

INBOUND INTERNATIONAL STUDENT MOBILITY IN INDIA: A TIME SERIES ANALYSIS

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ABSTRACT

The recent National Education Policy of the Indian government envisions India as a favored destination for international students from other developing countries. The main purpose of this study is to forecast the number of inbound international students from India's main source countries to ascertain prospects. This study employs an auto-regressive model analysis of the 2011-2021 UNESCO.UIS international student mobility (ISM) dataset involving four South Asian international student source countries to forecast the values from 2022 to 2027 and determine the trend. The results reveal that Nepal will continue its ascendancy and stature as the main source for international students in India, followed by Bangladesh, Afghanistan and Bhutan. This study on the trends of inbound international students will provide valuable insights to the administrators and policymakers of higher education institutions for strategic planning and budgeting.

Keywords: Inbound student mobility, Higher Education, Forecasting, Pull/Push factors

1. INTRODUCTION

International student mobility is increasingly being seen as a significant constituent of trades and services by most countries (Wen, 2018). Student mobility has increased in recent times due to enhanced international communications and transportation. In order to expand international student enrolment, countries like Australia, New Zealand, Malaysia, Singapore, and UAE have employed policies that are conducive to hosting international students (Snodin, 2019). Inbound and outbound flows of international students have increased at an accelerating rate over the last decade. Higher education being an exchangeable product or service, its economic value is evident. While the impact of international student mobility differs across countries, it is a

challenge for the countries to balance localization and globalization in higher education (Wen,2018).

Policies regarding international student enrolment in a country depends on internal reforms in higher education, curriculum and teaching and other administrative reforms (Wen,2018).India's emphasis on internationalization of higher education as per the National Education Policy (NEP-2020) is driven by domestic and foreign interests. The rising interest of the international community for Indian higher education has resulted in generating additional revenue. India is being viewed as one of the hottest players in the international arena since India has been a major source of students going abroad, along with China, for higher education. The fact that the number of students going to college in India is expected to reach 400 million in 2030 makes India a global hub of higher education. (Khare,2021) India is not just the world's largest source of HE students but also has one of the largest graduate talent pipelines (Khare,2021).The number of students seeking international education has increased at an accelerated rate. This has led to an increase in the inbound ISM in recent years, although at a much slower rate than outbound student mobility. In recent years the number of students from Nepal, Afghanistan, Bhutan, and the African nations has increased. Nepal continues to be the top source of students. (Khare,2021)

In the above context, this study has the following research objectives:

- (i) To determine the best Auto Regressive Forecasting Model for predicting the number of inbound students from the selected South Asian countries based on UNESCO.UIS ISM data for the2011 to 2021 time period.
- (ii) To determine the trend for the number of inbound international students.
- (iii)To determine the country-wise forecast for the year 2027.

1.1. Implications

This study will help administrators of higher education institutions who are constantly looking out for patterns and possible influences on students' decision to attend their institution. Predicting the number of inbound students would help the administrators in strategic planning and budgeting and better allocation of scholarships and financial aid to maximize international student enrolment (Hossler and Bean, 1990).

2. LITERATURE REVIEW

There is a considerable body of work related to international student mobility. This includes the factors influencing international students in their choice of destination, antecedents of

international student mobility, variations in the flow of international students, patterns and trends in international student mobility, and recruitment strategies and motivational factors.

2.1 Pull/Push Factors

The push and Pull theory was first introduced by Lee (1966). This theory indicates the migration from a 'region of origin' to the 'region of destination'. Both the origin and destination have pull and push factors. Pull factors are the one that is linked to the receiving country, i.e., the factors which attract international students to the university in the host country.

Pull factors become more important once the student decides on the host country. Students will select a country where the pull factor has to be the largest and the push factor has to be the smallest (Mazzarol, Soutar, 2002). Six factors are identified as pull factors (Mazzarol and Soutar, 2002). These factors are overall knowledge about the destination country, recommendations from family and friends, tuition fees, living costs & general safety in the destination country, the environment in the host country, the geographical proximity of the host country and social connect (possible family and friends) in the host country.

2.2. Rationale to explain international student mobility in Indian higher education

The rationale of India's inbound international student policies is categorized into the soft power and cultural approaches.

Soft Power approach: soft power focuses on a preferred (positive) understanding of India's interests and identity abroad. India aims to become a soft power by building academic and strategic dominance. An increase in the number of international students studying in India will lead to an increase in soft power, a tool for diplomacy. India has declared its intentions to be a global education hub by providing premium education at affordable costs (NEP 2020).

Cultural approach: Indian higher education advocates historical and cultural perspectives to interpret internationalization of higher education. A cultural approach in promoting higher education leads to more respect for cultural diversity, mutual respect and understanding between local and international students.

3. THEORETICAL FRAMEWORK

Autoregressive (AR) Models predict future values based on past values. The model calculates the regression of the historical data and calculates the present or future values in the series.

An AR(p) model is an autoregressive model where specific lagged values of y_t are used as predictor variables. Lags are where results from one time period affect the following periods. The value for “p” is called the order.

An AR process of order p models the value of a time series at time t, X_t , using its previous p realizations $X_{t-1}, X_{t-2}, \dots, X_{t-p}$

$$X_t = \beta_0 + \sum \beta_i X_{t-i} + e_t$$

In the equation, β_0 is the intercept of the model, X_t is modelled using a linear combination of the p previous realizations and a noise term, AR processes are particularly useful for modelling linear term series.

The advantage of this method is that it can forecast any recurring patterns in the data and identify the lack of randomness in the data. AR models have been used for the prediction of worldwide cybercrimes, for forecasting heart rate changes, traffic flow predictions, and for predicting the driving behaviour.

4. RESEARCH METHODOLOGY

4.1. Data Source

The data for the number of outbound students from India for the years 2011 to 2021 for all the countries was obtained from UNESCO.UIS website. Inconsistency in the data on international student mobility from one source to another is acknowledged, and therefore the data was extracted from a single source, i.e., UNESCO.UIS website.

4.2. Data Analysis

The autoregressive model was used to predict future values by applying regression analysis on the past data.

The comparative regression Model of the 4 countries is shown in Table-1..

Table-1. Comparative Regression Models

<i>Country</i>	<i>Adjusted R²</i>	<i>ANOVA sig.</i>	<i>Fitted Model</i>	<i>t-stat</i>	<i>Sig.</i>
Bhutan	0.54	0.023	$Y_t = 391.74 + 0.805(Y_{t-1})$	0.614 2.885	0.023

Bangladesh	0.93	0.00	$Y_t=84.23+1.127(Y_{t-1})$	0.537 10.07	0.00
Afghanistan	0.878	0.000	$Y_t=1470.10+0.675(Y_{t-1})$	4.39 7.68	0.00
Nepal	0.95	0.00	$Y_t=1881.84+0.898(Y_{t-1})$	2.68 12.78	0.00

Table-1 shows the comparative regression models for the 4 countries. The adjusted R-square is high enough (except for Bhutan) to show a significant goodness of fit, and the ANOVA model is significant for all four countries. ANOVA model shows the overall significance of the model. The fitted regression model is shown for each country. The p-value is significant for each of the regression models.

For the best AR model, multiple Regression analysis of the past data was used to get insights. Regression models were developed for the 3rd degree AR model, 2nd degree AR model and 1st degree AR model. The 1st degree AR model was significant at $\alpha=0.05$ for all the countries was significant and thus selected as the final model. In the 3rd degree AR model and 2nd Degree AR model the p value was not significant for any of the variables and hence was not considered as a significant model.

4.3. Trend of Inbound student mobility

Table-2. Forecast of the no. of inbound students

<i>Year</i>	<i>Afghanistan</i>	<i>Bangladesh</i>	<i>Bhutan</i>	<i>Nepal</i>
2022	4225	3183	1862	14017
2023	4322	3671	1891	14413
2024	4387	4221	1914	14767
2025	4431	4757	1933	15084
2026	4461	5445	1948	15367

2027	4481	6221	1960	15620
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Table-2 shows the top countries for inbound students pursuing higher education in India from the year 2022 to 2027. As per the forecasting estimates, Nepal is the top source of international students pursuing higher education in India, followed by Bangladesh, Afghanistan and Bhutan.

5. FINDINGS

1. The 1st degree AR model was significant at $\alpha=0.05$ for all the countries was significant and thus selected as the final model.
2. The forecasting results reveal that Nepal is the top source for higher education, followed by Bangladesh, Afghanistan and Bhutan.
3. The adjusted R-square is high enough (except for Bhutan) to show a significant goodness of fit for the 4 countries.
4. ANOVA (Ftest) shows the over all significance of the model and has a significant p-value for the 4 countries.
5. The fitted model of regression has been calculated for all 4 countries.
6. The p-values of the regression models are significant for the 4 countries.

6. CONCLUSION

Based on the study, the conclusions are as follows:

1. This study is based on the inbound student mobility dataset from UNESCO website.
2. Nepal is the top source for international students in India, followed by Bangladesh, Afghanistan and Bhutan.
3. The regression models are significant ($p\text{-value}<0.05$), and the value of the adjusted R-square shows the goodness of fit for all four regression models.

7. RECOMMENDATIONS

1. This study will help the administrators and policy makers of the higher education institutions in the emerging economies to increase the quality and quantity of inbound students.

2. The forecast in this study will motivate the administrators and policymakers of higher education institutions to design strategies so as to attract international students from other Asian countries and developed countries.
3. Given the close competition for international students among the emerging economies, it has become imperative for the Indian universities to understand the factors that attract international students and their decision to study in the host country.

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