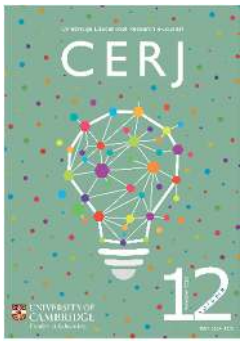

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Assessing the Impact of Indonesia's Project-Based Sukuk Financing Mechanism on Higher Education: Student Enrolment, Learning Quality, and Institutional Cash Flow

Kalihputro Fachriansyah[1, 2], Catur Wulandari[1], and Agnes Putri Santoso[1]

1 Directorate for Higher Education, Science and Technology, Ministry of National Development Planning/Bappenas, Indonesia
2 Institute of Education, University College London

ABSTRACT

This study assesses the impact of Indonesia's Sovereign Sharia Securities Project-Based Sukuk (SBSN-PBS) as a financing mechanism for public higher education institutions (HEIs). Introduced in 2015, SBSN-PBS was designed to address government fiscal constraints by mobilising Islamic finance to support the development of academic infrastructures in public HEIs. The research focuses on three key dimensions: student enrolment, quality of learning environment, and the effect on HEI's cash flow. A mixed-methods approach was employed, combining quantitative and qualitative data from a survey questionnaire in 91 public HEIs and 18 focus group discussions involving a total of 49 public HEIs. Data were collected in 2021, during the COVID-19 pandemic, which introduced contextual challenges that may have influenced infrastructure utilisation and institutional operations. The findings indicate that SBSN-PBS contributed to increased student enrolment and enhanced institutional performance, including improvements in accreditation status, average GPAs, study durations, and graduate competencies. Additionally, SBSN-PBS provided short-term financial relief to public HEIs, partly through increased tuition revenue. However, the experience of the pandemic highlights that the full benefits of SBSN-PBS may not be realised without alignment to evolving learning modalities, such as hybrid and online education. The study concludes with policy recommendations to strengthen the effectiveness and adaptability of SBSN-PBS as a strategic financing instrument for higher education development.

KEYWORDS

Higher education financing, project-based sukuk, SBSN-PBS, learning facilities development, COVID-19

Introduction

The expansion of higher education and its funding or financing strategies have become critical policy concerns globally (Johnstone, 2009; Marcucci, 2013), particularly in countries where governments aim to provide affordable or free access to higher education. In Indonesia, the government introduced the Sovereign Sharia Securities Project-Based Sukuk (*Surat Berharga Syariah Negara berbasis proyek*, or SBSN-PBS) as an alternative financing instrument. SBSN-PBS mobilises sharia-compliant capital to fund infrastructure projects in public sectors, including higher education, thereby reducing reliance on conventional state budgets.

In higher education sector, SBSN-PBS has been used to fund the construction of essential academic facilities such as classrooms, laboratories, and libraries (Alfariz et al., 2025; Directorate for Higher Education, Science and Technology, 2022). These investments are intended not only to expand institutional capacity but also to improve the quality of learning environments and support the financial sustainability of public HEIs. However, the actual impact of SBSN-PBS on these outcomes remains underexplored.

While some studies have documented improvements in enrolment and infrastructure availability (Alfariz et al., 2025), there is limited attention to broader institutional effects such as learning quality and

Contact: Kalihputro Fachriansyah, kalih.fachriansyah@bappenas.go.id

financial performance. Moreover, this study's data were collected in 2021, during the COVID-19 pandemic, which introduced contextual challenges that may have influenced infrastructure use and institutional operations. Although the pandemic is not the central focus of this research, it provides important background for interpreting the findings.

This study addresses these gaps by evaluating the impact of SBSN-PBS financing on three interrelated dimensions: (1) student enrolment; (2) the quality of learning environments; and (3) the effect on HEIs' cash flow and financial management. By combining quantitative and qualitative data from a wide range of institutions, the research provides a comprehensive assessment of SBSN-PBS as a strategic tool for higher education development in Indonesia. The findings aim to inform future policy design and implementation, particularly in the context of fiscal constraints and evolving educational needs.

Literature Review

Indonesia's Higher Education Context and Current Development

Indonesia's higher education system is extensive, with 4,437 HEIs serving 9.8 million students (DGHERT MOECRT, 2024). It organised under the two primary ministries: the Ministry of Education, Culture, Research, and Technology (MOECRT)[1], and the Ministry of Religious Affairs (MORA), which together cater for 97 percent of the students (DGHERT MOECRT, 2024). Under the MOECRT, there are 76 academic public HEIs (*perguruan tinggi negeri akademik,* PTNA) offering general, vocational, and professional education, and 49 vocational public HEIs (*perguruan tinggi negeri vokasi,* PTNV) dedicated solely for vocational education. MORA oversees 91 religious-based public HEIs, including 59 Islamic-focus institutions (*perguruan tinggi keagamaan Islam negeri,* PTKIN) (DGHERT MOECRT, 2024). Additionally, 24 non-educational ministries overseeing 171 ministery/institution HEIs (*perguruan tinggi kementerian lembaga,* PTKL), which were established to provide sector-specific vocational education or as service academies preparing future civil servants.

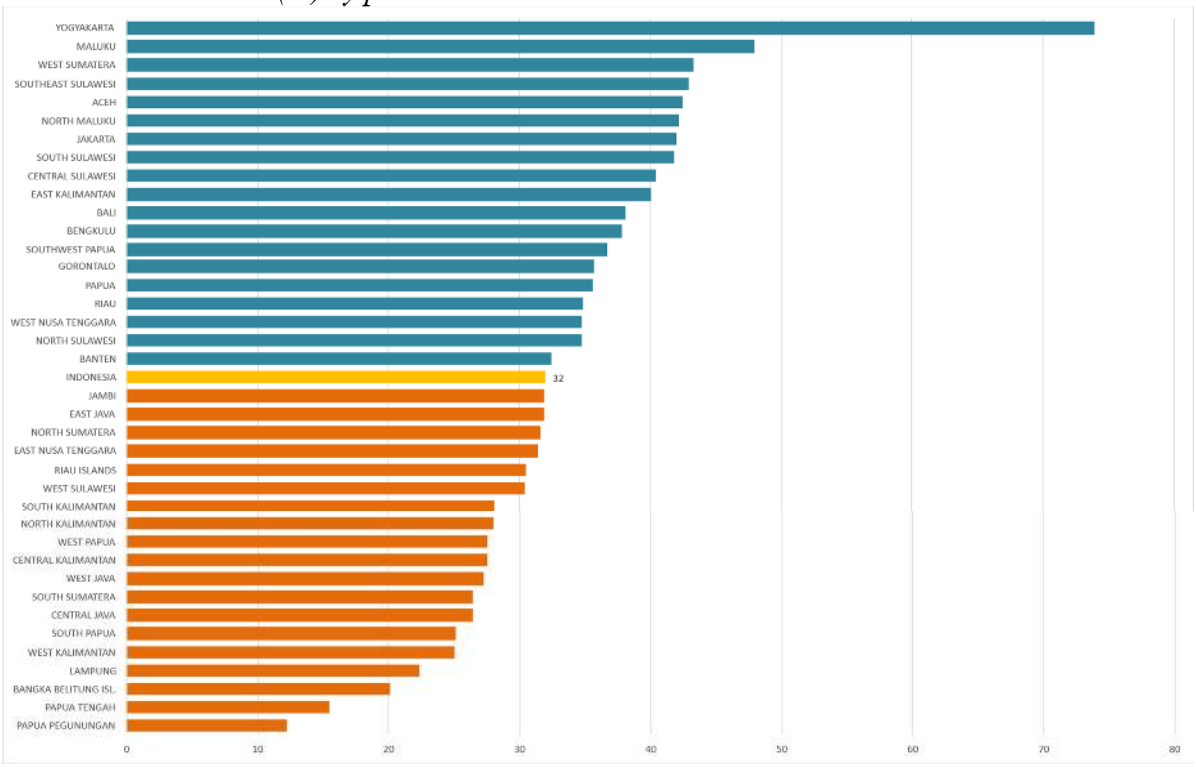
Although these public HEIs represent only 8 percent of all HEIs, they accomodate nearly half of all student enrolments in Indonesia. This is largely because public HEIs are more likely to benefit from government support (OECD & Asian Development Bank, 2015). The government funds public HEIs through four main policy instruments: operational funding, student financial aid, infrastructure development, and remuneration for teaching and non-teaching staff holding civil servant status (Ministry of Finance, 2023). Operational funding and staff remuneration are essential for daily teaching, learning, and research activities, and also serve as subsidies to maintain affordable higher education (MOECRT, 2019). Additionally, student financial aid, known as *KIP-Kuliah* is provided for students from disadvantaged backgrounds (Puslapdik, 2024). Infrastructure development, such as new teaching and research facilities, is allocated selectively due to the limited annual budget (Directorate for Higher Education, Science and Technology, 2022).

Despite this substantial government support, public HEIs also rely on other sources of revenue such as tuition fees, grants, and institutional business units (Priyono & Ahmad, 2018). However, the ability to generate non-government revenue is still limited to a few prestigious public HEIs with financial autonomy status (Fachriansyah & Sulastri, 2020; Pelawi, 2021; Alifa & Sulaeman, 2023). This inequality in institutional capacity is reflected in enrolment disparities across the 38 provinces (Figure 1), with several provinces, particularly densely populated or eastern regions, falling below the national average gross enrolment rate (GER) of 32 percent in 2024 (BPS-Statistics Indonesia, 2024).

[1] The name of the ministry has been frequently changed in corresponding to elected President discretion. The latest nomenclature is the Ministry of Higher Education, Science, and Technology. To avoid confusion, this study will use MOECRT

Figure 1

Gross enrolment ratio (%) by province in 2024



Source: author adoption from BPS Statistics Indonesia (2024)

The diversity of public HEIs also influences their funding and infrastructure challenges. Academic HEIs (PTNA) typically require broader facilities to support general and professional education, and can strategise in resource-sharing across faculties to minimise capital cost per student. On the other hand, vocational HEIs (PTNV and PTKL) often need specialised equipment and workshop spaces. Religious-based HEIs (PTKIN) may face unique constraints in aligning infrastructure with both academic and religious standards. These differences affect how institutions can utilise government support and pursue financial sustainability.

Expanding enrolments alongside stagnant government budgets have led to a decline in per student allocations (Welch & Aziz, 2024), risking a drop in quality. This funding gap has implications for institutional ability to meet the Eight National Standards for Higher Education (*Standar Nasional Pendidikan Tinggi*, or SNPT), particularly those related to graduate competency and learning infrastructure. The National Accreditation Board for Higher Education (*Badan Akreditasi Nasional Pendidikan Tinggi,* BANPT) conducts institutional assessments based on SNPT and grants accreditation statuses: ‘A’ or ’outstanding’, ‘B’ or ’excellent’, ‘C’ or ‘satisfactory’, or no accreditation. These statuses reflect factors such as the student-to-lecturer ratio, adequacy of learning facilities, and availability of student services. The accreditation process also evaluates HE outputs such as the graduate's grade point average, study length, and waiting time for the first job (BAN PT, 2019).

As presented in Table 1, quality gaps exist across the regions. For example, Maluku and Papua have no public HEIs accredited as 'A' or 'outstanding', in contrast to Java, where prestigious accredited 'A' or 'outstanding' public HEIs are concentrated. There are also concerns about the limited quality of public HEIs in vocational and religious-based education. This disparity suggests the need for affirmative resource allocation to less developed regions and under-resourced public HEIs.

Table 1
Public HEI accreditation by region

Region	Number of accredited 'A' or 'Outstanding' public HEIs/ Proportion to all HEI in the region		
	PTNA	**PTNV**	**PTKIN**
Sumatera	8 (44.4%)	0 (0)	1 (5.0%)
Java	21 (67.7%)	3 (15.8%)	6 (30%)
Nusa Tenggara-Bali	3 (50%)	0 (0)	0 (0)
Kalimantan	2 (33.3%)	0 (0)	0 (0)
Sulawesi	4 (44.4%)	0 (0)	1 (11.1%)
Maluku	0 (0)	0 (0)	0 (0)
Papua	0 (0)	0 (0)	0 (0)
Total	38 (50.7%)	3 (6.1%)	8 (13.8%)

Source: calculated from Higher Education Statistics (DGHERT, 2023)

SBSN-PBS as Mode of Financing Learning Infrastructure Development

Adequate learning infrastructure is essential for supporting student engagement, satisfaction, and academic achievement (Brooks, 2011; Guney & Al, 2012; Wilson & Cotgrave, 2016). In modern higher education, learning spaces have evolved into physical, virtual, and hybrid environments (Ellis & Goodyear, 2016). However, in the Indonesian context, physical infrastructure remains a key indicator of institutional quality, as reflected in accreditation assessments by BANPT, which consider factors such as space per student, accessibility, and facility quality (BAN PT, 2019). Overcrowded classrooms can negatively affect accreditation ratings, and limited infrastructure may constrain enrolment capacity.

As discussed in the previous section, public HEIs in Indonesia rely heavily on government funding, including BOPTN. While BOPTN may be used for refurbishing facilities, it cannot be allocated for new construction on a large scale (Ministry of Research, Technology, and Higher Education, 2019). This limitation has created a critical need for alternative financing mechanisms to support infrastructure expansion.

To address this gap, the Government of Indonesia introduced SBSN-PBS in 2011, following the enactment of the Law of State Sharia Bonds 19/2008. SBSN-PBS is a financing instrument used to support the national budget (APBN) through strategic capital investments. Unlike traditional funding, SBSN-PBS involves returns to investors and is backed by tangible project assets, making it a more accountable and productive form of public debt (Hariyanto, 2017; Nopijantoro, 2017). Its implementation involves multiple stakeholders, including project initiators, decision-makers, and civil society, ensuring transparency and prudence (Putera et al., 2022).

SBSN-PBS was first applied to the higher education sector in 2015 to finance seven PTKINs under MORA. In 2018, MOECRT adopted SBSN-PBS to develop two PTNAs, and its use has since expanded significantly. Between 2018 and 2021, MOECRT's SBSN-PBS allocation rose from IDR314.6 billion to IDR1,540.5 billion, while MORA's allocation increased from IDR280.9 billion to IDR1,199.9 billion (Directorate for Higher Education, Science and Technology, 2022).

These investments align with national priorities to improve equitable access and enhance graduate quality (Bappenas, 2014, 2019). To substantiate the impact, SBSN-PBS have been prioritised for newly established HEIs and those in low-enrolment regions. By expanding physical capacity, these facilities help increase student intake and potentially improve institutional revenue through tuition fees (Alfariz et al., 2025), contributing to long-term financial sustainability.

Overview Indonesia's Higher Education during COVID-19

Beyond its direct health impacts, the COVID-19 pandemic significantly disrupted the higher education sector in Indonesia. Beginning in March 2020, large-scale mobility restrictions shifted learning from face-to-face to online platforms (Olivia et al., 2020; Belawati & Nizam, 2020). Although online learning is not new,

pioneered by *Universitas Terbuka* in 1984 and later expanded through SPADA Indonesia and IdREN massive open online courses (Pannen, 2008; Pannen & Riyanti, 2019; Belawati & Nizam, 2020), the abrupt transition fundamentally altered the operational and financial dynamics of HEIs.

Internationally, HEIs experienced substantial financial losses due to campus closures, with estimates reaching £790 million in the United Kingdom, $14 billion in the United States, and AUS$3 billion in Australia (Burki, 2020). While similar figures for Indonesia are unavailable, comparable impacts likely occurred due to idle facilities and suspended business units. Socioeconomic hardship also led to tuition arrears and reduced student intake. To mitigate these effects and retain enrolment, many institutions introduced tuition waivers, payment deferrals, and other financial relief measures (Belawati & Nizam, 2020; Riinawati, 2021).

In response, the government enacted a budget refocusing policy through the Minister of Finance Regulation No.38/2020, directing ministries to cut non-essential spendings and reallocate them to COVID-19-related activities. Although SBSN-PBS budget allocations were exempt from these cuts, project implementation faced delays due to pandemic-related constraints. Health protocols restricted the mobilisation of materials and labour, reducing productivity and delaying construction timelines (Islam et al., 2024). As a result, planned increases in seating capacity and infrastructure improvements could not be realised as scheduled, limiting their immediate impact on enrolment and institutional resilience.

Method

This study adopted a sequential mixed-methods approach, using qualitative data from focus group discussions (FGDs) to support and enrich the analysis of quantitative and qualitative data gathered through a prior survey (Creswell & Plano Clark, 2011). This design enabled triangulation, enhancing the validity and reliability of findings by capturing both breadth and depth in understanding the impacts of SBSN-PBS financing on Indonesian higher education institutions (HEIs).

A questionnaire was distributed to all 95 Indonesian public HEIs that received SBSN-PBS funding from 2015 to 2021. The questionnaire gathered both quantitative and qualitative data, including participants' opinions and contextual insights related to the impact of the SBSN-PBS project on student enrolment, learning quality improvement, and institutional cash flow in the last three years (2018-2020). Of the 95 institutions contacted, 91 responded to the questionnaire, representing a high response rate. These comprised 21 PTNAs, 14 PTNVs, and 56 PTKINs.

To deepen insights from the survey, 18 online FGDs were conducted between July and August 2021. Each involved representatives from 4 to 6 HEIs, with 49 institutions participating: 18 PTNAs, 10 PTNVs, and 21 PTKINs. Participants were purposively selected and grouped by HEI type to ensure diverse representation. Each participant briefly presented their questionnaire responses, followed by discussions facilitated by researchers. This format encouraged group perspectives and allowed further probing of survey issues (Cohen et al., 2018). The group setting also helped reduce hierarchical dynamics between researchers, who were government officers, and participants, fostering a more open environment (Krueger & Casey, 2015; Kornbluh, 2023).

No audio or video recordings were made during the FGDs. Instead, three researchers took detailed notes during each session. These notes were compared and aligned for consistency before being reviewed and manually analysed. The analysis focused on identifying information aligned with the survey's themes and questions.

Participation in both the questionnaire and FGDs was voluntary. No follow-up was conducted to determine reasons for non-participation. Completion of the questionnaire and attendance at FGDs were taken as implied consent. Participants were informed of the study's purpose and assured of confidentiality. No individual or institution is identified in the findings. As an ethical safeguard, HEIs were anonymised using a coding system based on geographic region (Sumatera, Java, Kalimantan, Sulawesi, Nusa Tenggara-Bali, Maluku, and Papua) and institutional type (PTNA, PTNV, or PTKIN). For example, 'PTNA Sumatera-1' refers to an academic public HEI in Sumatera with the identifier '1'.

An integrative approach was used during interpretation and reporting, allowing for more nuanced insights than would be possible through separate analyses (McCrudden & McTigue, 2019). Data from the

survey and FGDs were analysed within predefined thematic categories: access, adequacy of learning facilities, quality, and institutional cash flow. These themes were developed deductively, based on literature review and the survey structure. This approach was appropriate for capturing key information related to the research questions (Braun & Clarke, 2006), particularly regarding the impacts of SBSN-PBS and the moderating effects of the COVID-19 pandemic.

Results

From 2015 to 2021, 95 public HEIs received infrastructure development assistance from SBSN-PBS funding, accounted for IDR3.8 trillion for PTNAs and PTNVs and IDR7.1 trillion for PTKINs. As shown in Table 2, during 2015 to 2021, the SBSN-PBS outputs were predominantly lecture buildings, accounting for 140 units in PTKINs, 22 units in PTNAs, and 9 units in PTNVs. The data indicate that lecture buildings are still significantly needed by public HEIs in Indonesia, particularly to expand access to higher education. SBSN-PBS provided access equity to eastern part of Indonesia. For instance, two lecture buildings built in each PTKIN Maluku-2 and PTKIN Papua-2 provided additional capacity of 840 and 640 students, respectively.

Table 2
SBSN-PBS Outputs 2015-2021

Year	Type of HEI	Lecture Building	Laboratory	Library	Others
2015	PTKIN	17	-	-	-
2016	PTKIN	34	5	5	9
2017	PTKIN	32	6	4	8
2018	PTKIN	29	6	1	14
	PTNA	3	3	-	-
2019	PTKIN	23	6	6	8
	PTNA	8	3	-	-
	PTNV	-	1	-	-
2020	PTKIN	2	-	-	-
	PTNA	8	6	1	-
	PTNV	6	4	-	1
2021	PTKIN	3	2	2	-
	PTNA	3	6	1	-
	PTNV	3	6	-	-
Total	PTKIN	140	25	18	39
	PTNA	22	18	2	-
	PTNV	9	11	-	1

Source: author calculation from survey data.

Impact on Student Enrolment

The impact of SBSN-PBS on student enrolment was examined by tracking student numbers between 2018 to 2020 in 59 public HEIs that had completed lecture buildings prior to 2020. Overall, these institutions experienced a 16 percent increase in student enrolment, rising from 591,185 to 683,716 students. At the institutional level, however, the impact was mixed: 48 HEIs (81 percent) reported an increase in enrolment, while 11 (19 percent) experienced a decline. This suggests that while the infrastructure investment was broadly beneficial, its effectiveness varied depending on local conditions.

The most substantial growth was observed at PTNA Sumatera-1, which received continuous SBSN-PBS funding as part of a strategic development plan to establish a new public university in Sumatra. Its student population grew from 2,677 in 2018 to 10,907 in 2020. More broadly, participants in focus group discussions noted that the presence of new, prominent buildings served as a powerful promotional tool, helping to attract prospective students and boost enrolment. Conversely, the 11 HEIs that experienced declining student numbers

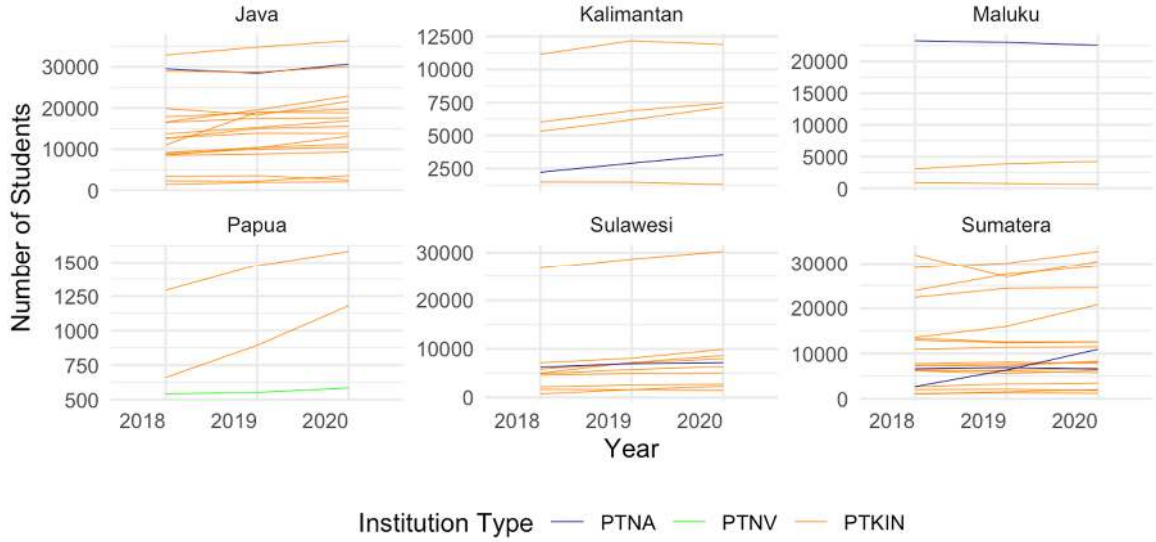
despite expanded capacity highlight the importance of contextual factors. For example, PTKIN Maluku-1 saw a 30 percent drop in enrolment, attributed to limited electricity access and the remoteness of its surrounding population.

Figure 2 illustrates the distribution of HEIs that received lecture buildings and their enrolment trends between 2018 and 2020, differentiated by region and institutional type. The majority of beneficiaries were PTKINs, reflecting their urgent need to expand lecture facilities to accommodate growing demand. PTKIN participants in focus groups emphasised this need, while PTNV representatives viewed SBSN-PBS as an opportunity to upgrade laboratories and workshops-facilities requiring substantial investment not typically covered by general funding.

The survey data also reveal notable regional disparities in student populations. Most public HEIs in Eastern Indonesia, including those in Papua, Maluku, and Sulawesi, have relatively small student bodies, typically fewer than 10,000 students. In these cases, SBSN-PBS investments significantly contributed to enrolment growth. For instance, PTKIN Papua-2 nearly doubled its student population from 660 in 2018 to 1,180 in 2020.

Figure 2

SBSN-PBS impact on student enrolment by regions in year 2018-2020



Source: author calculation from survey data.

However, the positive impact of new lecture buildings was moderated by the COVID-19 pandemic, particularly in Eastern Indonesia. Many prospective students lacked internet access and were unable to register online, while mobility restrictions prevented on-campus registration. These challenges were highlighted during focus group discussions by participants from PTNA Papua-1, PTNA Papua-2, PTNA Papua-3, PTNA Maluku-1, and PTKIN Maluku-1. In addition, the economic downturn made it difficult for some students to continue their education. To address these issues, the government introduced support measures for vulnerable students, including tuition waivers as outlined in Minister of Education Regulation No. 25/2020 and Minister of Religious Affairs Regulation No. 515/2020. These policies allowed for deferred payments and reduced tuition fees. To further mitigate learning loss during campus closures, MOECRT and MORA also provided internet data packages to support remote learning.

Impact on the Quality of Learning Environments

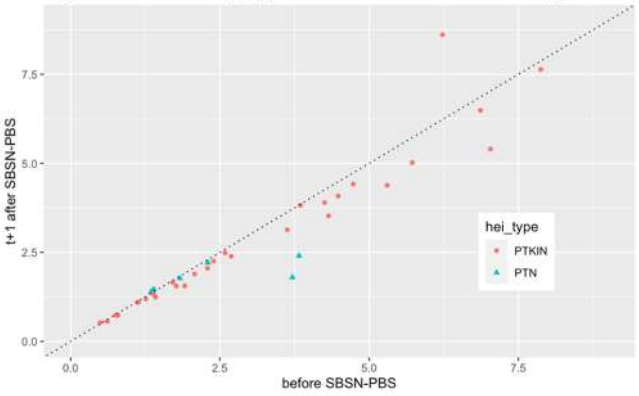
The SBSN-PBS financing mechanism has played a significant role in enhancing the quality of learning environments in Indonesian public HEIs. This impact is evident not only in the expansion of physical infrastructure but also in broader educational outcomes associated with improved facilities. SBSN-PBS funding enabled the construction of essential academic infrastructure, including classrooms, laboratories,

libraries, and multipurpose buildings, intended to improve both the adequacy and functionality of learning spaces, often measured by the ratio of space (square-metre) per student.

Among the 58 public HEIs that received SBSN-PBS funding in 2018 or 2019, the impact on space adequacy was moderate. As shown in Figure 3, most institutions fall below the "no change" dashed line, indicating that learning spaces remained similar or became more congested than before. This congestion occurred because many HEIs quickly filled the new seats with additional students, often exceeding their ideal capacity due to rising demand. For example, PTNA Sumatera-1 saw its laboratory space per student shrink from 3.72 square metres in 2018 to 1.17 square metres in 2020, following the admission of 3,000 additional students. In contrast, PTKIN Maluku-1 experienced an increase in space per student from 6.23 to 8.61 square metres, driven by a decline in enrolment despite the addition of new facilities.

Figure 3

Changes in learning space-to-student ratio (square-metre per student)



Source: author calculation from survey data.
Note: PTN includes both academic and vocational

The limited improvement in space adequacy was further moderated by the COVID-19 pandemic, which shifted learning patterns towards hybrid modes combining online and offline instruction. Interestingly, several HEIs participating in focus group discussions viewed this shift as a "blessing in disguise," as online learning allowed them to increase enrolment without immediately expanding physical infrastructure. However, without a strategic transition to sustainable hybrid learning models, these enrolment increases may prove unsustainable once full face-to-face learning resumes. Moreover, learning space adequacy is one of the criteria for quality education outlined in the Minister of Research, Technology and Higher Education Regulation No. 44/2015. Failure to meet these standards could negatively affect institutional accreditation and limit future student intake.

While the adequacy of physical infrastructure is a critical foundation, SBSN-PBS investments have also contributed to measurable improvements in learning quality. Although the survey did not include predefined indicators for assessing quality improvements, several public HEIs reported various metrics of enhanced educational quality. These included improvements in institutional or study programme accreditation in 22 HEIs, increases in average graduate grade point average (GPA) in 16 HEIs, reductions in study duration in 15 HEIs, and enhanced graduate competence in 9 HEIs. However, not all 91 respondents provided complete academic performance records. In many cases, institutions did not report quality-related impacts because the facilities were still under construction or had only recently been completed, and improvements had not yet been formally measured. Therefore, while these outcomes are promising, they represent a partial view of the overall impact and should be interpreted with caution.

Importantly, the survey did not explicitly capture negative trends such as GPA declines or extended study periods. However, several focus group participants acknowledged that the pandemic disrupted supervision schedules and delayed research activities, particularly in institutions where construction was incomplete or digital infrastructure was lacking. This suggests that while SBSN-PBS funding supported

improvements in some HEIs, others may have experienced stagnation or setbacks, especially during the pandemic. A more balanced picture would require further data collection on institutions that did not report positive changes.

Graduate competence, as reported by nine HEIs, refers to the perceived readiness of graduates to enter the labour market. This was assessed through a combination of employer feedback, tracer studies, and internal evaluations of student performance. Improvements were attributed to better access to laboratories, seminar rooms, and multipurpose buildings that support both academic and extracurricular development. Facilities for sports, collaboration, and student-led initiatives were seen as contributing to soft skill development, which is increasingly valued by employers.

These findings suggest that while SBSN-PBS investments have contributed to measurable improvements in learning quality, the benefits were not evenly distributed across all recipient HEIs. The outcomes were more concentrated in institutions that were better prepared to integrate new infrastructure into their academic processes. A critical factor influencing the immediate impact of SBSN-PBS, as highlighted during focus group discussions, was the availability of qualified staff to operate the new facilities. For instance, PTNV Papua-1 did not immediately benefit from quality improvement due to a shortage of lecturers and laboratory technicians capable of utilising the newly built laboratories. Several HEIs have yet to experience the full benefits, particularly where construction was recently completed or where enrolment pressures offset gains in space adequacy.

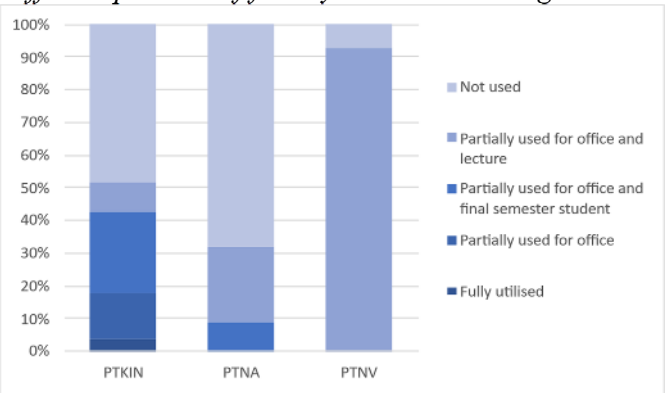
Impact on HEI's Cashflow

The SBSN-PBS project has had a notable impact on the cash flow of public HEIs, influencing both revenue and expenditure patterns. On the revenue side, many institutions experienced an increase in tuition income as enrolment rose following the expansion of learning facilities. For example, PTNA Kalimantan-2 recorded a 35 percent increase in tuition revenue as student numbers grew from 5,809 to 6,958 between 2018 and 2019. However, this trend was disrupted in 2020 due to tuition fee reduction policies introduced to support student retention during the COVID-19 pandemic. Despite further enrolment growth to 7,385 students, PTNA Kalimantan-2 experienced a 51 percent decline in tuition revenue. More broadly, 25 out of 91 public HEIs reported a decrease in revenue between 2019 and 2020. Focus group participants confirmed that similar tuition reduction or deferral policies were implemented at the discretion of HEI leadership.

In addition to tuition income, SBSN-PBS investments contributed to increased cooperation revenue, particularly through the availability of laboratories and research facilities. These facilities enabled HEIs to access research grants and establish partnerships with external stakeholders. However, the pandemic significantly limited the utilisation of these facilities, reducing opportunities for revenue generation. As shown in Figure 4, most public HEIs either partially utilised or did not use their physical infrastructure during the pandemic. Notable exceptions included PTKIN Maluku-2 and PTKIN Sulawesi-9, which continued full utilisation due to their remote locations and lower exposure to COVID-19 risks.

Figure 4

Different patterns of facility utilisation during COVID-19 by type of HEI

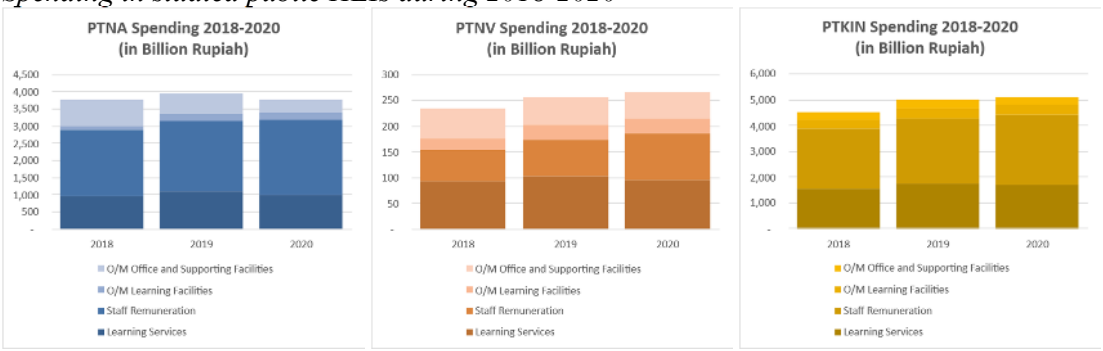


Source: author calculation from survey data.

On the expenditure side, SBSN-PBS also influenced spending patterns. The survey categorised HEI expenditures into four main areas: (1) learning services, including direct costs for educational provision; (2) salaries and allowances; (3) operations and maintenance of learning buildings (e.g. electricity, water, internet); and (4) operations and maintenance of supporting buildings such as offices and multipurpose halls. As illustrated in Figure 5, overall spending in PTNV and PTKIN slightly increased between 2018 and 2020, while PTNA spending declined from IDR 3.95 trillion in 2019 to IDR 3.79 trillion in 2020.

Figure 5

Spending in studied public HEIs during 2018-2020



Source: author calculation from survey data.

With the construction of new facilities, operating and maintenance costs were expected to rise. At the aggregate level, this trend was observed; however, analysis at the institutional level revealed an inconclusive pattern, with variations depending on utilisation and local conditions. Staff remuneration also increased in proportion to enrolment growth, reflecting the need for additional academic and administrative support.

Although total spending did not differ significantly from previous years, many HEIs reported initial difficulties in executing planned budgets during the early stages of the pandemic due to mobility restrictions. Following the enactment of the budget refocusing policy, spending gradually normalised as the Ministry of Finance issued guidelines on eligible expenditure items. Several HEIs, including PTNA Sulawesi-3, PTNA Sumatera-5, PTKIN Sulawesi-3, PTKIN Sulawesi-4, PTKIN Java-5, and PTKIN Java-13, had to increase spending to comply with health protocols and support online learning. Typical expenses included enhanced campus internet bandwidth, data packages for staff, and subscriptions for virtual meeting platforms.

Discussion

This study provides empirical insights into the role of SBSN-PBS as an alternative financing mechanism in Indonesian higher education. The financing scheme has played a strategic role in expanding infrastructure across public HEIs, with access expansion being a central objective for the 91 institutions that received SBSN-PBS funding between 2015 and 2021. While the construction of new lecture buildings supports the positive relationship between infrastructure availability and enrolment (Alfariz et al., 2025), the effectiveness of this expansion varied significantly depending on institutional context, particularly the availability of basic infrastructure and operational readiness. In several cases, the lack of qualified lecturers and laboratory technicians limited the ability of HEIs to fully utilise new facilities, raising concerns about the sustainability of access gains.

Moreover, the presence of new infrastructure did not always translate into adequate learning environments. Some HEIs admit students beyond recommended capacity, resulting in overcrowded classrooms that risk compromising learning quality and accreditation status (BAN PT, 2019). Similarly, the rapid shift to online and hybrid learning during the COVID-19 pandemic, without sufficient digital infrastructure, pedagogical adaptation, or regulatory support, may have exacerbated inequalities in learning

experiences and institutional capacity. These challenges reflect a broader tension between access expansion and quality assurance in low- and middle-income countries, where resource constraints often undermine ambitious policy goals (Schendel & McCowan, 2016). In such contexts, higher education risks becoming symbolic rather than transformative, especially when graduates are not equipped with competencies demanded by the labour market, contradicting the expected positive correlation between years of schooling and returns to education (Psacharopoulos, 2006).

While SBSN-PBS investments contributed to reported improvements in student learning outcomes, such as GPA, study duration, and graduate competence, these outcomes warrant critical reflection. The study did not assess classroom design or spatial arrangements, which are closely linked to learning theory (Guney & Al, 2012). Furthermore, the reported improvements are based on self-reported survey data and may reflect aspirational narratives rather than objectively measured outcomes. It is plausible that improved access to laboratories enhances practical skills, and that adequate seminar rooms reduce delays in final-year assessments. However, attributing learning outcomes solely to infrastructure overlooks the influence of pedagogical quality, curriculum design, and student engagement. Future evaluations should triangulate infrastructure data with academic performance metrics and qualitative insights to better understand the mechanisms through which SBSN-PBS contributes to educational quality.

From a financial perspective, SBSN-PBS has introduced new dynamics in institutional cashflow. The analysis shows that infrastructure expansion led to increased tuition revenue in many HEIs, suggesting a potential link between capital investment and financial sustainability. However, this effect was uneven and insufficient to ensure long-term financial independence. Public HEIs remain reliant on government allocations to cover core operational costs. What this study adds is a recognition that SBSN-PBS-funded infrastructure, while valuable, also generates new financial obligations, particularly for operations and maintenance, that are not always matched by proportional revenue growth.

This tension highlights the need for a more strategic approach to institutional financing. Rather than relying solely on tuition fees, which proved unreliable during the pandemic, HEIs should be supported to diversify their income sources. One promising direction is to leverage SBSN-PBS-funded infrastructure for complementary revenue-generating activities such as laboratory testing and research services, industry-based on-demand courses (Furstenbach, 1993). Additionally, HEIs could explore facility-based income, such as renting out lecture halls or multipurpose spaces for community or business use, as long as these activities do not interfere with core academic functions. To enable this, future policy frameworks should consider granting HEIs greater flexibility in asset utilisation, alongside capacity-building in entrepreneurial management. Such measures would help institutions build more resilient and diversified revenue models over time.

Limitation of the Study

Despite its novelty in terms of the number of HEIs studied and the depth of data collected, this study has several limitations. First, the indicators used to assess learning and graduate quality were limited. While academic metrics such as GPA and study duration were included, data on non-academic performance and graduate outcomes from tracer studies were insufficient. This limits a comprehensive understanding of SBSN-PBS's broader impacts on employability and long-term success.

Second, although learning facilities are often shared across programmes, the study aggregated benefits at the institutional level rather than at the specific faculty or programme level where SBSN-PBS was implemented. This may obscure the specific impacts on individual units, potentially leading to over- or underestimation of the project's effectiveness.

Third, the study lacked direct student input. Including student perspectives could have provided valuable insights into how SBSN-PBS projects affect their learning environments and academic experiences. Future research should incorporate qualitative data from students to enrich the understanding of the project's impact.

Lastly, the study relied on self-reported data from HEIs, which may introduce bias. While the data offer useful insights, findings should be interpreted with caution, as self-reported information may not always reflect actual conditions.

Implications for Future Policy

The COVID-19 pandemic has fundamentally reshaped societal norms, including those within the higher education sector. Although the immediate crisis has passed, future policy planning must anticipate and respond to potential disruptions that may similarly affect learning continuity. The shift in learning modalities, particularly the integration of online and hybrid formats, has become a new normal. Accordingly, HEIs must develop strategies to support evolving pedagogical practices and optimise existing infrastructure that was underutilised during the pandemic.

Future infrastructure investments should be tailored to contemporary learning needs, with greater emphasis on digital readiness. This includes upgrading information technology infrastructure such as computers, cameras, sound systems, digital whiteboards, and high-bandwidth internet access. SBSN-PBS should be re-envisioned not only as a mechanism for physical expansion but also as a catalyst for digital transformation. HEIs must be equipped to deliver engaging online learning environments that support cognitive development, emotional engagement, motivation, and social interaction. To ensure inclusivity, institutions should offer multiple learning platforms that accommodate students with limited access to technology. Government support will be essential in enhancing staff capacity to adapt to digital tools and pedagogical innovations.

To improve accountability and effectiveness, SBSN-PBS financing should be accompanied by clear performance indicators. These indicators should focus on the utilisation of funded facilities and their contribution to learning quality. In addition, national policy frameworks should provide greater flexibility in the design and governance of SBSN-PBS projects, particularly during emergencies. Such flexibility is vital for enabling responsive decision-making at the institutional level, taking into account the diverse geographical, infrastructural, and socioeconomic contexts in which HEIs operate.

Ultimately, future policy must move beyond infrastructure provision to embrace a more holistic approach to institutional development: one that integrates digital transformation, operational flexibility, and performance-based accountability. This will ensure that SBSN-PBS continues to serve as a strategic instrument for strengthening the resilience, inclusivity, and quality of Indonesia's higher education system.

Conclusion

This study has demonstrated that SBSN-PBS has played a strategic role in expanding infrastructure across Indonesian public HEIs, contributing to increased student enrolment and improved learning environments. However, the effectiveness of this expansion was shaped by institutional readiness, including the availability of qualified staff and supporting infrastructure. The pandemic further exposed systemic vulnerabilities, particularly in digital capacity and pedagogical adaptability, underscoring the tension between access expansion and quality assurance.

While SBSN-PBS-funded facilities were associated with reported improvements in academic outcomes and graduate employability, these findings require cautious interpretation. The study highlights the need to move beyond infrastructure provision as a proxy for educational quality, advocating for more nuanced evaluations that consider pedagogical practices, curriculum relevance, and student engagement. Financially, SBSN-PBS introduced both opportunities and obligations, with increased tuition revenue offset by new operational demands. This calls for a more diversified and resilient institutional financing model.

Moving forward, SBSN-PBS should be re-envisioned not only as a tool for physical expansion but also as a catalyst for digital transformation and institutional innovation. Future investments must align with contemporary learning modalities, particularly hybrid and online formats, and be supported by robust information technology infrastructure and staff capacity-building. Policy frameworks should incorporate performance-based indicators and offer greater flexibility in project governance, enabling HEIs to respond effectively to diverse and evolving challenges.

Finally, the sustainability and impact of SBSN-PBS depend on its integration within a broader strategy for higher education reform that balances access, quality, and financial resilience, and positions infrastructure as part of a holistic approach to institutional development.

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