

The financial sustainability of Vietnamese higher education institutions: unveiling the hidden factors

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Abstract

Purpose – Over several decades, the Vietnamese government has gradually reduced funding for public higher education and has implemented a cost-sharing system. As a result, Vietnamese universities have had to look for alternative sources of income. While there is a significant emphasis on the importance of revenue diversification in higher education in Vietnam, there is limited empirical data on financing for Vietnamese higher education. The purpose of this paper, therefore, is to estimate the degree of financial sustainability in Vietnamese universities.

Design/methodology/approach – The authors used the Hirschman–Herfindahl Index and multiple regression analysis to assess 134 Vietnamese universities' financial sustainability between 2013 and 2020.

Findings – The results revealed that almost all universities in this study were unsustainable due to their weak financial diversity. The age, type of ownership, location, the ratio of lecturers with PhD degrees and land size can affect the financial diversification level of higher education institutions. Our study highlighted that public universities have better financial health than private universities; institutions in rural areas have higher financial diversification than in big cities.

Originality/value – Suggestions for policymakers and university leaders that may enhance financial sustainability include the adoption of tailored strategies based on the university's characteristics and missions.

Keywords Higher education finance, Financial diversification, Higher education policy, Vietnam, Hirschman–Herfindahl index

Paper type Research paper

Introduction

Global higher education finance policies have steadily shifted from free higher education to cost-sharing systems over the past few decades (Finney, 2014; Heller and Rogers, 2006; Pham and Vu, 2019). Several stakeholders, including governments, students, parents, businesses and philanthropists, now contribute to the expense of higher education rather than a sole agency (i.e. government) as previously. However, the extent to which each party should bear responsibility in the financial relationship is a matter of ongoing debate and lacks a consensus (Hillman and Peek, 2023). Furthermore, higher education has evolved into a quasi-market, with universities increasingly behaving like private enterprises and trying to generate revenue



from different sources (Delaney and Doyle, 2018; Marginson, 2013). Therefore, the degree of financial diversification indicates the health or viability of higher education institutions (HEIs) (Garland, 2020).

Historically, public universities in some countries got complete financial backing from the government, and students enjoyed free education (Barr, 2004; Greenaway and Haynes, 2003). However, government support for public higher education has decreased globally during the past several decades in both developed and developing economies (Tandberg, 2010). This modification necessitates cost-sharing regulations or the necessity for public institutions to seek alternative sources of revenue, such as tuition fees, donations and knowledge transfer services, in order to maintain their operations. Many countries, including developed countries (Clark, 1998; Etzkowitz *et al.*, 2000) and low-income or middle-income nations have incorporated cost-sharing into their higher education reform agendas (Kanaan *et al.*, 2011).

Vietnam is not an exception from the aforementioned trend when the cost-sharing scheme has been implemented due to two main reasons: the expansion of the higher education system and the constraints in the government funding for higher education. Several programs and regulations have been implemented since the cost-sharing scheme's first introduction in 1997: tuition fees, national loan program, donations and technology transfer (Le *et al.*, 2021; Pham and Vu, 2019).

In the aforementioned context, financial sustainability is essential for Vietnamese higher education institutions to reduce their dependency on the government's funding and develop sustainably. However, there is limited empirical evidence examining Vietnamese universities' status quo. Therefore, this study wants to fill the literature gap by examining Vietnamese higher education institutions' financial diversification level affected factors. More specifically, this study aims to answer two research questions (RQs) below:

- RQ1. What are the levels of financial diversification among Vietnamese higher education institutions from 2013 to 2020?
- RQ2. How do institutional attributes (e.g. age, type of ownership, location, diversity, student size, the ratio of lecturers with PhD degrees, type of university and land size) affect the financial diversification level?

To address these two research questions, a unique dataset was collected by the authors through different sources, including university reports and websites. The study period starts in 2013 and ends in 2020.

Literature review

Financial diversification in the global higher education systems

Financial diversification emerged in many nations' higher education reform plans (Le *et al.*, 2021). Since the mid-1990s, Clark (1998) revealed that European universities need to build a portfolio of patrons to share enormously increasing costs to respond to the gradual decline in government funding, increasing demand for abundant knowledge, more outstanding quality and student growth. In England, universities now pay more attention to their financial sustainability due to the liberalization of the higher education market. Hickey (2024) posited that while small public universities heavily depend on home tuition fees, approximately 77% of their income on average, bigger and more autonomous universities diversify their income from international fees, research grants, funding body grants and other income. In addition, graduate taxes and income-contingent loans have been becoming a popular approach to fund higher education (Britton *et al.*, 2019). In the UK, income contingent loans are the default for undergraduates. The borrowers make minimum payments on their debt, contributing 9% of their income above a certain threshold each year (Britton and Gruber, 2020). Generally, higher income-contingent loans do not result in higher annual repayments; instead, they often lead to a more extended repayment period or a larger amount of debt forgiven at the end of the loan

term. In the UK, the repayment term is currently set at 30 years, while in some other countries, like New Zealand and Australia, it extends until retirement or even death respectively (Britton and Gruber, 2020). However, McGettigan (2013) argues that the rise of income-contingent loans, combined with the expansion of tuition fees, creates a generation of students trapped in financial uncertainty. Hence, in order for autonomy and liberalization policies to develop sustainably in a quasi-education market, universities should concentrate on their core mission of providing accessible, high-quality education, prioritizing social justice and human flourishing (McGettigan, 2013) and proactively seeking ways to adapt their strategy, that is diversifying into new programs and greater use of domestic and international partnerships (Hickey, 2024).

In Canada, Eastman (2006) investigated the revenue generation strategies of four major public higher education institutions, given an extended period of budget reductions. In this study, the author conducted semi-structured interviews with senior university officers, along with analysis of financial data and archival research. The study found a differentiation between institutional-level and faculty-level revenue generation initiatives. Some various sources of revenue for Canadian universities are proposed: increasing tuition fees for local students, private fundraising and lobbying governments, continuing education, ancillary operations and land development. Recently, sharp decreases in public funding have considerably forced Canadian universities to diversify their revenues more and more, especially by raising tuition fees (Lang, 2022). Whilst, the foremost challenges confronting colleges and universities in the US are maintaining quality standards and competitiveness amid prolonged resource constraints from tuition revenues and public subsidies (Finney, 2014; Hearn, 2003; Webb, 2015). Like the Western nations, American universities have been promoting knowledge transfer and innovation services with businesses and local communities that not only engender enormous innovations, develop talents, create new products and services, enhance the standard of living for people but also generate financial returns (Hidalgo and Albers, 2011; Rossoni et al., 2024). Moreover, endowment is significant for universities to yield income. In the US, over 43% of non-profits have received endowments and the most endowment funds are received by higher education non-profits (Calabrese and Ely, 2017). Hence, institutional revenues are generated from the general domains: tuition fees, government loans, instruction, research and analysis, financial decision-making and management, pricing, human resources, franchises, sponsorship and partnering arrangements with third parties, licensing, auxiliary and affiliate, facilities and real estates and development (Hearn, 2003; Webb, 2015). However, the implementation of revenue diversification strategies in the US' universities may encounter numerous obstacles, hindering the effective generation of their income. Finney (2014) found that improving funding for universities by increasing tuition fees puts pressure on students' families. The statistics revealed in the study show a notable enormous growth of tuition and fees from the mid-1980s-2013 (632%) in many American families' expenses while their income increased by only 152%. Hence, for profound change to diversify their revenue streams successfully, state leaders should proactively encourage innovative and efficient use of public funds, prioritize financial support for low-income and first-generation students and establish tuition policies tied to family income (Finney, 2014). University managers should prepare for massive organizational transformation and be aware of fundamental change (Hearn, 2003).

Similarly, universities in low-income or middle-income countries have been diversifying their financial sources. Nik Ahmad et al. (2019) used the Hirschman–Herfindahl Index (HHI) to investigate the degree of revenue diversification of selected Malaysian public universities from 2013 to 2015. The study found that Malaysian public universities have made efforts to generate three primary revenue sources: government grants, tuition fees and other income (rental, investment and miscellaneous). The results also indicated that “funding variety” and “revenue balance” will likely differ among universities. The more established and larger public universities have more non-traditional income. However, “revenue balance” does not seem so apparent. Meanwhile, Thai HEIs are encountering an increasing number of

challenges, for instance, international competition, a decline in student population due to ageing society and growing operational costs (Scott and Guan, 2023). In the context of communist countries, Wang (2001) investigated significant government policies and reforms and their influence on financing higher learning institutions in China in three periods: (1) from 1978 to the beginning of the 1980s (the period of restoring the higher education system), (2) from 1985 to 1992 (the first wave of higher education reform), (3) from 1992 to the beginning of the 2000s (government efforts to deepen the reform of the structuring and financing of higher education). It was emphasized in the study that China endeavored to decentralize the financial responsibilities in their higher education system. Hence, Chinese higher education institutions obtain diverse financial sources, from tuition fees, business and private donations, alumni donations and endowments, training contracts for enterprises and research and consultancy contracts (Tian and Liu, 2019; Wang, 2001). However, the situation facing the financial diversification of Chinese universities is equal opportunity, financial aid for students and the disparity in financial sources (Liu and Gao, 2021; Wang, 2001).

With declining government financial resources, universities worldwide must be more entrepreneurial and autonomous than before to generate funding from other sources to improve financial stability (Hearn, 2003; Le *et al.*, 2021, 2022; Mok, 2007; Nik Ahmad *et al.*, 2019; Scott and Guan, 2023; Tian and Liu, 2019; Wang, 2001). Nonetheless, universities face numerous financial constraints, that is equal opportunity, financial aid for students, disparity or inadequate diversification. In high-income nations, e.g. Australia, universities are facing a decline in international student enrolments due to the global COVID-19 pandemic and the government's attempts to reduce migration (Campbell, 2024; Krause, 2022). Whilst, according to Le *et al.* (2021), public universities in low-income or middle-income economies experience greater pressure to diversify revenues than their counterparts in developed countries, partly because governments in low-income or middle-income nations face more significant budget constraints than those in the developed world. Moreover, universities in these countries, typically relying heavily on government support, are less autonomous than those in the developed world, often facing more significant challenges in generating revenues from other sources, that is knowledge transfer, endowments or philanthropic contributions.

Context of the study: Vietnamese higher education system

In tandem with *Doi Moi* (Reform), the Vietnamese educational system experienced dramatic growth in the late 1980s (Pham and Vu, 2019). Evolving from an elite system in the early 1990s, the Vietnamese higher education system has presently become a massive one. The number of universities has significantly increased from 63 in 1987 to 242 in 2022 (Vietnam Ministry of Education and Training, 2009, 2022). Simultaneously, the Gross Enrollment Ratio, often considered a proxy for the degree of education expansion, has risen from 9.5% (in 1999) to 28.6% (in 2019) (O'Connell *et al.*, 2022). Under such circumstances, the Vietnamese government has grappled with financing all public higher education institutions. Consequently, the financial policy for public higher education institutions in Vietnam has transformed from a wholly publicly subsidized system to a cost-sharing one. Specifically, public universities in Vietnam are now permitted to charge tuition fees from their students. Nevertheless, increasing tuition fees is not an ideal solution as it may lead to inequitable access to higher education. Thus, seeking new sources of funding, such as knowledge transfer, corporate partnerships, philanthropies and endowments, is paramount for public higher education institutions in Vietnam nowadays (Pham and Vu, 2019; Le *et al.*, 2021).

Theoretical framework

Prior studies in higher education have indicated that financial diversification guarantees financial health, sustainability and long-term survival (Garland, 2020; Mok, 2007; Orr, 2015; Sporn, 1999; Wangenge-Ouma, 2011). Clark (1998) posited that the enlarged portfolio of

revenue streams enables a university to strengthen the ever more crucial capacity to internally cross-subsidize. One year later, [Sporn \(1999\)](#) found that revenue diversification helped universities enhance their adaptation to financial vulnerability. Specifically, when universities rely entirely on a single source of income, they need to be more capable of proactively copying with environmental demands. Similarly, [Mok \(2007\)](#) reported that public universities will likely achieve superior performance and adapt to dynamic social and economic changes. Another benefit attributed to income diversification of universities is the quality of higher education. The study conducted by [Hopper \(2001\)](#) showed that students who receive student loans often outperform their peers who have not received financial support since they are more conscious of the value of their education. Therefore, in the study context, we use [Pfeffer and Salancik's \(1978, 2015\)](#) Resource Dependency Theory to illuminate the importance of having a diverse income and investigate the financial health of Vietnamese higher education institutions. The Resource Dependency Theory explains that organizations will be able to survive if they can acquire and retain vital resources ([Pfeffer and Salancik, 1978, 2015](#)). However, for future growth and survival, these organizations must ensure positive interactions with resource providers ([Froelich, 1999](#)).

Financial health for higher education institutions, in this study, is defined as a composite measure reflecting their ability to sustain operations, manage financial obligations and support strategic investments. Revenue diversification, measured through the Herfindahl-Hirschman Index, serves as a primary indicator. This approach is based on Resource Dependency Theory's emphasis on minimizing financial dependency risks ([Garland, 2020](#)). However, financial health can also be evaluated using additional indicators, such as liquidity ratios and debt management, to provide a more comprehensive understanding ([Tandberg, 2018](#)). Future research could incorporate these broader metrics alongside the HHI, offering a fuller assessment of financial health. This circumstance arose due to the paucity of vital resources and the unpredictability of the surrounding environment. Thus, the Resource Dependency Theory provides an acceptable theoretical explanation for the present study to comprehend the financial sustainability of Vietnamese universities that rely on government support.

The Resource Dependency Theory also emphasizes that diversification is a crucial strategy for organizations that wish to maintain their independence in the future. Therefore, higher education institutions encountering the State appropriation decline must engage with non-governmental income sources ([Wangenge-Ouma, 2011](#)). Notably, previous research has embraced the Resource Dependency Theory to describe how organizations reliant on funders could manage limited resources. Despite some differences between non-profit organizations and higher education institutions, previous research that utilized this theory to investigate non-profit organizations is still applicable and might be implemented in Vietnamese universities because both sectors are driven by idealistic goals ([Webb, 2015](#)).

When applied to Vietnamese higher education institutions, Resource Dependency Theory highlights the crucial significance of many resources, including institutional age, student population, institutional types and orientations and geographical area, in determining their level of financial diversification. These features, which reflect the resources available to a university, are consistent with Pfeffer and Salancik's viewpoint that the ability to get and maintain crucial resources is crucial for survival. Universities can maintain financial stability and independence by utilizing their diverse resources, such as larger student populations, long histories, specific institutional types and extensive land size ([Manrique and Grifell-Tatjé, 2020](#); [Tandberg, 2018](#); [Hartarska, 2005](#)). This is especially important when facing changes in state support and external uncertainties.

Methodology

Data collection

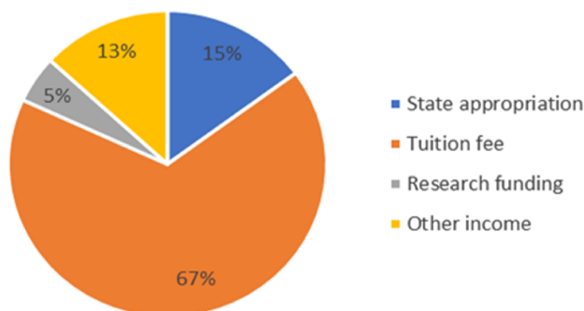
This study employed a unique dataset collected from different sources, including university websites, university annual reports and Vietnam Ministry of Education and Training's

statistics. The descriptive statistics of all variables, including variable's name, description, measurement, mean (standard deviation), frequency are represented in [Table 2](#). For the income-related variables used to calculate the HHI score, we gathered data from universities' annual reports and the official website of the Vietnam Ministry of Education and Training (MOET). Unlike developed countries with centralized data collection systems, Vietnam's decentralized system required innovative and meticulous efforts to compile data from multiple sources. This approach allowed us to integrate diverse datasets, ensuring comprehensive coverage of financial and institutional variables. While this process presented challenges, such as discrepancies between datasets, missing values and inconsistencies in reporting formats, these were carefully addressed through data harmonization and validation techniques to enhance reliability and comparability.

This study represents financial health through financial diversification, measured using the HHI—a widely accepted proxy for a university's financial diversification level. This approach reflects both the strengths and limitations of the available data. The aggregation of income streams (e.g. endowments, Knowledge Exchange, local partnerships) into "other income" provides a practical way to quantify diverse income sources, even if some granularity is unavoidably reduced. While certain indicators like student family resources were unavailable, our compiled dataset remains one of the most comprehensive for Vietnamese higher education, offering valuable insights into the literature. These efforts highlight our dataset's and methodology's robustness, even within a complex, resource-constrained data environment.

The HHI, originally developed to quantify business concentration ([Rhoades, 1995](#)), is also utilized in the non-profit sector to assess revenue diversification and financial sustainability ([Chikoto et al., 2016](#)). In higher education research, this index has been applied in European, UK, Malaysia and Vietnamese contexts ([Garland, 2020](#); [Jaafar et al., 2021](#); [Le et al., 2021](#)) to represent a university's financial diversification or financial sustainability. The index calculation involves the number of income sources and the revenue from each, preferring the standardized approach (score range: 0–1) for higher education (see [Figure 1](#)). This study adopts [Pham and Le \(2021\)](#)'s approach, with five levels of financial diversification level, as shown in [Table 1](#). The research focuses on the Vietnamese higher education system, where income is divided into four main categories: State appropriation, Tuition fees, Research and Development and Other incomes.

The formulation of the HHI is as follows:



Source(s): Authors' own work

Figure 1. Share of financial income of Vietnamese universities between 2013 and 2022

Table 1. Classification of financial diversity level based on HHI values

HHI value	Financial diversity level
0.0–0.2	High
0.2–0.4	Relative high
0.4–0.6	Moderate
0.6–0.8	Relative low
0.8–1.0	Low

Source(s): Pham and Le (2021)

$$\sum_{i=1}^N (r_i/R)^2, i = 1, \dots, n,$$

where N is the number of income sources, r is the income from the ith source and R is the total income (revenue) from all sources.

Measures

Table 2 describes the descriptive measures of independent and dependent variables included in this study. Specifically:

- (1) Age of university (AGE): Age of the university;
- (2) Type ownership of university (OWN): whether a university is public university or private university;

Table 2. Description of independent and dependent variables

Variable code	Measurements	Type of variable	Mean (SD) or frequency	Reference	Expected relationship with HHI
AGE	interval/ratio	Independent variable	42.66 (25.86)	Yazdanfar and Ohman (2014)	Negative
OWN	Dummy	Independent variable	102 public (76.10%) 32 private (23.90%)	Tandberg (2018)	Negative
LOC	Dummy	Independent variable	90 in big cities (67.10%) 44 in non-big cities (32.90%)		Negative
ORI	Dummy	Independent variable	83 multidisciplinary (61.90%) 51 monodisciplinary (38.10%)		Negative
STS	interval/ratio	Independent variable		Hartarska (2005)	Negative
PHD	interval/ratio	Independent variable	0.20 (0.10)		Negative
LAN	interval/ratio	Independent variable	3406000.00 (2200000.00)	Hartarska (2005)	Negative
HHI	interval/ratio	Dependent variable	0.55 (0.22)		/

Source(s): Authors' own work

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- (3) Location of the university (LOC): whether a university locates in a big city (Hanoi, Ho Chi Minh City or Danang) or non-big city;
- (4) Orientation of university (ORI): whether a university is multidisciplinary or monodisciplinary;
- (5) Student size (STS): Number of students currently enrolled in the university (average between 2013 and 2022);
- (6) The ratio of lecturers who held a PhD degree over the whole population of lecturers in the university (average between 2013 and 2022) (PHD);
- (7) Land size (LAN) of the university (m²);
- (8) Average HHI score between 2013 and 2022 (HHI).

Further from calculating the HHI score, we want to examine to what extent the institutional attributes affect the financial health of the universities. Leveraging the capacity to gauge the strength of the relationship between an outcome and multiple predictor variables (Petchko, 2018), this study employs multiple regression analysis for the examination.

Results

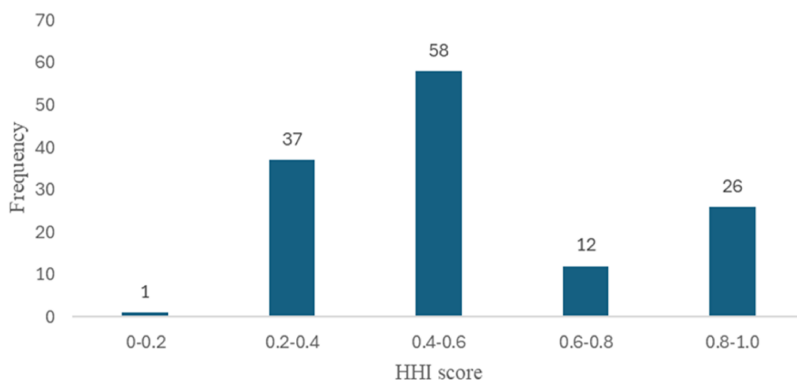
Share of income sources for 134 surveyed universities

Figure 1 shows the average proportion of each income source of 134 universities included in this study between 2013 and 2020. Tuition fee has always been the most crucial income source at all the surveyed universities, accounting for 67% of the total income. Following tuition fees, state appropriation is the second contributor to the total universities' income with 15%. Compared to tuition fees and state appropriation, the income from research only accounted for 5%. The figure for other income, including loans and endowments, is 13%.

HHI score results

Figure 2 below illustrates the distribution of the average HHI score of 134 Vietnamese universities in the survey. Specifically, the 134 universities surveyed are categorized into five groups based on their HHI scores, as indicated in Table 1.

As shown in Figure 2, the majority of Vietnamese universities participating in this research (58 or 43.28%) have moderate to high financial concentration with HHI scores between 0.4–0.6, which reflects a moderate level of financial diversification. The next largest group (37



Source(s): Authors' own work

Figure 2. HHI score distribution of 134 Vietnamese universities

or 27.61%) falls into the 0.2–0.4 range, showing a relatively high level of income diversification. At the extremes, one university exhibits very high diversification (HHI: 0–0.2), while 26 or 19.40% universities show low financial diversification level (HHI: 0.8–1.0). There are 12 or 8.95% universities having a HHI score ranging between 0.6–0.8, indicating relative low level of income diversification.

Correlation’s analysis

The correlation statistics presented in Table 3 demonstrated that there was no violation of the multicollinearity assumption, as the correlation coefficient among the variables was less than the 0.7 threshold (Ratner, 2009). In addition, the independent variables’ multicollinearity was examined using the variance inflation factor (VIF). The results revealed that the VIF for each variable was less than 5, indicating no violations of the multicollinearity assumption (Hair, 2010).

The regression results

A regression of HHI score on age, types of ownership of the university, location, orientation of university, student size (see Table 4). The ratio of lecturers who held a PhD degree, and land size accounted for 62.0% of the variance in HHI score ($R^2 = 0.62$, $F [7,62] = 14.16$, $p < 0.001$). Specifically, types of ownership were a significant predictor of HHI score ($\beta = 0.54$, $p < 0.001$, 95% CI = [0.30, 0.77]). Location was a significant predictor of HHI score ($\beta = 0.35$, $p < 0.001$, 95% CI = [0.17, 0.53]). Land size was a significant predictor of HHI score ($\beta = -0.20$, $p = 0.02$, 95% CI = [-0.37, -0.03]).

Table 3. Results of correlation analysis

	AGE	PPV	LOC	MUL	STS	PHD	LAN
AGE	1						
OWN	-0.50	1					
LOC	0.16	0.24	1				
ORI	-0.23	0.30	-0.16	1			
STS	0.27	-0.26	0.22	0.14	1		
PHD	0.08	0.19	0.31	0.02	0.23	1	
LAN	0.35	0.01	0.10	0.12	-0.02	0.06	1

Source(s): Authors’ own work

Table 4. Results of regression analysis

Independent variables	B	95% CI	VIF
Intercept	0.04		
AGE	-0.20 ⁺ (0.11)	[-0.42, 0.03]	1.84
OWN	0.54 ^{***} (0.12)	[0.30, 0.77]	2.04
LOC	0.35 ^{***} (0.09)	[0.17, 0.53]	1.46
ORI	-0.01 (0.09)	[-0.19, 0.17]	1.40
STS	0.03 (0.09)	[-0.14, 0.20]	1.46
PHD	-0.15 ⁺ (0.08)	[-0.32, 0.01]	1.20
LAN	-0.20 [*] (0.08)	[-0.37, -0.03]	1.27

Note(s): $R^2 = 0.62$

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

+ moderate significance

Source(s): Authors’ own work

The age of the university was a moderately significant predictor of HHI scores ($\beta = -0.20$, $p = 0.08$, 95% CI = [-0.42, 0.03]). The ratio of lecturers who hold a PhD degree was moderately significant ($\beta = -0.15$, $p = 0.07$, 95% CI = [-0.32, 0.01]).

Orientation of the university was a non-significant predictor of HHI scores ($\beta = -0.01$, $p = 0.91$, 95% CI = [-0.19, 0.17]). Student size was a non-significant predictor of HHI score ($\beta = 0.03$, $p = 0.73$, 95% CI = [-0.14, 0.20]).

Discussion and conclusions

Discussion of study findings and implications

It is widely acknowledged globally that the higher education sector is undergoing more challenging circumstances characterized by declining government funding, increased expenditures and rising costs. Under such circumstances, public universities across the world have attempted to diversify their financial incomes, apart from the two traditional sources (government funding and tuition fees from domestic students) in order to secure financial sustainability (Le *et al.*, 2021; Nik Ahmad *et al.*, 2019; Powell and Rey, 2015).

Abundant previous research supported by the Resource Dependency Theory demonstrates that a better understanding of inputs, outputs and interdependence with the external environment helps higher education institutions achieve a higher level of revenue diversification and strengthen their resource capacity, thus reducing vulnerability and financial risks (Garland, 2020; Lämsiluoto *et al.*, 2013; Powell and Rey, 2015).

In this study, the Resource Dependency Theory helped to explain how Vietnamese higher education institutions flourish and develop sustainably their financial incomes. Vietnamese universities can embrace a prudent strategy of altering the environment to align with their capacities to mitigate financial vulnerability. However, higher education institutions should thoroughly leverage their strengths, weaknesses, opportunities and threats in diversifying revenue portfolios before determining the most suitable diversification strategy (Jaafar *et al.*, 2021).

In addition, the HHI indexes consisting of state appropriation, tuition fees, research and development and other incomes are adopted to assess the financial health and revenue diversification of 134 Vietnamese higher education institutions. The study suggests that the majority of Vietnamese universities (43.28%) have a moderate level of revenue diversification, followed by 27.61% of universities with a relatively moderate level. Whilst, the proportion of universities with a weak and relatively weak level accounts for 28.36%. Notably, only one out of 134 universities (0.75%) achieves a high level of income diversification. The result is consistent with the findings of Le *et al.* (2021), which reveal that Vietnamese universities seem to perform at a lower level of financial sustainability compared to other universities from developed countries such as England, Germany or Italy. The reasonable rationale for the status quo of the financial health of Vietnamese higher education institutions may be explained by their high reliance on tuition fees. The centrally determined funding structure makes Vietnamese universities inactive in seeking alternative financial resources, or if they are proactive, their constrained research capabilities hinder them from generating significant revenue (Dang, 2009). The portion of government funding allocated to higher education is limited, comprising only 0.41% of GDP in 2002 out of a total of 4.22% of GDP for all education expenditure (Dang, 2009). Even in more recent years, the allocation for higher education remains the least among all education segments, accounting for approximately 0.27% of GDP in 2020 out of a total of 4.9% of GDP for all levels of education (Tran *et al.*, 2023). Meanwhile, the demand of the young generation for places at higher education institutions has escalated faster than their ability, leading to an even more substantial responsibility for the government. In their turn, universities, particularly public universities, started to put in more effort to expand the enrollment target (Dang, 2009; Nguyen, 2020; Tran *et al.*, 2023). Hence, the government funding level is declining while tuition fees are increasing (Le *et al.*, 2021).

The findings also demonstrated that among constitutional attributes, types of ownership have the highest influence on the financial diversification level of Vietnamese universities, followed by their locations. There is a disparity in financial diversification between public and private higher education institutions in Vietnam. Public higher education institutions exhibit a more robust and varied financial structure when compared to private counterparts. This difference aligns with established funding models in Vietnamese higher education, where public institutions benefit from a blend of government support, tuition fees and auxiliary sources such as research grants and international partnerships (Le *et al.*, 2021). In contrast, the financial base of private universities is less diverse and predominantly reliant on tuition fees. This situation can be attributed to the nascent stage and continuous evolution of the private education sector, which is yet to develop a wide array of alternative funding mechanisms (Huong and Fry, 2002). To help private universities increase their financial diversification and enhance their financial sustainability, the Vietnamese government should consider allocating a specific portion of the public budget for them. Currently, apart from a few exceptional sources, such as the Ministry of Science and Technology's National Foundation for Science and Technology Development (Nguyen *et al.*, 2021a, b) and the government's student loan program (Pham and Vu, 2019), private universities in Vietnam are ineligible for most public funding sources. Implementing a new funding mechanism, such as performance-based project grants available to both public and private universities, in addition to the current recurrent funding reserved only for public institutions, could be an effective measure to help Vietnamese universities diversify and secure their financial revenues (Nguyen *et al.*, 2021a, b).

In terms of geographic location factor, our result contradicts the assumption that urban universities are financially more diverse due to their proximity to large businesses and research hubs. Instead, universities and colleges in smaller cities demonstrate a wider variety of income sources. This unexpected finding suggests that institutions in these areas have adapted innovatively to their local environments, cultivating unique income streams such as community projects, local industry partnerships or agricultural initiatives – strategies perhaps less feasible in more urban (Luu and Wright, 2008). Additionally, the size of the university land was found to have a negative correlation with financial diversification level. This could be attributed to increased operational and maintenance costs associated with larger properties, leading to a reliance on a limited range of income sources. This insight is significant as it challenges the notion that larger campuses are inherently equipped with more financial opportunities.

Limitations and directions for future studies

According to the report released by Vietnam Ministry of Education and Training (2022), 142 out of 232 universities are eligible for autonomy according to Amended Law of Higher Education in Vietnam, No. 34/2018/QH14. In particular, 32.7% of universities guarantee regular expenditure and investment, and 13.7% guarantee regular expenditure nationwide. The total income of autonomous higher education institutions increases markedly due to their ability to independently determine tuition fees within the framework of state regulations, introduce new academic programs, enroll international students and establish collaborations with enterprises, etc. However, there is no comparison of the financial diversification between the autonomous universities and the others. This research gap should be investigated in further studies.

This study faced limitations due to Vietnam's decentralized data system. Unlike developed countries with centralized, standardized data repositories, Vietnam's higher education data had to be integrated from various sources, including university reports and government websites. This decentralization led to challenges such as data discrepancies, missing values and limited detail in reported income streams. For instance, revenue from knowledge exchange, local partnerships and endowments were lumped into "other income" categories, hampering individual analysis of these streams. Despite our efforts to harmonize and improve reliability,

the lack of granular data limits a deeper exploration of financial diversification, especially regarding innovation and local partnerships.

In addition, the study only adopted the HHI to explore the financial diversification level of Vietnamese higher education institutions. Further research on the financial stability of higher education institutions should include surveys or in-depth interviews with senior officers or managers. Moreover, certain universities are more successful than others in attaining revenue diversification, so further studies should demonstrate and explain the determinants of their success. Notably, further research on this topic should explore diversified income portfolios from the perspectives of organizational readiness and change (Nik Ahmad *et al.*, 2019; Weiner, 2009).

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