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Exploring Determinants and their impact on Financial Sustainability of Malaysian Public Universities During the Pandemic

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Abstract

The financial sustainability of Malaysian public universities during the COVID-19 pandemic has become a critical area of concern due to declining in the government's budget and the unceasing growth in higher education costs. Due to their heavy reliance on student enrolment, research grants, and government funding, the revenue of Malaysian public universities is particularly vulnerable to the economic challenges posed by the COVID-19 pandemic. To date, studies that focused on the determinants of financial sustainability of Malaysian Higher Education Institutions (HEIs) during the pandemic COVID-19 is still limited. Thus, this study aimed at examining the determinants and their impact on financial sustainability of Malaysian public universities during the pandemic. This study adopts a quantitative research method and employs secondary data. Three years of financial data were collected from twenty (20) public universities' annual reports. Determinants of financial sustainability is proxied by student enrolment, research grants, and government budget. Meanwhile, financial sustainability is measured using Return on Assets (ROA). The empirical findings show that student enrolment and research grants are the determinants that have a significant impact on the financial sustainability of Malaysian public universities during the COVID-19 pandemic. The results have implications for policymakers and the body of knowledge, who shall consider the importance of sufficient revenue to sustain the universities' finances.

Keywords

Financial Sustainability, Return on Asset, Government Budget, Covid-19, Malaysia

1.0 Introduction

The COVID-19 pandemic, which began in late 2019, has had profound and far-reaching impacts on economies and societies worldwide. Educational institutions, including universities, faced unprecedented challenges as they adapted to new modes of operation. Public universities, serving as pillars of knowledge dissemination, research, and community engagement, have faced exacerbated financial sustainability challenges during the COVID-19 crisis. Financial sustainability has become a major issue for universities globally. Growth in costs of higher education has been unprecedented, exceeding amounts sustainable by government funds (Altbach et al., 2009). Reduction of state funding, declining enrollments, and increased operational costs associated with implementing safety measures have caused universities to grapple with budgetary constraints. The shift towards online learning modalities during the pandemic has necessitated investments in technology infrastructure thus further straining financial resources. The pandemic has impacted the financial health of Higher Education Institutions (HEIs) due to decline in higher education

funding, which has been a challenge for governments facing budget reductions particularly during the pandemic (Blankenberger & Williams, 2020). The closure of HEIs due to the pandemic has resulted in an immediate financial impact through the loss of tuition fees and research revenue (Kara, 2021). As the crisis persists, higher education around the globe particularly in developing countries faces severe cuts in government funding as resources are redirected to other sectors that are expected to play a crucial role in economic recovery (Altbach & de Wit, 2020).

HIEs are typically hit hard during economic downturns due to a lack of strategies to face the situation. COVID-19 pandemic is expected to impact the global economy significantly, and universities are more vulnerable to the impacts than any other institution (Alharbi, 2020). Malaysia's tertiary sector is also affected by the COVID-19 pandemic due to the reduction in the amount of funding they received from the government and thus, exposing universities to additional financial risks and financial pressure. As a result, the pandemic has devastated the revenue of public and private universities and colleges in Malaysia, as most of these institutions rely on student tuition fees, government funds and research grants to stay afloat. Aside from the health risk, the looming economic collapse due to the pandemic put students in tight spots that led them to quit their studies, which greatly affected the universities' revenue. Besides that, foreign student enrolment declined due to government restrictions and policies on international students during the pandemic. These burdened the institution's cash flow (Friedman, Hurley & Fishman, 2020). Moreover, during the pandemic academicians faced difficulties applying for research grants, whereby research grants are one of the essential sources of income for the universities. Most government funding for research and conference grants is limited thus, it is crucial for universities and academicians to successfully secure grants from the government or the industries to sustain the university's source of income.

Revenue of HEIs consists of diverse sources of income such as public funding, tuition fees, grants, and other sources. Due to the declining trend of government funding and the unending rise in higher education costs particularly during the pandemic, financial sustainability has become a primary concern among public universities worldwide. As a result, public universities are being forced to seek alternative revenue streams (Jaafar et al., 2021). According to the resource dependency theory (RDT), developed by Pfeffer and Salancik (1978), asserts that organizations are not self-sufficient and must obtain resources from their environment to survive and thrive. RDT posits that organizations are dependent on external resources for their survival and effectiveness. These resources can include funding, human capital, and technological assets. The theory emphasizes that the dependency on these external resources creates a power imbalance, making organizations vulnerable to the actions and decisions of resource providers. In the context of public universities, RDT suggests that the HEIs' financial sustainability is heavily influenced by their reliance on government funding, tuition fees, and other external revenue sources.

The COVID-19 pandemic has impacted universities financially in many ways such as budget cut for higher education funding (Ferguson, 2020); the closure of educational institutions due to pandemic outbreaks that had an unprecedented impact on education and academic survival among students and universities that affect students' financial, academic, time management, and health (Kapasia et al., 2020). Thus, the COVID-19 pandemic affects the financial sustainability of HEIs and has become a primary concern among public universities worldwide. Many studies on financial sustainability in higher education were conducted, including by Baldacci et al. (2008) and Maruna et al. (2018), which define a sustainable financial organization with sufficient capital, liquidity, and good asset quality, efficiently managing operational and

financial risk. According to Rymanova and Stanislavchik (2010), financial sustainability is creating, allocating, and using funds to achieve long-term solvency and managing expenditures to improve financial health. The COVID-19 pandemic caused financial constraints to HEIs, particularly reduction in the revenue such as funds received from the government and limitation on research grants that impacted the amount of expenditure allocated to HEIs, and the assessment of needs based on established priorities that may affect HEIs' financial sustainability (Alshubiri, 2020).

Previous studies have focused on the pandemic's impact on students' behaviours and adapting to the changes in the mode of studies. However, limited studies focus on assessing the determinants and its impact on the financial sustainability of HEIs during the COVID-19 pandemic. Thus, the primary objective of the current study is to explore the determinants and its impact to the financial sustainability Malaysian public universities during the pandemic and aims to fill the knowledge gap in this area of research. The determinants of financial sustainability are proxied by (i) student enrolment, (ii) research grants, and (iii) government budget and financial sustainability is measured using Return on Assets (ROA). Thus, three (3) research objectives are identified for this study that are:

- (i) To examine the impact of student enrolment on the financial sustainability of Malaysian public universities during the COVID-19 pandemic.
- (ii) To examine the impact of research grants on the financial sustainability of Malaysian public universities before and during the COVID-19 pandemic.
- (iii) To examine the impact of the government budget on the financial sustainability of Malaysian public universities during the COVID-19 pandemic.

2.0 Literature Review

Financial Sustainability of HEIs

Financial sustainability is defined differently depending on whether the organisation is profit-oriented or non-profit oriented. It is defined as the ability and willingness to generate the necessary capital flows of resources and meet the financial obligations without disregarding financial obligations to future periods. In the context of HEIs, Nik Ahmad et al., (2019) suggested that the ability of HEIs to generate sustainable income while running their operational activities without relying on external funders such as government and other stakeholders would determine their financial sustainability. Public universities are considered public institutions because the government funds them (Jaafar et al., 2021; Ahmad et al., 2013). In Malaysia, the government granted partial autonomy to public universities, allowing them some flexibility in administrative and financial operations (Chang & Sirat 2018; Ministry of Higher Education Malaysia 2015). This scenario distinguishes public universities from other public sector entities. Despite receiving government funding, the way they are managed and operated differs slightly due to the uniqueness of higher education institutions. Nevertheless, despite the granted autonomy, the government retains control of public universities (Chang & Sirat 2018).

The current trend shows that in most countries, public HEIs, particularly universities, are experiencing a decline in public funding, posing a financial sustainability challenge (Alshubiri 2020; Jacob & Gokbel 2018; Mohd Amir et al. 2016; Wangenge-Ouma 2011). According to Kapustian et al. (2021), one of the most critical problems faced by the university is to guarantee its financial sustainability is intact in the short and medium-term, particularly during the pandemic, by taking into consideration the amount of funding received from the government and forecasting the impact of the pandemic to the universities' financial

health. Furthermore, the unexpected budget cut appeared to be a significant catalyst, prompting universities to develop more financial sustainability initiatives such as diversification of revenue while maintaining the universities' primary academic mission (Mamat, Ahmad & Said 2021).

Determinants of Financial Sustainability of HEIs

Student Enrolment

Student enrolment is enrolling in school, specific classes, or co-curricular activities at a particular school. The enrolment process is completed after the student is admitted to a specific school. The challenges caused by the COVID-19 pandemic for college and university to secure student enrolment is numerous. For instance, in the United States, universities must transition traditional campus recruiting events to virtual formats, address the evolving financial needs of students and their families, and need to accurately predict future enrolment outcomes (Clark, Fritz & Fishman, 2020). Another significant challenge that HEIs face is balancing enrolment and net tuition targets. Clark et al., (2020) suggests that while HEIs typically aim to prioritize mission-based enrolment goals, the pandemic has shifted their focus significantly towards net tuition revenue. This shift is particularly critical for HEIs at risk of closure, as even minor shortfalls in financial targets could lead to their permanent shutdown. Therefore, net tuition revenue becomes the primary consideration to ensure the survival of HEIs during the pandemic (Burki, 2020).

The COVID-19 pandemic has significantly impacted international education enrolment, affecting universities' revenue from tuition fees paid by international students (Jacob, Abigeal & Lyida, 2020). To curb the spread of COVID-19, many governments worldwide have temporarily closed educational institutions. This national closure of HEIs has impacted over 91 percent of the global student population. The imposed of international travel bans to mitigate the spread of COVID-19 has also raised issues concerning international students. In Malaysia, a ban was enacted on March 25, 2020, preventing all foreigners from entering the country. As a result, many international students were unable to travel to Malaysia to continue their studies. This situation has highlighted Malaysian universities' reliance on fees from international students, with the travel ban adversely affecting the universities' future revenue.

Research Grant

Johnstone (2002) defines a research grant as a contract or sponsored research with an appropriate 'overhead' charge that can fund additional faculty salaries and new equipment and contribute to general institutional and administrative costs. According to Kadir and Cotter (2019), acquisition of research grants (RG) refers to grants other than the government's operating and development expenditures. Public universities must devise innovative strategies to secure grants from various sources. As a result, the research grant is an essential factor that can increase public universities' income (Kadir & Cotter 2019). Universities accepted research grants as means of diversifying their revenue stream. Universities' research funding varies depending on the HEIs' ability to attract private companies and government agencies to fund their research activities. Some funding agencies prefer to support research in scientific institutions, while others focus on supporting applied research with broader objectives. In addition, higher education research and consulting are critical in understanding social, political, and economic implications. Consequently, a reduction in funding could adversely affect studies that benefit the public (Postiglione, 2011). Public funding for research is anticipated to decline substantially, leading to a significant reduction in funding opportunities for many researchers (Webster, 2020). The global economic impact of the COVID-19 pandemic suggests that future research funding will likely be affected (Harper et al., 2020).

Government Budget

A budget estimates revenue and expenses over a specified future period and is utilised by governments, businesses, and individuals. Public HEIs around the globe are currently facing a decline in public funding, posing a financial sustainability challenge (Alshubiri, 2020; Jacob & Gokbel, 2018; Jacob et al., 2018; Mohd Amir et al., 2016; Wangenge-Ouma, 2011). In Malaysia, all public universities have received substantial government funding. As of 2007, public universities received 90 per cent of their total operating budget from the government, requiring them to bear only 10 per cent of their total operating costs (Ahmad et al., 2019b). However, significant budget cuts in two consecutive years from 2016 to 2017 forced public universities to generate up to 30 per cent of total operating costs on their own, while the government budget covered the remaining 70 per cent (Abdullah, 2017). These budget cuts occurred in tandem with the release of the Malaysian Education Blueprint 2015-2025 (Higher Education), which includes financial sustainability as one of ten practice and policy shifts required to transform Malaysian public higher education institutions (Ministry of Higher Education Malaysia, 2015). As a result of this reform, public universities must generate funding to supplement the federal government's limited and inadequate funding (Ahmad et al., 2013). Moreover, the global economic crisis has significantly strained public-funded HEIs in most parts of the world. For instance, in Thailand, Philippines, and Malaysia, funding for higher education has been reduced due to the economic downturn (Ahmad et al., 2013; Postiglione, 2011).

Prior studies have demonstrated the importance of government funding in public universities. Ahmad et al. (2013) investigated funding reforms in Malaysian public-sector universities and found that funding is a major influencing factor for institutional performance. However, they suggested that universities should prioritise their revenue sources when government funding is scarce. Budget cuts have become a critical issue in Malaysian higher education, particularly for public universities. As a result, it is timely for Malaysian public universities to be creative in diversifying their revenue streams and finding ways to mitigate the impact of government funding cuts (Huang, 2018; Jacob & Gokbel, 2018; Wangenge-Ouma, 2011).

2.1 Hypotheses Development

Conceptual Framework

The conceptual framework of this study is developed based on the Resource Dependency Theory (RDT). A fundamental notion of RDT states that the dependence on critical resources influences the actions and decisions organisations made by organizations. These actions can be explained depending on the particular dependency situation (Pfeffer & Salancik, 1978). In addition, Pfeffer and Salancik (1978, p39) explained that “... *organisational behaviours will respond to demand made by external organisations on whose resources they are heavily dependent*”. RDT posits that the long-term success and sustainability of an organization depend on the availability of resources. Control and access to these resources form the basis of power (Zehir, Findikli, and Celtekliligil, 2019). This leads to dependence and interdependence among organizations or individuals who manage the transfer of resources (Hillman, Withers & Collins, 2009). As presented in Figure 1, this study examines the relationship between independent variables: determinants of financial sustainability proxied by student enrolment, research grants, and the government budget and the dependent variable, financial sustainability measured by return on assets of Malaysian public universities during the COVID-19 pandemic.

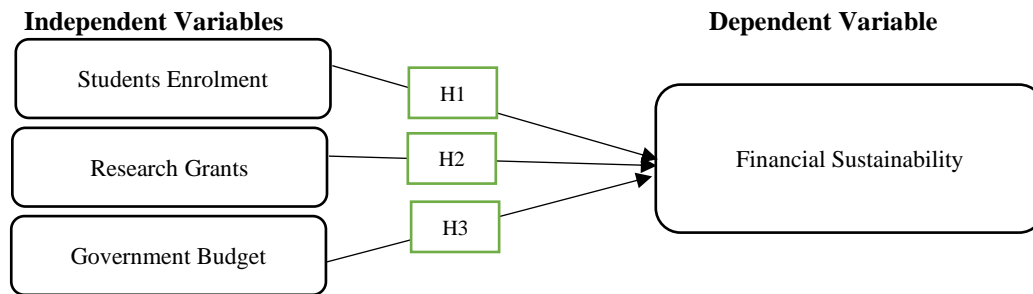


Figure 1: Conceptual Framework

Hypotheses Development

Student Enrolment and Financial Sustainability

The COVID-19 pandemic has forced higher education institutions (HEIs) to consider their operating models, business continuity plans, and preparation for a digital shift in education. At the same time, they are facing declining enrolment, changing student demographics, budget funding constraints, escalating education costs, and student loan debt. Long-term and short-term consequences of the pandemic may force some HEIs to close, and many require major changes in strategic enrolment management to remain viable (Friedman et al., 2020). The disruptions during the early stages of the Movement Control Order (MCO) in the year 2020 has caused a significant drop in both foreign and domestic student enrolments in Malaysia. Reduction in student enrolment affects the amount of tuition revenue collected by the universities. Tuition revenue is one of the primary sources of income for HEIs that are mainly used to fund the universities' operating costs. Resource Dependence Theory (RDT) believes that the organisation's survival depends on another organisation or person (Hilman, Withers & Collins, 2009). This implies that the university's financial sustainability depends on financial resources, which confer rights and privileges on the providers. As a result, students are an essential component of universities' financial sustainability, that provides the "tuition fee" to the universities. Due to the recent financial crisis, economic recession, and COVID-19 pandemics, the entire sector has difficulty accessing funding opportunities and identifying financing options. Most HEIs, particularly private universities, rely on a tuition-based revenue model to maintain operational budgets. If student enrolment falls, it directly impacts their financial performance of the HEIs and eventually affecting their financial sustainability.

The overall revenues of Malaysian universities rely heavily upon the students' enrolment. Thus, the pandemic has significantly impacted the changes in the overall revenue of the universities. This is supported by Thatcher (2020), that found the number of student enrolments, particularly among international students in private universities, has significantly impacted the universities revenue. This is because these institutions rely heavily on student enrolment to generate operational revenue. The sharp decline in enrolment among international students, who normally pay higher tuition fees, has consequently affected the financial sustainability of these universities. Therefore, the following hypothesis is developed:

H1: There is a significant positive relationship between the student enrolment and financial sustainability of Malaysian public universities during the COVID-19 pandemic.

Research Grant and Financial Sustainability

Higher Education Institutions (HEIs) relies on several sources of income to preserve their financial sustainability, and research grant is one of their primary sources. To achieve financial sustainability,

universities must generate enough revenue to fund future academic and research activities (Kadir & Cotter, 2019). Therefore, for HEIs to maintain their financial sustainability, research grants allocated to research projects should generate financial gains or profits and generate income. The COVID-19 pandemic has significantly affected the allocation of research grants, philanthropic sources, and other types of university income. Additionally, the post-pandemic recession may compel companies to reassess their contractual partnerships and collaboration strategies with HEIs thus, impacting the universities' income (Estermann et al., 2020). Previously, research grants were profuse, providing universities with substantial assistance and a stable financial situation. However, due to COVID-19, universities were compelled to endure significant expenses for their survival. Mamat et al., (2021), claimed that universities were expected to bear a portion of their operating expenses by 2020. The first massive budget cuts in 2015 imposed coercive pressures on research universities.

The unexpected budget cut appeared to act as a major catalyst, prompting universities to develop more financial sustainability initiatives while maintaining the universities' primary academic mission. While the notion of financial sustainability seems to be competing with the academic sense, university administration attempted to institutionalize the agenda at both the strategic and operational levels (Mamat et al., 2021). The current trend shows that most universities are shifting toward obtaining funds from private sources. This situation is primarily due to the challenges research universities face in securing adequate public funds to cover their current expenditures and financial obligations while the same time promoting university expansions (Estermann & Pruvot, 2011). Thus, based on the above discussion, the following hypothesis is posited:

H2: There is a positive relationship between the research grant and the financial sustainability of Malaysian public universities during the COVID-19 pandemic.

Government Budget and Financial Sustainability

Public HEIs are considered public institutions because they are government-funded (Jaafar et al., 2021; Tang & Hussin, 2013; Ahmad et al., 2013). These institutions are founded as non-profit organisations and are heavily reliant on government funding (Caruana et al., 2018; Lim et al., 2016; Ahmad et al., 2013). In most countries, public HEIs, especially universities, are currently facing a decline in public funding, posing a financial sustainability challenge (Alshubiri 2020; Jacob & Gokbel 2018; Mohd Amir et al. 2016; Wangenge-Ouma 2011). The reliance of public universities on government subsidies (resources) is a factor that is explained in resource dependency theory (RDT). According to Daviet (2016), the control and power-sharing of higher education institutions are gradually shifting from government support dependency to power privatisation. As government funding for public universities decreases, the potential for privatization and private sector influence to gain control over these institutions increases (Akomolafe & Aremu, 2016). This control manipulation is one factor of RDT.

The impact of the pandemic on the government budget changes the overall universities' financial sustainability in Malaysia. The government budget has been declining since 2020, affecting the operation of higher institutions. The Malaysian Ministry of Education (MOE) has announced that public universities are expected to find alternative resources and revenue streams for income generation due to government budgetary constraints. As a result, universities must plan strategically and creatively to explore all possible

resources rather than relying solely on government funds. The above discussion leads to the development of the following hypothesis.

H3: There is a positive relationship between the government budget and the financial sustainability of Malaysian public universities during the COVID-19 pandemic.

3.0 Methods

3.1 Sample

This study adopted the quantitative method in identifying and investigating the independent variables which are determinant and its impact on the dependent variable. The independent variables selected for this study are determinant of financial sustainability and the dependent variable is the financial sustainability of the Malaysian public universities during the COVID-19 pandemic. The study gathered data through secondary sources to operationalise the dependent variable (financial sustainability) and independent variables. The dependent variable was measured by Return of Asset (ROA). Meanwhile, the independent variables are proxied by student enrolment, research grants, and government budget. The sampling selected for this study is the public universities in Malaysia. Public higher education institutions (HEIs) are considered public institutions since the government funds them (Ahmad et al., 2013; Tang & Hussin, 2013). These institutions were established as non-profit organisations and were heavily reliant on the government for funding (Caruana et al., 2019; Ahmad et al., 2013). According to the Ministry of Higher Education (2020), there are 20 public universities in Malaysia. Due to the limited number of public universities, the total population is selected as the sample in this study. Thus, all 20 public universities were selected as sampling for this study, as depicted in Table 1.

Table 1: Public Universities in Malaysia

No	Name Of University	Location
1	Universiti Malaya (UM)	Kuala Lumpur
2	Universiti Sains Malaysia (USM)	Penang
3	Universiti Kebangsaan Malaysia (UKM)	Selangor
4	Universiti Putra Malaysia (UPM)	Selangor
5	Universiti Teknologi Malaysia (UTM)	Johor
6	Universiti Teknologi MARA (UiTM)	Selangor
7	Universiti Islam Antarabangsa Malaysia (UIAM)	Selangor
8	Universiti Utara Malaysia (UUM)	Kedah
9	Universiti Malaysia Sarawak (UNIMAS)	Sarawak
10	Universiti Malaysia Sabah (UMS)	Sabah
11	Universiti Pendidikan Sultan Idris (UPSI)	Perak
12	Universiti Sains Islam Malaysia (USIM)	Negeri Sembilan
13	Universiti Malaysia Terengganu (UMT)	Terengganu
14	Universiti Tun Hussein Onn Malaysia (UTHM)	Johor
15	Universiti Teknikal Malaysia Melaka (UTeM)	Melaka
16	Universiti Malaysia Pahang (UMP)	Pahang
17	Universiti Malaysia Perlis (UniMAP)	Perlis
18	Universiti Sultan Zainal Abidin (UniSZA)	Terengganu
19	Universiti Malaysia Kelantan (UMK)	Kelantan
20	Universiti Pertahanan Nasional Malaysia (UPNM)	Kuala Lumpur

This study intends to examine the determinant and its impact on financial sustainability of public universities during the COVID-19 pandemic. This study focuses on public universities because they primarily rely on government funding, whereas private universities depend on tuition fees from students. Thus, the population is chosen to ensure the data is reliable and valid. The dataset encompasses information from 20 Malaysian public universities' annual report, covering the period from year 2018 to 2020 (3 years). These 20 universities constitute the sample data being tested, totaling of 60 observations.

3.2 Variable Measurements

In this study, the dependent variable is the financial sustainability, while the independent variables are the determinant of financial sustainability that are measured by (i) student enrolment, (ii) research grants, and (iii) government budget. The measurement of variables is shown in Table 2:

Table 2: Measurement of Variables

Variable	Measurement	Citation
Dependent Variable Financial Sustainability	Return on Asset (ROA) Net Income / Total Assets	Bowman (2011), de Andres Alonso et. al., (2016), Prentice (2016)
Independent Variable Student Enrolment (SE) Research Grant (RG) Government Budget (GB)	Tuition fees by student Grant funding Allocation from government	Ahmad et al. (2019b), Almagtome et al. (2019), Findler et al. (2018), Jaafar et. al., (2021) Almagtome et al. (2019), Jaafar et al. (2021)

4.0 Results and Discussion

4.1 Descriptive analysis

Table 3 shows the descriptive statistics result of the dependent variable, which is the financial sustainability measured by Return of Asset (ROA) and the independent variables consisted of Student Enrolment (SE), Research Grants (RG), and Government Budget (GB).

Table 3: Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation	Variance
ROA	60	-.0847751	0.2280162	0.015718662	0.0480282691	0.002
SE	60	10,497.813	301,413.000	69,916.88235	61175.42625	3742432777
RG	60	1,674.321	96,885.186	20,556.67103	17138.88530	293741389.3
GB	60	97,648.490	1769124.000	460433.5382	363608.8015	1.322E+11

ROA (Return of Asset); SE (Student Enrolment, RM'000); RG (Research Grant, RM'000); GB (Government Budget, RM'000)

The findings show that the mean value of financial sustainability measured by ROA is 1.57%. The ROA means show that the value is ranged from -8.5% (min value) to 22.8% (max value), and the deviation from the mean is 4.80% (standard deviation). This result shows that some public universities experienced negative ROA during the studied period. Public universities that rely heavily on government funding or external grants may show varying ROA based on the stability and amount of funds received particularly during the pandemic COVID-19. Thus, reduced funding or delayed payments could negatively impact ROA. Additionally, the findings indicate that the average revenue collected from student enrolment (SE) is RM69,915,882 with a range from RM10,497,813 (minimum) to RM 301,413,000 (maximum). These

findings highlight the considerable variation in fees collected from student enrolment across the public universities over the three-year period (2018-2020). The large standard deviation and variance indicate substantial differences between institutions, with some having significantly larger student populations and others much smaller.

In addition, the minimum research grant (RG) amount is RM1,674,321 while the maximum reaches RM96,885,186 indicating a broad range of financial support received by the universities yield from the grants. The mean value of RM20,556,671 suggests that, on average, public universities receive moderate funding from the grant. However, the large standard deviation of RM17,138,885 highlight the substantial differences in grant allocation. This suggests that while some universities benefit from substantial research funding, others operate with significantly lower resources, potentially impacting their research capabilities and outputs. Meanwhile, the findings on the government budget (GB) allocated to public universities reveal substantial disparities in funding levels. The minimum government budget is RM97,648,490 for the period of three years while the maximum reaches RM1,769,124,000 showing a significant range in government support. The mean value is RM460,433,548 suggesting that, on average, institutions receive a moderate level of funding. However, the large standard deviation of RM363,608,801 indicates considerable differences in budget allocations among universities. Possible explanations for this finding are; universities with larger sizes or more extensive programs and facilities may receive higher government budgets to support their broader operations. In contrast, smaller size universities with lower number of student enrolment or less complex operations may receive less funding. Additionally, universities designated as 'Research Universities,' which place a strong emphasis on research and development particularly those making significant contributions to national or regional priorities are likely to attract higher government funding.

4.2 Regression Analysis

Table 4: Regression Analysis

Variable	Standardized Coefficients	t-stat	p-value
Constant		1.763	0.083
DV: ROA			
SE	0.243	2.215	0.031*
RG	0.515	4.724	0.001**
GB	-0.294	-2.667	0.010
R (R ²)	0.363 (0.316)		
Observation (N)	60		
F-stat	7.830***		

***Significant at the 1% level (2-tailed), **Significant at the 5% level (2-tailed), *Significant at the 10% level (2-tailed)

Predictors: (Constant), Student Enrolment (SE), Research Grant (RG), Government Budget (GB)

An analysis of multiple regression is carried out to examine the determinants and its impact on the financial sustainability of Malaysian public universities during pandemic COVID-19. Before performing regression analysis, it is crucial to verify the significance of the independent variables in predicting the dependent variable (Pallant, 2010). As shown in Table 4, presents an F-test value of 7.830 ($p = 0.001$). Therefore, it can be concluded that there is sufficient evidence in this study to suggest that at least one independent variable significantly influences the dependent variable. Regression analysis was conducted to test the

hypotheses developed in this study. The result of the regression analysis is shown in Table 4. The adjusted R^2 is 0.316, which indicates that 31.6% of the variation within the dependent variable, which is financial sustainability (proxied by ROA), could be described by the student enrolment, research grants, and government budget.

The first objective of this study is to examine the impact of student enrolment on the financial sustainability of Malaysian public universities during COVID-19 pandemic. The hypothesis, H1, indicated a positive relationship between student enrolment and financial sustainability, implying that tuition fees will influence the financial sustainability of public universities. The result shown that student enrolment indicates a significant positive relationship with financial sustainability when the coefficient for student enrolment (SE) is 0.243, $t = 2.215$, $p = 0.031$. As a result, H1 is accepted. This finding shows that student enrolment significantly affects public universities' financial sustainability. Student enrolment signifies the amount of revenue received from the tuition fees, and this variable significantly influences the financial sustainability of Malaysian public universities during the COVID-19 pandemic. When the number of student decline, it will impact the tuition revenue as public university does rely on the tuition fees. Hence, it may affect the financial sustainability of the public university during the pandemic.

Finding of the current study supported a study conducted by Thatcher et al. (2020) among universities in Australia that shows a declining number of student enrolment results to decreasing in universities' revenue with a loss of \$17,359,452,714 between 2018 and the year 2020. In addition, a survey by Kim et al., (2020) shows that almost half of the students are no longer planning to enrol in a bachelor's degree due to the COVID-19 pandemic, thus will affect the universities' revenue. The findings of this study confirm the negative effect of the COVID-19 pandemic on student enrolment globally. Thus, the result of the current study reflects a significant change in revenue of student enrolment during the COVID-19 pandemic influences the universities' financial sustainability.

The second objective of this study is to investigate the impact of research grant on the financial sustainability of Malaysian public universities during the COVID-19 pandemic. Hence, H2 proposed a positive relationship between research grants and financial sustainability, implying that research grants have influenced the financial sustainability of Malaysian public universities. The result shows that the research grants have a significant positive relationship with financial sustainability since the coefficient value is 0.515, $t = 4.724$, $p = 0.001$. Thus, the empirical result confirms that research grants significantly influence the financial sustainability of Malaysian public universities during the COVID-19 pandemic. Therefore, H2 is supported.

In the year 2020, during the pandemic, research grants were difficult to secure from both the government and private organizations due to the unpredictable circumstances impacting the economy. Besides, many private organisations may find it hard to fund universities' research as they focus on sustaining their organisation. Among factors that cause a reduction in the number of research grants received by universities during the pandemic, as stated by the Minister of Higher Education, Datuk Seri Dr Noraini, is that the government is currently focusing on research grants to develop the COVID-19 vaccine. Hence much funding is focused on vaccine research. Most research grants may extend beyond a year, and with the ongoing COVID-19 pandemic, many firms are reluctant to risk providing universities with research funding

due to the uncertainty surrounding the pandemic's duration. Consequently, the reduction in research grants for public universities impacts their financial sustainability during the COVID-19 pandemic.

Finally, the third objective of this study is to investigate the influence of government budget on the financial sustainability of Malaysian public universities during the COVID-19 pandemic. H3 proposed that government budget positively influences the financial sustainability of Malaysian public universities. The findings of this study show a significant negative impact of the government budget on the financial sustainability of Malaysian public universities during the pandemic. The coefficient value of ROA is -0.294, $t = -2.667$, $p = 0.010$. Thus, H3 is not supported.

The annual government budget allocation is announced the year before, so at that time, the government did not anticipate COVID-19 as a situation requiring special attention. As a result, the budget remained largely unchanged during the pandemic that eventually effect the financial sustainability of the universities. Over the years, government allocations have been decreasing, with the expectation that public universities will find their own sources of funding. After significant budget cuts in 2016, most public universities started focusing more on revenue diversification strategies to maintain financial sustainability. Universities only began to prioritize financial sustainability plans after the significant impact of government budget cuts. The necessity to maintain university operations with reduced funding and to demonstrate their capability in implementing financial sustainability acted as external catalysts, compelling universities to change. In other words, the Malaysian Education Blueprint (MEB), along with the government's budget, exerted coercive pressure on universities to move toward financial sustainability.

The reduction in government funding during the COVID-19 pandemic further intensified the financial pressures on universities. With limited financial resources, many universities faced difficulties in maintaining their operations. The financial instability caused by the pandemic highlighted the vulnerability of universities that are heavily reliant on government grants for their financial sustainability. The current study findings are contradicted with the findings of Ahmad and Farley (2013) and Hagedoorn et al. (2000). They highlighted that most public universities depend largely on government funds to support their operating activities. The Resources Dependency Theory (RDT) appears to agree with this condition (Pfeffer & Salancik, 1978). The budget cuts will become a permanent fixture in the Malaysian higher education landscape. However, it shows in this study that the government budget has a negative influence on financial sustainability in Malaysian public universities during the COVID-19 pandemic. The possible explanation of this finding is that in response to the declining government support, public universities have increasingly turned to revenue diversification strategies to sustain themselves financially. Revenue diversification involves generating income from various sources, including tuition fees, research grants, philanthropic donations, and commercial activities. This approach allows universities to reduce their dependence on a single source of funding and provides a buffer against financial shocks such as during the unprecedented period of COVID-19 pandemic. During the COVID-19 pandemic, many universities intensified their efforts to diversify their revenue streams. For example, some universities increased their focus on online education, leveraging digital platforms to attract students from around the world. Although these strategies have offered some relief, the financial challenges encountered by universities during the COVID-19 pandemic emphasize the need for a more resilient and diversified funding model for higher education institutions to ensure their long-term sustainability.

5. Conclusion .

This study examines the determinant and its impact on the financial sustainability of Malaysian public universities during the COVID-19 pandemic. The primary objective of this study is to investigate the determinants and its influence on the financial sustainability of university that is proxied by Return on Assets. Meanwhile, the determinant of financial sustainability is measured using three variables that are: student enrolment, research grants, and government budget. Thus, three (3) objectives have been stated in the current study. The empirical results yield a significant positive relationship between the two independent variables (student enrolment and research grant) with financial sustainability. However, contrary results are evidenced for government grant that shows a significant negative impact on the financial sustainability of the universities.

This study has empirically proven that student enrolment and research grants are the determinant that have significant impact on the financial sustainability of Malaysian public universities during the COVID-19 pandemic. The findings of this study may be useful to the government bodies such as the Ministry of Finance, which is responsible for government expenditure and revenue-raising. Besides that, the Ministry of Higher Education, which manages the HEIs in Malaysia, may benefit from the findings of this study. The Ministry of Higher Education (MOHE) could identify the income sources that impact the financial sustainability of higher education institutions during unprecedented periods like the COVID-19 pandemic. Based on this assessment, MOHE might recommend revising tuition fees, research grants, and government budgets to better align with the current economic conditions.

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Tarikh : 20 Januari 2023



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Tuan,

**PERMOHONAN KELULUSAN MEMUAT NAIK PENERBITAN UiTM CAWANGAN PERAK
MELALUI REPOSITORI INSTITUSI UiTM (IR)**

Perkara di atas adalah dirujuk.

2. Adalah dimaklumkan bahawa pihak kami ingin memohon kelulusan tuan untuk mengimbas (*digitize*) dan memuat naik semua jenis penerbitan di bawah UiTM Cawangan Perak melalui Repositori Institusi UiTM, PTAR.

3. Tujuan permohonan ini adalah bagi membolehkan akses yang lebih meluas oleh pengguna perpustakaan terhadap semua maklumat yang terkandung di dalam penerbitan melalui laman Web PTAR UiTM Cawangan Perak.

Kelulusan daripada pihak tuan dalam perkara ini amat dihargai.

Sekian, terima kasih.

“BERKHIDMAT UNTUK NEGARA”

Saya yang menjalankan amanah,

SITI BASRIYAH SHAIK BAHARUDIN
Timbalan Ketua Pustakawan

nar

Setuju.

27.1.2023

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