

Unlocking Potential: The Smart Investment in Education Management for Future Success in Bangladesh

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Abstract

In the dynamic context of Bangladesh, where education serves as a cornerstone of societal progress, this article explores the imperative of strategic investment in education management. This investment holds the key to unlocking the nation's latent potential and propelling it towards a future marked by success and sustainable development. Bangladesh's education landscape has seen notable advancements, yet challenges like high dropout rates and outdated curricula persist. The essence of effective education management lies in addressing these challenges comprehensively. By modernizing curricula, prioritizing teacher training, integrating technology, refining assessment techniques, and embracing inclusive education, Bangladesh can lay the groundwork for a transformative educational experience. Investing in education management carries numerous benefits. Firstly, it acts as a catalyst for economic growth and innovation, as a skilled and educated workforce that attracts investments and fosters a culture of innovation. Secondly, it promotes social mobility by democratizing access to quality education, enabling individuals from diverse backgrounds to ascend the socio-economic ladder. Additionally, focusing on education management enhances global competitiveness by producing professionals capable of thriving in international markets. Moreover, this investment aligns with sustainable development goals, empowering individuals to contribute meaningfully to their communities. While the Bangladeshi government's commitment is palpable through policies like the National Education Policy, the collaboration of public and private sectors is crucial. Private investment can infuse resources into areas such as infrastructure development, technology integration, and teacher training, augmenting governmental initiatives. In conclusion, this article underscores the significance of investing wisely in education management to shape Bangladesh's future. By amalgamating curriculum innovation, teacher development, technology adoption, and inclusive education, Bangladesh can harness its potential and emerge as a beacon of success on the global stage. This collective effort, embracing education as a cornerstone, promises not only individual success but also the collective advancement of the nation.

Keywords: Education Management, Investment, Potential, Curriculum Innovation and Teacher Development

Introduction

Bangladesh stands at a crucial juncture in its development journey, with education playing a pivotal role in shaping its future. The country's progress is intertwined with its ability to provide quality education that equips its citizens with the skills and knowledge needed to thrive in an ever-changing world. This article delves into the significance of investing in education management in Bangladesh, highlighting how it can unlock the nation's potential and pave the way for future success.

Educational Landscape in Bangladesh

Bangladesh has made significant strides in improving access to education over the years. However, challenges such as high dropout rates, outdated curricula, and limited resources still persist (Hossain et al., 2023). To address these issues and elevate the quality of education, a holistic approach to education management is required.

Key Areas of Focus

Modernizing Curriculum and Pedagogy: A forward-looking education management strategy should prioritize the development of relevant and modern curricula. This includes integrating practical skills, critical thinking, and digital literacy to prepare students for the demands of the 21st century.

Teacher Training and Professional Development: Investing in continuous teacher training is essential for enhancing the quality of education. Teachers equipped with updated teaching methodologies and subject knowledge can provide more effective learning experiences for students (Javed et al., 2020).

Technology Integration: Bangladesh's youthful population and increasing digital connectivity present an opportunity to harness technology for education. Investing in educational technology can help reach remote areas, facilitate online learning, and provide access to a wealth of educational resources (Al Qalhati et al., 2020).

Assessment and Quality Assurance: Implementing robust assessment methods ensures that student progress is effectively measured. This enables educators to identify areas for improvement and tailor their teaching strategies accordingly.

Inclusive Education and Student Support: Addressing the diverse needs of students through inclusive education practices and comprehensive student support services can enhance learning outcomes and reduce dropout rates.

Benefits of Investment

Economic Growth and Innovation: A well-educated workforce drives economic growth by attracting investments, fostering innovation, and enabling the country to compete globally in various sectors.

Social Mobility: Investing in education management creates a pathway for social mobility, enabling individuals from all backgrounds to access quality education and improve their life prospects.

Global Competitiveness: By focusing on education management, Bangladesh can enhance its global competitiveness by producing skilled professionals who can excel in international job markets.

Sustainable Development: Education management contributes to achieving sustainable development goals by empowering individuals to contribute meaningfully to their communities and society as a whole.

Cultural Preservation: A comprehensive education management approach can incorporate the preservation of Bangladesh's rich cultural heritage, ensuring that traditions and values are passed down to future generations.

Problem Statement

In Bangladesh, the landscape of education management faces multifaceted challenges that necessitate strategic and smart investments. The nation grapples with financial constraints, hindering the development of modern infrastructure and the recruitment of qualified educators. Outdated educational facilities impede effective learning environments, contributing to a growing disparity in educational quality. Socio-economic factors further exacerbate this gap, with marginalized communities struggling to access quality education.

The shortage of skilled teachers poses a critical hurdle, affecting the overall educational experience and future prospects of students (Hossain et al., 2018). Additionally, cultural norms and societal expectations may impede the implementation of progressive educational practices. These challenges collectively hinder the nation's ability to prepare its youth for the demands of a rapidly evolving global economy.

The COVID-19 pandemic has highlighted the fragility of the education system, exposing the digital divide and the inadequacy of online learning infrastructure. The need for resilient education management systems is more pressing than ever, demanding innovative solutions to address these systemic issues. Smart investments in education management are crucial for fostering a sustainable and inclusive learning environment that empowers the youth, ensuring future success and contributing to the overall socio-economic development of Bangladesh.

Government Initiatives and Private Sector Collaboration

The Bangladeshi government's commitment to education is evident through policies like the National Education Policy. However, effective education management requires collaboration between the public and private sectors. Private investment can help fund infrastructure development, technology adoption, and teacher training, supplementing government efforts (Al Qalhati et al., 2020).

Bangladesh, like many developing nations, faces significant challenges in its education sector that hinder its progress towards a prosperous future.

As per the budget for the fiscal year 2022-23, only 1.83% of the country's GDP is allocated for education (*The Business Standard*, n.d.). Bangladesh boasts a literacy rate of 74.91%, but a

report by UNICEF (2022) shows that only 34% of third graders in the country can read proficiently, and only 18% can do basic math (*The Daily Star*, n.d.).

According to the Bangladesh Education Statistics 2021 report, there was a 6% decrease in secondary school completion rates for girls and a corresponding increase in dropout rates from 2020 to 2021 (Bureau, 2022).

Limitations

Despite the potential benefits of investing in education management in Bangladesh, challenges persist. Limited financial resources, outdated infrastructure, and a shortage of skilled educators hinder progress. Additionally, socio-economic disparities and cultural barriers may impede equal access to quality education. Overcoming these obstacles requires comprehensive strategies, government commitment, and collaborative efforts to ensure sustainable, inclusive advancements in education for future success in Bangladesh.

Literature Review and Hypotheses

A good number of literatures show the necessity of smart investment in education management. In the literature “unpacking smart education’s soft smartness variables: leadership and human resources capacities as key participatory actors” the authors Jonela Carmada Marisa Wilson and others has shown the importance of leadership and human resources capacity in the management of smart education. This study addresses the deficiency observed in the literature as it relates to the key factors that enable success in the management of smart education. The study also emphasis on smart pedagogies based on technology to combat the effects of covid-19 (Wilson et al., 2021).

In the literature “powerful knowledge, educational potential and knowledge-rich curriculum: pushing the boundaries” the author Zongyi Deng shows a modal of future oriented , knowledge-rich curriculum by invoking David Lambert’s capabilities approach and Bildung-Centred Didaktik (Deng, 2022). It also shows that curriculum is knowledge-rich in three aspects. Firstly, it is animated and informed by a vision of education centrally concerned with the cultivation of human powers predicated on the contribution of knowledge. Secondly the construction of a school subject in the form of curriculum frameworks, syllabus and guidelines entails selecting and organizing content in terms of educational potential and its realization in classroom and thirdly, classroom teaching entails unlocking the educational potential of the content of the content of a school subjects the possibilities for developing human powers. The curriculum future-oriented in the sense that it aims at the formation of autonomous and responsible individuals who can thrive and flourish in the present and future world.

In the literature “smart Education and future trends” the another Ocotlan Diaz-Parra and other the components of smart education. Smart education influence diverse technologies like combinatorial optimization, machine learning, big data, data visualization, internet of education things, learning analytics and others to enhance education quality (Díaz-Parra et al., n.d.). This study also shows that the standard of education should be improved through the use of technologies like the internet of education things.

Research Objectives

- 1) To examine the imperative of strategic investment in education management.
- 2) To analyze the smart investment in Education sector of Bangladesh.

Research Questions

- 1) How can the imperative of strategic investment in education management be explored?
- 2) How does the smart investment in Education sector of Bangladesh work?

Hypotheses

H01: Family Income has no impact on Future Success in Education of Bangladesh.

HA1: Family Income has an impact on Future Success in Education of Bangladesh

H02: Government Support has no impact on Future Success in Education of Bangladesh.

HA2: Government Support has an impact on Future Success in Education of Bangladesh.

H03: Teacher's Salary has no impact on Future Success in Education of Bangladesh.

HA3: Teacher's Salary has an impact on Future Success in Education of Bangladesh.

H04: Curriculum has no impact on Future Success in Education of Bangladesh.

HA4: Curriculum has an impact on Future Success in Education of Bangladesh.

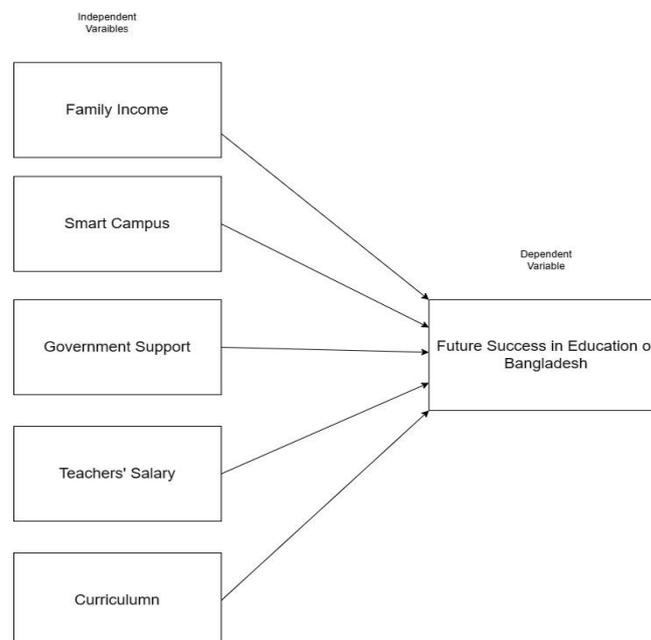


Figure-01: Conceptual Framework

Figure-01 is the conceptual framework of this study. The conceptual framework mainly provides the outlines of the key components of a research study and the relationships between them. In this case, it focuses on the factors that are considered independent variables and their potential impact on the dependent variable.

Independent Variables

Family Income: This variable is likely being examined to determine whether the income level of a family has any influence on the dependent variable, "future success in Education of Bangladesh." Higher family income might be expected to positively affect educational success, as it could provide access to better educational resources and opportunities.

Smart Campus: The inclusion of "Smart Campus" as an independent variable suggests that the research may be exploring whether the technological advancements and infrastructure of educational institutions (i.e., smart campuses) have an impact on the future success of

students in Bangladesh. This could encompass factors like access to digital resources, online learning, and technological support.

Government Support: This variable indicates that the research is investigating the role of government policies, programs, or funding in relation to the future success in education. Government support can influence various aspects of the education system, from infrastructure to curriculum development.

Teachers' Salary: The variable "Teachers' Salary" suggests that the study is considering whether the compensation of teachers in Bangladesh plays a role in students' future educational success. Higher salaries may attract and retain more qualified educators.

Curriculum: Curriculum refers to the educational content and structure, and its inclusion as an independent variable suggests an exploration of whether the curriculum's quality and relevance have an impact on future educational success.

Dependent Variable

Future Success in Education of Bangladesh: This is the outcome or variable of interest. It reflects the researcher's focus on understanding and measuring success in the context of education in Bangladesh. It could encompass various indicators, such as academic achievement, graduation rates, employability, or any other relevant measure of success. In this conceptual framework, the researchers' are likely trying to assess how these independent variables (family income, smart campus, government support, teachers' salary, and curriculum) are associated with, or potentially influence, the future educational success of individuals in Bangladesh.

Research Methodology

The study focused on both primary and secondary data. The primary data was collected from the practicing 135 academicians. Questionnaire as a tool was used for the survey. Stratified sampling was used for the data collection.

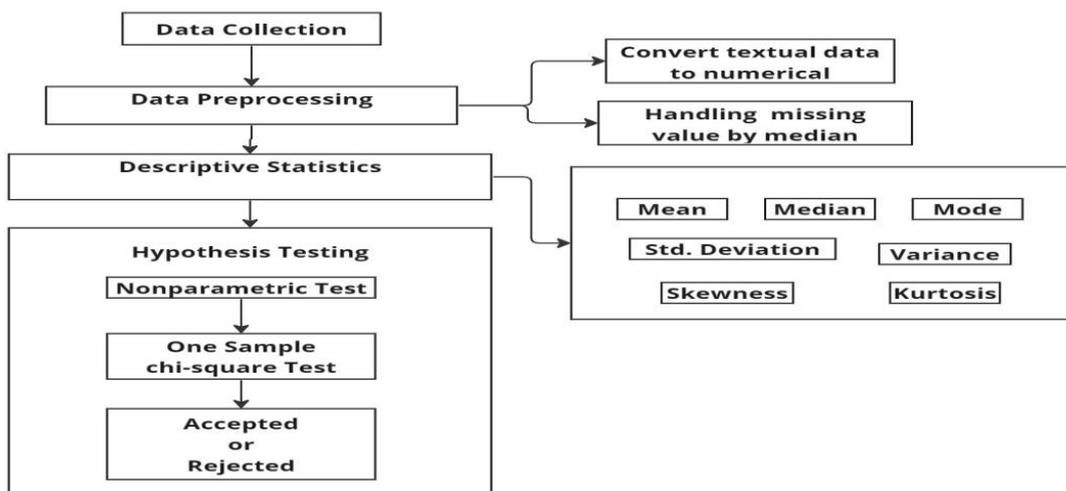


Figure-02: Methodology

Data Analysis Plan

Data collection refers to the process of gathering relevant information or data points from various sources. It involves systematically collecting data to answer specific research questions or to analyze and derive insights from the data. Data collection can be performed

through various methods such as surveys, interviews, observations, or by extracting data from existing databases or sources.

Data preprocessing, also known as data cleaning or data preparation, is a crucial step in the data analysis process. It involves transforming raw data into a format that is suitable for analysis and modeling. Data preprocessing techniques help in improving data quality, resolving inconsistencies, handling missing values, and converting data into a standardized format.

Data Preprocessing

One aspect of data preprocessing is converting textual data into numerical format, which is often required for machine learning algorithms to process the data effectively. This process is known as text encoding or text vectorization. Common techniques for converting textual data to numerical format include bag-of-words, TF-IDF (Term Frequency-Inverse Document Frequency), and word embeddings such as Word2Vec or GloVe.

Handling missing values is another important step in data preprocessing. Missing values occur when certain data points are not available or are incomplete. One common approach to handling missing values is to replace them with a central tendency measure such as the median, mean, or mode of the available data. In the case of handling missing values by median, the missing values are replaced with the median value of the corresponding feature or column. This approach helps in preserving the central tendency of the data and minimizing the impact of missing values on subsequent analysis or modeling.

Descriptive Statistics

Mean: The mean, also known as the average, is the sum of all values in a dataset divided by the total number of observations. It represents the central tendency of the data. Here's the equation to calculate the mean (μ) of a set of n numbers:

$$\mu = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

Median: The median is the middle value in a dataset when it is arranged in ascending or descending order. It divides the data into two equal halves and is less affected by extreme values compared to the mean. It is a measure of central tendency.

To find the median, first, we need to arrange the data set in ascending or descending order. Then, we used the following equation to calculate the median:

There is an odd number of values (n is odd):

Median (M) = The middle value, which is the value at the position $(n + 1) / 2$.

Mode: The mode is the value that appears most frequently in a dataset. It represents the most common or typical value in the data. Here's the mathematical representation of the mode:

Given a data set X with n values:

$$X = \{x_1, x_2, x_3, \dots, x_n\}$$

To find the mode (M), we define it as follows:

$$M = \{x_i \mid f(x_i) \text{ is maximum for all } x_i \text{ in } X\}$$

Standard Deviation: The standard deviation measures the dispersion or variability of the data points from the mean. It indicates how spread out the values are from the average. A higher standard deviation suggests greater variability in the data. The mathematical equation for calculating the standard deviation is as follows:

$$\text{Standard Deviation } (\sigma) = \sqrt{\frac{\sum(x_i - \mu)^2}{N}}$$

Variance: The variance is the square of the standard deviation. It provides a measure of the average squared deviation from the mean. Like the standard deviation, it quantifies the spread or variability of the data. The mathematical equation for calculating the variance (σ^2) is as follows:

$$\text{Variance } (\sigma^2) = \frac{\sum(x_i - \mu)^2}{N}$$

Skewness: Skewness measures the asymmetry of a dataset's distribution. It indicates whether the data is skewed to the left (negative skewness) or to the right (positive skewness) relative to the mean. A skewness value of zero indicates a symmetrical distribution. Skewness is typically measured using the third standardized moment of a distribution. The formula to calculate the skewness (γ) is as follows:

$$\text{Skewness } (\gamma) = \frac{\sum(x_i - \mu)^3}{N * \sigma^3}$$

Kurtosis: Kurtosis measures the shape of the distribution and describes the tails of the distribution relative to the mean. It indicates whether the data has heavy tails (positive kurtosis) or light tails (negative kurtosis) compared to a normal distribution. A kurtosis value of zero represents a normal distribution. Kurtosis is usually calculated using the fourth standardized moment of a distribution. The formula to calculate kurtosis (κ) is as follows:

$$\text{Kurtosis } (\kappa) = \frac{\sum(x_i - \mu)^4}{N * \sigma^4} - 3$$

Reliability Test: Reliability is a measure of the consistency or stability of a set of data or measurements. In statistics, reliability tests are commonly used to assess the consistency and dependability of a scale or a set of items in a questionnaire or survey. There are several methods for calculating reliability, but one of the most widely used methods is Cronbach's Alpha. It is calculated using the following formula:

$$\text{Cronbach's Alpha } (\alpha) = \frac{n}{n-1} \left(1 - \frac{\sum \rho_{ij}}{\rho_{tt}}\right)$$

Where:

n: The number of items (questions) in your scale.

ρ_{ij} : The covariance between item i and item j.

ρ_{tt} : The total covariance among all the items.

Hypothesis Testing

Nonparametric tests, also known as distribution-free tests, are statistical tests that do not make assumptions about the underlying distribution of the population. Nonparametric tests are typically used when the data does not meet the assumptions of parametric tests, such as normality or equal variances.

The one-sample chi-square test is a nonparametric test used to determine whether there is a significant difference between the observed frequencies in a single categorical variable and the expected frequencies under a specific distribution. It is commonly used when analyzing data on proportions or counts in different categories. The formula for calculating the Chi-Square Test of Independence is denoted χ^2 , and is computed as:

$$\chi^2 = \sum_{i=1}^R \sum_{j=1}^G \frac{(a_{ij} - e_{ij})^2}{e_{ij}} \quad \text{Where,}$$

a_{ij} is the observed cell count in the i^{th} row and j^{th} column of the table

e_{ij} is the expected cell count in the i^{th} row and j^{th} column of the table

In hypothesis testing, the decision to accept or reject the null hypothesis is based on the evidence obtained from the sample data. If the evidence is strong enough to reject the null hypothesis, it is said to be rejected. If there is insufficient evidence to reject the null hypothesis, it is accepted. The decision to accept or reject the null hypothesis is made based on the test statistic and its comparison to the critical region determined by the significance level.

Results and Analysis

The table-01 provides a summary of descriptive statistics for five different variables related to "Future Success," including measures of central tendency (mean, median, mode), variability (standard deviation, variance), and information about the shape of the data distribution (skewness and kurtosis).

Table-01

Data Analysis (Descriptive Statistics)

		Future Success	Family Income	Government Support	Teachers Salary	Curriculum
N	Valid	135	135	135	135	135
	Missing	0	0	0	0	0
Mean		3.05	2.95	3.02	3.01	3.19
Median		3.00	3.00	3.00	3.00	3.00
Mode		3	4	5	2	4
Std. Deviation		1.400	1.421	1.499	1.385	1.374
Variance		1.960	2.020	2.246	1.918	1.888
Skewness		.022	.014	-.011	.004	-.196
Kurtosis		-1.254	-1.339	-1.452	-1.276	-1.174

The mean for "Family Income" is 2.95. This indicates that, on average, respondents report a family income level of approximately 2.95 on the scale. Again, the scale's interpretation would depend on your study, but this suggests that, on average, the respondents have a family income close to the lower end of the scale. On the other hand, respondents consider the curriculum to be relatively important for future success, with an average rating of 3.19. The middle value in the dataset for all variables are 3.00, indicating that 50% of the responses fall below this value and 50% fall above it. The standard deviation is a measure of the spread or dispersion of data points around the mean. A higher standard deviation implies greater variability or scatter in the responses for each variable. In this case, all five variables exhibit a moderate level of variability, as indicated by the standard deviations between 1.374 and 1.499. The skewness and kurtosis values provide information about the shape of the distribution for each variable. The skewness values are all very close to 0, indicating nearly symmetric distributions with a slight leftward skew for "Government Support" and "Curriculum." The negative kurtosis values suggest that all variables have platykurtic distributions with lighter tails compared to a normal distribution. This means that the data are less extreme and more concentrated around the mean.

Table-02

Data Analysis (Reliability Test)

Variables	Reliability Coefficient (Cronbach alpha)	Item Number
Family Income (IV)	0.607	4
Smart Campus (IV)	0.616	4
Government Support (IV)	0.607	7
Teachers' Salary (IV)	0.614	5
Curriculum (IV)	0.730	6
Future success in education of Bangladesh (DV)	0.630	5

The Table-02 provided appears to be a reliability test output in SPSS, which calculates the Cronbach's alpha coefficient for different variables. The Cronbach's alpha coefficients provide information about the internal consistency of the items within each variable or construct. Higher values (closer to 1) generally indicate better internal consistency, meaning that the items are more reliable in measuring the intended construct. While some of the variables have moderate internal consistency (around 0.6), the "Curriculum" variable stands out with relatively higher internal consistency (0.730). This suggests a relatively higher level of internal consistency among the items related to the curriculum (6 items). Items within this construct appear to be more consistent in measuring the same concept.

Table-03

Data Analysis (Hypothesis Testing)

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The categories of Family_Income occur with equal probabilities.	One-Sample Chi-Square Test	.964	Retain the null hypothesis.
2	The categories of Government_Support occur with equal probabilities.	One-Sample Chi-Square Test	.002	Reject the null hypothesis.
3	The categories of Teacher_Salary occur with equal probabilities.	One-Sample Chi-Square Test	.081	Reject the null hypothesis.
4	The categories of Curriculum occur with equal probabilities.	One-Sample Chi-Square Test	.027	Reject the null hypothesis.
Asymptotic significances are displayed. The significance level is .050.				

The output of the Table-03 provided appears to be a summary of hypothesis tests, specifically one-sample Chi-Square tests, conducted in SPSS. These tests are used to assess whether the observed data significantly deviates from an expected distribution. In this case, the null hypothesis is that the categories of the variables have equal probabilities, and the alternative hypothesis is that they do not have equal probabilities. The results show that for Family_Income and Teacher_Salary, there is not enough evidence to conclude that the categories occur with unequal probabilities. However, for Government_Support and Curriculum, there is evidence to suggest that the categories do not occur with equal probabilities. The strength of evidence varies, with Government_Support having stronger evidence against the null hypothesis compared to Curriculum.

Recommendations

Digital Infrastructure Development: Invest in robust digital infrastructure to support online and blended learning. This includes improving internet connectivity, providing affordable devices to students, and creating a user-friendly learning management system (LMS) that can facilitate remote education.

Teacher Training and Development: Allocate resources to train and develop teachers. Focus on pedagogical training, technology integration, and continuous professional development to ensure that educators are equipped to deliver quality education, both in traditional classrooms and online.

Curriculum Enhancement: Review and update the curriculum to align with 21st-century skills and industry demands. Integrate practical and vocational education to prepare students for the job market, and incorporate digital literacy and critical thinking skills into the curriculum.

Data-Driven Decision-Making: Invest in data analytics and educational research to make informed decisions. Collect and analyze data on student performance, teachers' effectiveness, and education outcomes to identify areas for improvement and allocate resources more efficiently.

Public-Private Partnerships: Foster partnerships between the government, private sector, and non-profit organizations. Collaborative efforts can help secure additional funding, expertise, and resources to address educational challenges. Engage with tech companies to provide educational technology solutions and support.

Conclusion

In Bangladesh, the smart investment in education management has the potential to reshape the nation's trajectory. By focusing on curriculum innovation, teacher development, technology integration, assessment practices, and inclusive education, Bangladesh can unlock the full potential of its citizens. This collective effort will not only lead to individual success but will also contribute to the nation's growth, prosperity, and global recognition in the years to come. The key findings of the research reveal that government support and curriculum have both rejected the null hypothesis. This indicates that government support and curriculum do not occur with equal probabilities, and they have significant influences on future success in education within the context of Bangladesh. These findings suggest that strategic investment in education management, particularly in areas related to government support and curriculum development, is critical for enhancing the future success of educational endeavors in Bangladesh. The results of this study underscore the importance of thoughtful and purposeful investments in educational infrastructure and policies, as they play pivotal roles in shaping the educational landscape and students' success in the country. These insights can guide policymakers, educators, and stakeholders in making informed decisions to optimize educational outcomes in Bangladesh. In conclusion, the development of Bangladesh is heavily dependent on its ability to tap into the potential of its population and turn them into valuable human resources, which can only be achieved through quality education. Therefore, investing in education is the key to investing in people, and ultimately, prosperity.

Acknowledgement

The researcher extends their heartfelt gratitude to all the who generously shared their valuable insights and experiences for this study. Respondents' candid perspectives have been instrumental in shedding light on the evolving landscape. Their contributions have enriched the researcher understanding and will undoubtedly benefit fellow academia, policymakers, and researchers in navigating the challenges and opportunities of the dynamic global business environment for the smart investment in education.

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