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Return on Investment in Public and Private Higher Education Institutions in Vietnam: A Comparative Analysis

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Abstract— *Return on Investment (ROI) in higher education reflects the balance between the costs of obtaining a degree and the economic, professional, and social benefits it generates. In Vietnam, where both public and private higher education institutions play critical roles in workforce development, ROI assessment provides insight into the efficiency and long-term value of educational investment. The aim of this research is to evaluate and compare the ROI associated with public and private universities, considering financial returns, employability outcomes, and career progression of graduates. Data were gathered from 420 participants, including recent graduatestudents, through structured questionnaires and institutional reports. The analysis model incorporates variables such as tuition fees, duration of study, post-graduation salary levels, employment stability, and perceived career growth. ROI was assessed using cost-benefit frameworks, regression analysis, and comparative testing through independent sample t-tests, with implementation carried out using IBM SPSS statistics (version 26). The procedure highlights how investment in tuition and opportunity costs translates into measurable economic gains, with variations observed across public and private institutions. Results indicate that public institutions demonstrate stronger cost-effectiveness due to lower tuition burdens, while private institutions provide higher immediate salary outcomes in selected disciplines. The conclusion emphasizes that ROI differs by institutional type, field of study, and labour market alignment, offering policymakers and stakeholders evidence to refine resource allocation and strategic planning in Vietnamese higher education.*

Keywords— ***Return on Investment (ROI), Higher Education, Public Universities, Private Universities, Graduate Employability.***

I. INTRODUCTION

Education is a human capital investment that improves production and justifies the cost to balance quality, environmental sustainability, and fewer government subsidies. It is also a basic human right that ensures access and equality [1]. Return on Investment (ROI) is a quality indicator in higher education that aids parents and students in evaluating value for money. It also reflects external quality monitoring procedures that connect educational investment to quantifiable results [2]. Tuition fees are the current problem because of economic challenges and theiraftereffects, which leave students under financial duress and promote a consumer-driven approach to education and work [3]. By examining private sector transfer of expertise, intellectual property rights, and cheap open innovation techniques through investigations, surveys, and institution reports, the approach focuses on performance outcomes, commercialization, and industry and other stakeholders' collaboration [4]. The drawback is the dependence on short-term data from the epidemic, which would not account for contextual variations, long-term effects, or different responses from institutions and regions in higher education [5]. Self-reported financial worries could introduce bias and ignore larger cultural,

political, or international impacts on student decision-making, which limits generalizability [6].The objective is to compare the ROI of Vietnam's state and private higher education systems. The research uses regression analyses and cost-benefit frameworks to examine how educational investments result in long-term career, professional, and economic benefits for graduates by examining tuition costs, opportunity expenses, graduate employment outcomes, pay scales, and career advancement.

II. RELATED WORKS

The digital transformation maturity in post-COVID-19 higher education wasevaluated by questionnaires, interviews, and observations [7]. The results indicate gaps between criteria and perception across challenges with vision, process, expertise, and data. Context-specific scope and dependence on perception-based data could limit the findings' ability to identify longer-term, more comprehensive transformation patterns. The aim was to create standardized metrics that could assess the functionof institutionsparticipating in Education for Sustainable Development (ESD) [8]. Results from surveys of practitioners, expert consultation, and literature reviews indicate increased practicality and strong relevance, but limited validity because of different definitions. The use of self-reported institutional data, inconsistent criteria, and difficulties with cross-country comparison were some of the limitations. This aimed to include sustainability into higher education quality cost models [9]. The results, which are based on situational analysis and systematic literature, emphasize the advantages of sustainability and preventative measures. The limitations include dependence on theory models, insufficient empirical evidence, and challenges experienced in accessing the data of numerous institutions. The data were employed to examine the connections between organizational factors, such as planning, culture, commitment and structure and sustainability performance of tertiary institutions of learning [10]. Statistical and regression analyses show that moresustainability committees, offices and planning increase performance. One of its limitations wasthe use of self-reported data and the context. Data was collected among the students to analyze the effects of entry pathways of higher education on theacademic performance of students [11]. According to the analysis, students from underrepresented groups and alternate pathways frequently score worse than secondary school freshmen. The attention toAustralian universities, possible unmeasured confounding variables, and dependence on institutional performance statistics weresome of the limitations. The semi-structured interviews and a balanced scorecard frameworkwereused to examine theperformance management and management strategies in higher education [12]. The results illustrate the significance of continuous performance discussions by exposing the advantages and disadvantages of both financial and non-financial measurements. Reliance on qualitative judgments and the possible subjectivity of teacher responses were among the limitations.

III. METHODOLOGY

With 420 participants, including students and recent graduates from both public (n=220) and private (n=200) universities in Vietnam, were evaluated by a quantitative, cross-sectional comparative methodology. Institutional reports, secondary sources, and structured questionnaires were used to collect data. ROI was assessed by considering tuition, study length, post-graduation wages, job stability, and perceived career advancement across institutional types utilizing cost-benefit frameworks. Cost-benefit frameworks analysis included regression models, cost-benefit frameworks, and SPSS t-tests,asshown in Figure 1.

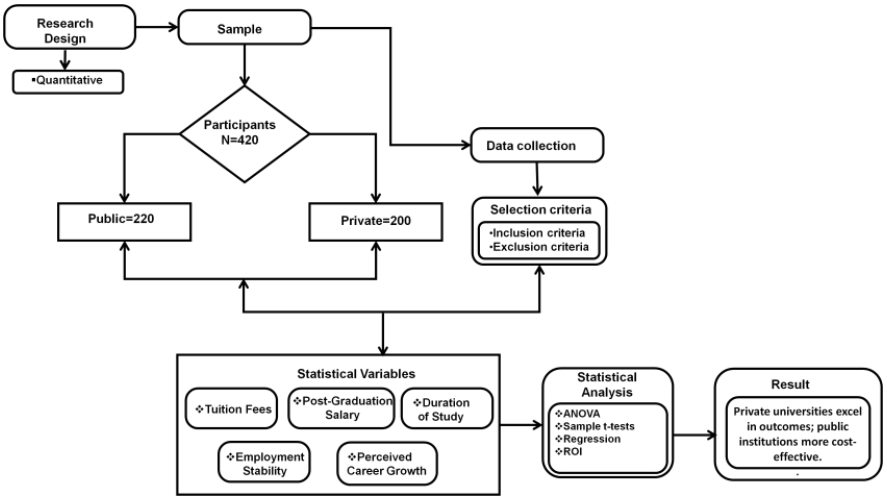

Fig.1: Frameworks for ROI in Public and Private Higher Education Institutions

3.1 Data collection

Data has been collected 420 graduate students, included 220 from Public institutions and 200 from Private institutions in Vietnam, utilizing secondary sources on tuition and fees, institutional records, and structured questionnaires. Table 1 shows the comprehensive insights into expenses, employability, pay, and professional advancement across institutions that were guaranteed by this method.

Table 1: Demographic features of ROI in Public and Private Higher Education Institutions

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	230	54.8
	Female	190	45.2
Age Group (years)	21–25	180	42.9
	26–30	150	35.7
	31+	90	21.4
Institution Type	Public	220	52.4
	Private	200	47.6
Field of Study	Science/Engineering	150	35.7
	Business/Management	140	33.3
	Humanities/Social Sciences	130	31.0

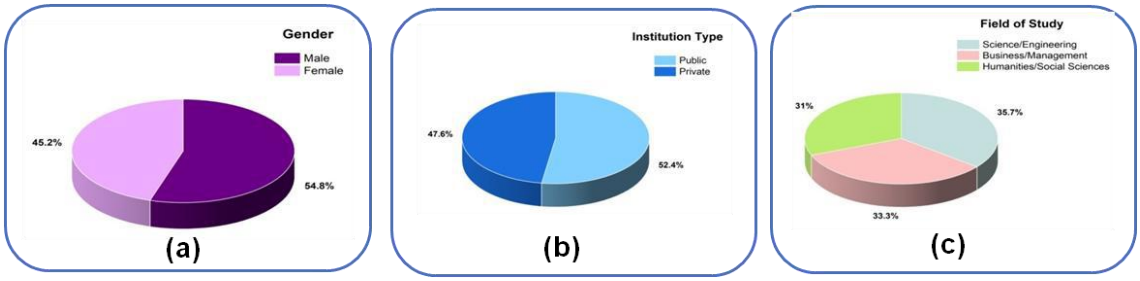

Fig.2: Demographic Distribution of Participant (a) Gender (b) Institution type (c) Field of study

Figure 2 shows the participant demographics: 2(a) gender distribution: 54.8% of participants are men and 45.2% are women; 2(b) institution type: 52.4% are public and 47.6% are private; and 2(c) field of study: Science/Engineering (35.7%), Business/administration (33.3%), and Humanities/Social Sciences (31%).

3.2 Selection criteria

Different professions and institution types were ensured by selecting participants based on their willingness to submit data on tuition, employment results, and career growth, as well as their enrollment in Vietnamese higher education and recent graduation within the previous five years.

Inclusion criteria: Participants in the research had to be recent graduates of Vietnamese public or private universities, have finished their undergraduate degrees, be employed or actively looking for work, and be willing to give accurate information about their tuition costs, study time, post-graduation pay, and career advancement.

Exclusion criteria: To ensure data reliability, students who had not finished their degree, were pursuing studies in short-term or non-degree programs, were hesitant to provide information about their employment or salaries, or had incomplete information about their tuition, study time, or career progression were omitted.

3.4 Questionnaire Development

The questionnaire was created to collect information on tuition prices, salaries, employability, and career advancement. Its items were straightforward, structured, and context-specific to ensure precise ROI measurement across public and private institutions.

Q1: What was the cost of your degree program tuition, and do you think your post-graduation results justified it?
Q2: How much do you currently earn each month, and does it match your post-graduation expectations?
Q3: How impressed are you with your chances for professional advancement since leaving your school, whether it is public or private?

3.4. Statistical Variables

The analysis model assesses how educational investment translates into long-term career, professional, and financial returns by looking at factors such as tuition costs, study length, post-graduation compensation, stable employment, and perceived career progress.

Tuition Fees: In an ROI analysis, tuition fees are the main financial investment component since they are the direct cost of education for students.

Duration of Study: The length of time required to finish a degree is measured by the duration of study, which delays possible financial returns and reflects opportunity costs.

Post-Graduation Salary Levels: Post-graduation income shows the financial advantages students obtain after earning their degree.

Employment Stability: Career satisfaction and long-term financial returns are impacted by employment stability, which is a reflection of the stability and security of post-graduation employment.

Perceived Career Growth: The assessment of professional progress and skill development by students is captured by perceived career growth, which shows long-term advantages beyond short-term cash gains.

3.5 Statistical Analysis

IBM SPSSstatistics (version 26) software was used for data analysis. Descriptive statistics are provided for a discussion of employment, income, career advancement, study duration, and demographics. Reliability in evidence-based ROI evaluation was made possible by regression, which identified important elements influencing financial and professional returns, and t-tests, which were used to evaluate ROI disparities between public and private institutions.

ANOVA: It was used to evaluate whetherthe type of institution has a significant impact on the economic returns of graduates and to find out if the mean ROI of both public and private colleges and universities is different using Equation (1).

$$X_{ij} = \mu + \tau_i + \sigma_{ij} \quad (1)$$

X_{ij} is the ROI for each student, μ denotes the total mean value, $\tau_i$denotesthe institution type effect, and σ_{ij} is the random error.

Sample t-tests: Itevaluated substantial variations in cost-effectiveness and results by comparing the mean ROI of graduates from public and private universities, as shown in Equation (2).

$$t - \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1^1} + \frac{s_2^2}{n_2^2}}} \quad (2)$$

Group means are denoted by X_1 andX_2, variances by $s_1^2$and s_2^2, and sample sizes for public and private institutions are n_1 and n_2.

Regression Analysis: Itidentified important predictors of employment after graduation, wage results, and total educational cost-effectiveness by examining the effects of tuition costs, study length, and institution type on ROI by using Equation (3)**.**

$$Y = \beta_0 + \beta_1 X + \in \quad (3)$$

YRepresents the return on investment, X is the predictor variable (either salary or tuition), β_0 denotes the intercept, β_1 represents the slope, and ε is the error term.

ROI: It compares the average return between public and private universities to observe if graduates' wages and career advancement balance tuition and opportunity costs using Equation (4).

$$ROI = \frac{Economic\ Benefits - Costs}{Costs} \times 100 \quad (4)$$

IV. RESULT AND DISCUSSION

While private universities provide greater pay, public institutions are more cost-effective; ROI differs by discipline, institution, and labor market alignment.

Table 2 shows the public universities are more cost-effective, generating a larger ROI (166.7%) because of lower tuition expenses. Due to the higher educational costs, private universities providegreater immediate incomes but a poorer ROI of 87.5%, which reflects trade-offs in the effectiveness of investments. Figure 3 (a) describes that compared to the private counterparts, public institutions have greater ROIs, indicating higher financial returns.

Table 2: ROI Cost-Benefit Analysis by Public and Private Higher Education Institutions

Institution Type	Average Cost (VND)	Average Benefit (VND)	Net Benefit (VND)	ROI (%)
Public (n=220)	45,000,000	120,000,000	75,000,000	166.7%
Private (n=200)	80,000,000	150,000,000	70,000,000	87.5%

Table 3 shows that the ROI is significantly predicted by post-graduation pay for both public (p=0.000, B=0.50) and private (p=0.000, B=0.57) graduates. ROI is also positively impacted by career advancement (Public B=0.28, Private B=0.32, p<0.005); however, ROI is negatively impacted by tuition. B represents the coefficient of unstandardized regression. Figure 3 (b) shows the Different Standard Errors (SE) by public and private organizations.

Table 3: Regression Analysis Comparing ROI for Public and Private Institutions

Predictor Variable	Public		Private		t-value	p-value
	B	SE	B	SE		
Constant	1.85	0.18	2.05	0.20	9.50	0.000
Tuition Fees	-0.28	0.10	-0.32	0.11	-3.05	0.002
Duration of Study	-0.10	0.08	-0.14	0.09	-1.55	0.122
Post-Grad Salary	0.50	0.09	0.57	0.10	5.85	0.000
Career Growth	0.28	0.10	0.32	0.11	3.12	0.002

The ROI of public and private institutions differs significantly, according to the ANOVA table ($F(1,418)=11.70$, $p = 0.001$). The higher mean ROI for private graduates suggests that the kind of school has a significant impact on the return on investment for education, as shown in Table 4.

Table 4: One-Way ANOVA of ROI by Institution Type

Source	Sum of Squares	df	Mean Square	F-value	p-value
Between Groups	4.780	1	4.780	11.70	0.001
Within Groups	170.520	418	0.408		
Total	175.300	419			

Table 5 shows that private colleges produce higher financial benefits (M=2.35, p=0.001), employable outcomes (M=4.10, p=0.003), and career advancement (M=3.85, p=0.012) than public universities, according to the t-test, demonstrating substantial institutional variations in graduate outcomes, as shown in Figure 3 (c).

Table 5:Independent Sample t-Test for Public and Private Institutions

Variable	Institution Type	N	Mean	SD	t-value	df	p-value
Financial Returns	Public	220	2.05	0.65	-3.42	418	0.001
	Private	200	2.35	0.70			
Employability Outcomes	Public	220	3.85	0.72	-2.95	418	0.003
	Private	200	4.10	0.75			
Career Progression	Public	220	3.60	0.68	-2.50	418	0.012
	Private	200	3.85	0.70			

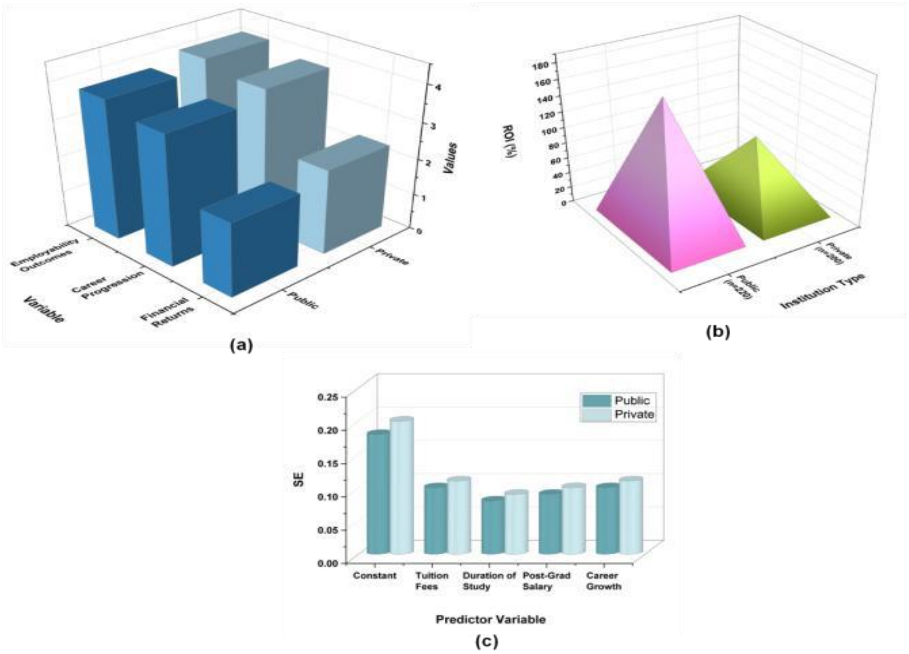

Fig.3: Outcomes of statistical analysis (a) Comparison of Public and Private Institutions (b) Standard Errors for ROI Predictors(c) Mean values of Public and Private Institutions

4.1 Discussions

This analysis supports long-term economic advantages and confirms affordability as a critical element impacting higher education ROI by demonstrating that public colleges and universities in Vietnam provide higher cost-effectiveness through reduced tuition and opportunity costs. The limitation of this previous research is thedependence on ranking-based measures, which can ignore institutional, cultural, and contextual variations in the application of sustainability [8].The use of self-reported data could limit generalizability across various higher education institutions and increase bias [10]. The qualitative interviews in particular contexts of higher education could limit the generalizability of the results of the balanced scorecard [12].The research addressed this limitation by using a mixed-method approach that spans several universities and combines extensive quantitative analysis with qualitative findings. This larger dataset ensures that results include a range of possibilities outside of local constraints, which improves generalizability and validity.

V. CONCLUSION

The ROI compared public and private higher education based on the evaluation of tuition cost, opportunity cost, career growth, employability, and salary returns. The data were collected through a quantitative, cross-sectional comparative research approach in theform of secondary sources, institutional reports, and questionnaires in a sample size of 420. The SPSS was analyzed by the use of cost-benefit models, regression analysis, ANOVA, and t-tests. The ROI of the public universities was higher (166.7) than that of the private universities (87.5). The regression indicated that tuition reduced ROI, whereas salary and professional advancement increased ROI. An important difference in academic ROI was proved by t-tests (t=3.42, p=0.001) and ANOVA (F=11.70, p=0.001). It is constrained by its cross-sectional nature, which could not provide a sufficiently detailed picture of long-term career paths, and reliance on self-reported data, which may introducebias inthe response.Future research should use mixed-method, longitudinal methodologies across a variety of institutions, taking into consideration labor market, cultural, and regional characteristics to improve generalizability and gain a deeper knowledge of ROI outcomes.

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