts, in this case, including scientists, play a simultaneous role in science communication and knowledge production.

Who are the experts? Generally, there are five types: 'experts who are members of groups whose expertise is generally acknowledged; experts whose personal expertise is tested and accepted by individuals (authors of self-help books are examples of this); members of groups whose expertise is accepted only by a particular group, such as theologians; experts whose audience is the public but who derive their support from subsidies from parties interested in the acceptance of their opinions as authoritative; and experts whose audience is bureaucrats with discretionary power' (Turner, 2001 p. 140). Notwithstanding these divergences, two apparent streams surface concerning experts: first is that their expertise is not given; it had to be earned or created; second is that the expertise functions in peripheral areas of science; i.e. on topics that are neither conclusively agreed nor concluded (Turner, 2001, pp.141). From a sociological view, particularly from a social construction of reality lens, subjective means of knowing is taken into account (Hornidge, 2013) (Hornidge, 2013) and the role of experts in this sense is pivotal in that they are 'officially accredited definers of reality' (see Berger and Luckmann, pp.97-105, as cited in Koppl, 2010). For the latter, legitimations are gained by experts in modern society by means of acquiring the power to define reality in a particular area (Koppl, 2010). Solving problems may require expert advice. In the context of knowledge society, expert advisors are basing their authority on the scientific basis of their advice (Rip, 2003).

Experts play a role in science policy (or *wirtschaftspolitik*), which is part and parcel of science system. The ways in which science system function, with seemingly conflicting written norms and policies and the restrained capacity as evidenced by insufficient funding, are a topic worth of investigating in light of social change. Despite the conflicting hierarchy of norms, practices evidently show that the system is not in a state of disorder. It is contentious as to what extent this existing science system manage to build a strong knowledge base for the development of Malaysia especially in regard to industry- academia collaboration. Still, universities are the main scientific knowledge producing organisations in terms of both research and teaching in Malaysia. Reflecting from the Indonesian case study (Purwaningrum, 2014), practices of research-based organisation indicate that Indonesia's science system maintains a representation of unresolved tensions of patronage and personal linkages. Malaysia's universities are caught in a dilemma that is a result of the rapid expansion of the university system. Public higher education institutions are caught by several challenges. The challenges are spiralling enrollments and demand, lower funding in per-student terms, and the practices of resorting to specific strategies to increase income (Welch, 2010 p. 148). The emphasis of research on this aspect has mostly been on public higher education, and not on private university, especially one that evolves from a vocational school such as TARUC.

Studies on the science system in Malaysia have indeed been under-researched on this theme of

vocational kind of knowledge and institution. The study of industrial clusters in Penang, Malaysia, identifies that adequately trained workforces, with appropriate vocational skills, are required to enhance the potential of the industrial sector (IPPTN, 2010). That being said, nonetheless the role of professionals in the vocational sector is oft overlooked (Grollmann and Rauner, 2007). Wilson, who was using data based on statistics from 1985-1986 and archival analysis of planning documents, stated that Indonesia is in the lead compared to Malaysia in terms of the degree of interaction and involvement in curriculum reforms between local companies and technical and vocational academic systems. This is possibly due to the complex Dutch heritage in the academic system in Indonesia (Wilson, 1991). Situating polytechnics akin to universities like what Indonesia has may cause problems in terms of professional certification, as lecturers in polytechnics are obliged to do research as part of their function, similar to university-level lecturers (Purwaningrum, 2016). Taking a more southeast asian perspective in reviewing the progress of the vocational academic systems in Asia, Tilak (2002) contends that Malaysia, Indonesia, Philippines, Thailand, and Sri Lanka have “moderately developed” vocational and technical academic systems. This is a positive development to which it invites the question as to what kind of knowledge and how this knowledge is produced from a polytechnic, or vocational institution, or higher education institution that evolved from a vocational institution. At this juncture, we point our inquiry in the context of Malaysia. For the purpose of our inquiry, we define Malaysia’s science system as ‘science based organisations producing knowledge in the science and higher education sector in Malaysia’.

Knowledge, a form of capital in which experts have the upper hand, has a tacit component. As explicated in the beginning of this paper, work-process knowledge is often neglected in science studies in universities. Malaysia is no exception to this. Hence, the second author will reflect on her experience of fieldwork in ATMI Polytechnic Cikarang, Indonesia (Purwaningrum, 2016). The reflection is an essential step in this paper and study as TARUC produces a work-process kind of knowledge; one that can be found in ATMI Polytechnic Cikarang and manufacturing industries in Germany. In the first few days of the lead author’s internship in a Polytechnic, in Indonesia in 2010, she tried to explore what knowledge is, as defined in the respondents’ everyday lives in ATMI Polytechnic. Knowledge is defined as ‘know-how on techniques of processing and techniques of assembling’ in ATMI Polytechnic (Informal discussion, Cikarang, 01.02.2011). Therefore, knowledge in this definition refers to applied know-how regarding the production of parts, and would normally be kept tacit in the head yet practised through individual embodiment (*membadankan*) and internalisation. Work-process knowledge has an attachment to embodiment of experience.

However, a set of organisational routines pertaining to human capital can also be a format of tacit knowledge, as it enhances organisational capacity. This includes allocation and strategy of human-capital upgrading, such as training. Human capital is indeed associated with knowledge workers: the propeller of a learning organisation. This work on organisational routines has been extensively studied in various literature (for example, see Cohen, Nelson and Winter, 1982 as cited in Sako, 1999) Routines may be characterised as ‘the way things are done’ in the firm (Sako, 1999 p. 116). An expert or consultant may have strategic importance due to the rising, instead of diminishing, marginal usage of knowledge (Gerke and Evers, 2012, Evers and Menkhoff, 2015) and due to their experiential knowledge (Purwaningrum, 2016). The visualisation of expertise through a skill matrix allows visible access to the experts in the shopfloor/workshop, as it shows the amount of training and the degree of expertise in each specific machine (CNC or pressing), (Interview by the second author, Cikarang Indonesia, 22 November 2010). It is a detached representational tool, which should be equipped along with a

contextual understanding of the way organisation works. Without this, it would be challenging to locate an expert in the workshop.

Conceptually, a typology of knowledge that is rarely discussed in the context of a university is ‘work process knowledge’. A university not only produces scientific knowledge but also work-process knowledge, as we will later show in the TARUC case study (Purwaningrum, 2016). This tacit form of know-how resembles that of a form of knowledge that steers the practice in the workshop and of contextual character (Rauner, 2011: p.56 as cited from Kruse, 1986). It may extend even further to that of the non-contextual theoretical knowledge (Rauner, 2011, pp.56 as cited from Kruse 1986). The term *Arbeitsprozeßwissens* or ‘work process knowledge’ was firstly coined by Wilfried Kruse (in Rauner, 2011, pp.56, as quoted from Kruse, 1986). The typology of knowledge is fundamental to vocational learning, (Rauner, 2011, pp.56 as cited in Kruse, 1986; Boreham, 2002, pp.232). It includes theoretical and practical knowledge, yet it can stretch from the work process of the enterprise as a whole production process, as the means of how different units in the organisation are linked (Boreham, 2002, p.232). The contentious issue of the work process knowledge is how it can be renewed, owing to the organisational capacity and character of the academic organisation. It is more pronounced in a system of production-based academic organisation that demands its units to be pragmatic and capitalistic in job demands to subsidise the cost of the academic organisation.

Meanwhile, Penang in Malaysia, where TARUC is located, has traditionally functioned as a trading port, as it is the gateway to the Indian Ocean. The science system in Malaysia has several unique features: education policy had been tasked to promote national unity by gradually unifying all linguistic streams of schools, but in 2008, the state government in Penang had stated that it was exiting the pro-Malay policy. This begs the question of what makes Penang special when it decided to abandon the pro-Malay policy? However, due to the research limitation of our paper’s focus and research focus, we will not entertain the question for now. It is, nonetheless, clear that the education provision is under the purview of the federal government. The state government has no direct influence on policymaking in the science system. Research funding, which is mostly financed by MOSTI and MoHE, is responsible for the overall support of the economic transformation plan in Malaysia. In fact, scholarly contributions on the role of the university in Malaysia have been centred upon transnational higher education, which sees university in relation to changes in globalisation and governments’ agenda. Malaysia imposed the Education Act 1961, which took into account recommendations by a number of review committees in education. The racial riot further enveloped universities under the remit of the Emergency Ordinance No. 74 in 1971, which brought to life the University and University Colleges Act 1971 (Wan, 2017). Increasing autonomy came along in the late 1990s whereby there has been a predisposition towards quasi-marketisation and marketisation of higher education. Such autonomy also opened doors for corporatisations to arise in Malaya.

The 1996 Education Act was part of the government’s overall plan to liberalise the economy and public sector. The New Economic Policy (NEP) in 1970 gave birth to preferential and quota treatment of Malays. It is not only the previously applicable NEP but also the overall policy backed up by the United Malays National Organisation (UMNO). University Teknologi MARA (UiTM) stood as an example of the active promotion of higher education in the Malays, beginning in the 1960s. The policy seems to have formally ended in 2001. Ethnic politics also serves as the backdrop in the university’s engagement with society. The policy has continued under other names, such as the New Economic Model, during former Prime Minister Najib’s period. The debate to reform the Malay preferential treatment is still ongoing. The current

government has recently made an announcement to change it to needs-based, the details of which are still not clear.

### **3. Methods**

We employ an analysis for the fieldwork, analysis and writing using an interpretive framework. The research relied on an in-depth qualitative method that featured semi-structured interviews in 2015, observation, research assistants' fieldnotes, and documentary data as secondary source. In addition to the interviews, data analysis was carried out using documents and government reports from 2011-2017. There was a set of questions but they were not used with rigidity. A semi-structured interview represented an 'opening up of the interview method to an understanding of how interviewees generate and deploy meaning in social life' (May and Beth, 2011 p. 134). In such interviews, there are pre-set questions, but they can be expanded to better capture the respondents' experience. Dialogues took place between the interviewer and the respondents.

Our two research assistants and the lead author used a 15-question list as an interview guideline. Two research assistants were also conducting interviews, mainly in Malay language and lasting for an hour and a half. We interviewed a total of eight TARUC lecturers. Each of the interview was recorded using an Olympus recording which was then transcribed and thematically analysed. When we used the guideline during interview, we often expanded those initial 15 questions into 33 to 43 questions. We asked our respondents about Penang, and some of the questions were as follows: 'Can you tell me a little bit about planning Penang city? What about the semi-conductor industry background that industrial cluster of Penang has, will you tell me more about this fact?' Regarding the history of the location: 'Do you know more about the history of Penang?' Concerning the person and political party behind Penang's development as an urban area: 'Who was investing at the beginning for the high tech park? What differentiated Penang at that time from Klang Valley? Was Cyberjaya not there?' We asked the sociology of knowledge-related questions: 'What are the main outputs of TARUC in terms of knowledge? Students or papers? Or patterns or the twin? Even the location?' We asked science policy-related questions: 'What are all the hindrances to academia-industry collaboration in TARUC?'

### **4. Community Engagement and a Restraining Silo at Tunku Abdul Rahman University College (TARUC)**

Tunku Abdul Rahman University College (TARUC) was initially established in 1969 by the Malaysian Chinese Association (MCA). The abbreviation MCA frequently arose during interviews in the field. Tunku Abdul Rahman was the first Prime Minister of Malaysia. The school bearing his name expanded into a university in May 2013. The tuition fee is set low and facilities are rented to outsiders and facilities for training. The government also provides additional support (Interview, 18 December 2015). Enabling access to education comparable to UiTM MARA for Malays is visible in TARUC, as demonstrated in its low tuition fees and a sense of responsibility to teach well. TARUC's vision is to be 'a distinguished institution of higher learning acknowledged locally, nationally and globally for its excellence in providing opportunities for the intellectual, personal and professional development and growth of its students by fostering their inquiring, creative and innovative minds to succeed in life'. TARUC's mission is threefold: first, it is committed to complement and supplement the government's efforts to provide quality education and training on a comprehensive range of

disciplines and levels, thereby adding to the development of human capital in Malaysia. Second is that it will focus on students' total development to their fullest potential, and its graduates will be imbued with knowledge, skills, values and attributes to succeed in life and work, contributing to the technological, economic and social advancement of the nation. Third is that it is committed to maintaining strong links with business, industry and the community, as well as to collaborate with other renowned institutions for the purpose of fostering continuous improvement and learning. The last aspect does not postulate international collaboration, which is lacking in TARUC. All of the missions put forward a universal education that provides 'special treatment' to Malays. This premise will be contested and explained in the text.

It is to be noted that the fieldwork in Penang was conducted two years after its expansion. TARUC's main campus is in Kuala Lumpur: it has an additional five branches in Penang, Perak, Johor, Pahang and Sabah. All the interviews were carried out in Penang. Historically, TARUC has been outside the remit of government science policy, in terms of research funding. In an interview, a respondent specifically noted that TARUC was established for the Chinese in Malaysia:

This college (TARUC) was established a long time ago in Kuala Lumpur. There was MCA in Kuala Lumpur, and they played a role (in establishing TARUC). They built the College for the Chinese in Malaysia, so that there is one higher education for this purpose. We now have a number of branches. (Interview, 28 December 2015)

TARUC also received subsidies from the government in its academic activity (Interview, 18 December 2015). The university, hence, received support not only from MCA but also from the government. For example, the Malaysia Digital Economy Corporation (MDEC), a government organisation that provides training in IT, trains lecturers in TARUC's IT programme. A lecturer described how MDEC sponsors courses in terms of training and training funds (Interview, 18 December 2015). It is located in Tanjung Bungah, Pulau Pinang. In the interviews, observations, and documentary data that were analysed, there is no cognisance or consciousness that TARUC is located in a city formerly functioning as a port city. Reference was made to a key person who financially sponsored the establishment of TARUC in Penang and the fact that they moved to the location in Penang fourteen years ago (Interview, 28 December 2015). According to *The Star Malaysia*, during his lifetime, the late Tan Sri Lon Boon Siew, the founder, was the richest man in Penang (*The Star*, 2017). He started the Oriental Group in Malaysia and was famously recognised as 'Mr. Honda' after bringing the Honda brand into Malaysia (*The Star*, 2017).

A particular feature of knowledge-production activity is its teaching. TARUC lecturers have knowledge-production activities that are disciplinary and combined with life experiences of the application of that knowledge. Most of the lecturers had work experience outside TARUC prior to becoming lecturers. Hence, they may teach theoretical components, but they also share real-life experiences or work-based experiences (Interview, 14 December 2015). This type of knowledge resonates with what the lead author had encountered in the second author's fieldwork in Indonesia. This character of work-process knowledge came about when the question of what strategic knowledge is, in their work:

An example is cement production. Most industries target low cost but with high quality. They try to find lightweight materials. I asked my student to find other alternatives than using materials or substances that can substitute the materials and alter the materials into lightweight ones with the same quality and strength with normal weight. Students

then learn through experiences, there is no theoretical textbook. They will try out and compare with what they learn, and such is the case with this group of students. (Interview, 14 December 2015)

Publications in peer-reviewed journals and key performance indicators rarely surfaced during interviews. A lecturer made a reference to the applicability of knowledge being produced in terms of usage by professional bodies, such as the CIOB (the Chartered Institute of Building) and industry. When asked about how they update or upgrade their knowledge, no reference was made to theories or the expansion of basic research. Responses tended to have more to do with what the industry needs. The lecturer, who was based in TARUC (School of Building), explained, 'Basically, we try to update (knowledge) with what the industry needs. What it needs or if there is new equipment or technologies, we will then update it here in TARUC' (Interview, 14 December 2015).

Work routines would be to follow a timetable of teaching: one week, it consists of 18 to 20 hours of teaching (Interview, 28 December 2015). Syllabi for courses that are similar to those at the Kuala Lumpur (KL) branch of TARUC are to be coordinated or discussed with lecturers in TARUC. It was interesting that, during the interviews, there was no mention of experiences of suiting teaching to local or regional components in Penang. The tie with KL is thick as it engulfs the connection it may have had with the kind of economic activities that exist in Penang. There is a responsibility in teaching, as well: so much so that leaving for five days for a course in MDEC would feel like a burden to a lecturer. Replacements have to be organised according to the teaching timetable. The reality sketched is thus a silo that orients the organisation to function inwardly: outwardly would be to the main branch in Kuala Lumpur. (Interview, 18 December 2015). This is centred in Kuala Lumpur. Nonetheless:

We have it on the main campus in Kuala Lumpur. We have a centre for investment (in training). For instance, the College (the top management) provides courses and distributes certificates for this. Such practice adds knowledge in our respective fields. In this knowledge upgrading and training, we leave once a year or twice a year (Interview, 14 December 2017).

In the spirit of upgrading the lecturers' capacity, TARUC discharges its third-mission service in community engagement. It manifests in organising many free workshops for secondary students. TARUC received numerous invitations from secondary schools to provide such workshops. Schools such as Pwin Hwa School, Chong Hwa School and Dato Keramat School in Penang requested the workshop. The lecturer stated with confidence that 'Sometimes, we share our knowledge and our company with the students. Yes, I will go for workshop free' (Interview, 18 December 2015). The fieldwork analysis suggests that although TARUC was initiated by MCA, it does not discriminate in terms of providing free workshops to students regardless of race or ethnic origins.

Knowledge sharing, nonetheless, is predominantly conducted face-to-face (see Nordin and Purwaningrum, 2018). Some of the discussions with students are carried out using CEL, which is an intranet. Facebook was used, but not too often. During consultation hours, students come and discuss things with their lecturers. Discussions also take place using Whatsapp and Wechat. For lecturers, knowledge sharing would most likely occur during meetings or conferences in Penang. The lecturers at TARUC are obliged to attend four seminars annually in Kuala Lumpur. During the seminars, lecturers from all branches would gather in one place. They would share experiences of teaching in Penang in these seminars. Collaboration with the

surrounding institution may well be facilitated through alumnaeship and can be restrained by the main branch in Kuala Lumpur. There was a collaboration with University Utara Malaysia for an IT course, where a lecturer had completed her study (Interview, 18 December 2015). The lecturer shared her experience in an interview. She was an alumna of the University of Technology Malaysia. She explained how there was another professional senior surveyor association that mostly concerns the exchange of information. The information, she said, can be valuable in terms of projects, but when concerning the renewal of knowledge, she would contact her former classmate, as they work in the field they had studied (Interview, 14 December 2015). In an interview and observation, a hierarchical structure exists between lecturers and the main management of TARUC, with the latter sitting atop the ladder. The lecturer stated that ‘Lecturers will only follow instructions from the top management’ (Interview, 14 December 2015).

‘Policy’ to lecturers in Penang means the Kuala Lumpur branch: every decision should be referred to the main branch in KL. Hence, TARUC in KL determines what policy is. There was barely a mention of research funding from MOSTI, and MoHE was rarely mentioned during interviews and observations. Collaboration happens via projects from the private sector. Consequently, science engagement with communities in Penang may well be determined and controlled by the main branch in KL.

## **5. Conclusion**

TARUC was established by the Malaysian Chinese Association (MCA). There is an explicit consciousness, as aired by lecturers working at TARUC, that the founder played a key role in establishing and providing financial support to TARUC in Penang. There was no mention about the role of Penang as a hub or as a former port city. Next, the main campus in Kuala Lumpur functions as a gatekeeper in terms of syllabus revisions and teaching-hours’-related decisions. The latter is vital as societal engagements are only possible through fulfilling one’s teaching-hours commitments. Knowledge is typically produced for teaching purposes but goes beyond that, since there is an emphasis on work-process knowledge as calibrated through its lecturers’ work experience. Work-process knowledge remains an essential part of knowledge base in Malaysia’s science system for two reasons: first is the fact that they provide training and education to Malaysians. Second is the fact that work-process knowledge is more applicable in the industrial cluster in Penang as opposed to scientific knowledge which is tied more with science indicators and patent/intellectual property regulations.

The TARUC case study highlights that knowledge production activity is intimately intertwined with previous work experiences and life experiences of the application of knowledge learned in the classroom and discipline. It is emblematic of how work process knowledge is taking shape in a university in Malaysia. Our contention is that the ways in which knowledge is produced are aligned with increasing autonomy at the macro and meso level in Malaysia, and the disciplinary orientation of knowledge production at a university level, which is the micro level. Autonomy signifies a paradigm shift in the Malaysian science system due to its growing marketisation, the dynamics of ethnic politics, and historical trajectory (for a preliminary discussion on this topic see: Rahmat and Purwaningrum, 2018). Disciplinary knowledge production, as we found in the TARUC case study, unpacks a continuum between an emphasis on the commercialisation of knowledge and the social product of knowledge, on the one hand, and the vocational/work-process-knowledge orientation on the other. To speak of the transformative capacity of knowledge and science and technology, hence, academic

organisations should welcome alternative ideas of knowledge production which incorporate not only scientific knowledge but also work-process knowledge.

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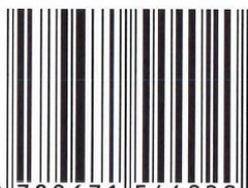


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