Enrollment Performance of B.Tech Course in West Bengal – A Study by using the concept the APLC

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Abstract

Assessment of enrollment performance over the years is important to understand the marketing effectiveness to each academic program. Academic Product Life Cycle (APLC) is a dominant marketing tool to determine the growth as well as survival strategies for private HEIs. It also showcases the effectiveness of marketing strategies over the years and strategies required for corrective measure. Secondary data of science based professional colleges offering courses like B.Tech in West Bengal were collected. Data of enrollment and intake were collected from All India Council for Technical Education (AICTE). Periodic APLC (2008-09 to 2024-25) and forecasts were developed by using time series analysis and developing Regression Model thereof.

Introduction

Student perception and Institutional rivalry in the higher educational sector have shaped a position in the industry in such as way where Higher Educational Institutes (HEI) is viewed as "Degree providers". The academic programs of HEIs are positioned as products. The parents consider themselves as customers and students are end user. French Classical economist Jean Baptiste (1803) states that "Supply creates its own demand", today education industry is just the reverse.

In the last decade, investments on HEIs were made on the hypothesis that with the economic growth there will be a growing demand from the supply side. Today, his hypothesis cannot be sustained. There has been an unprecedented change way that colleges and universities perceive the market and there has been a rapid transformation of value chain where education business is indeed a business (Karabel, 2005; Tuchman, 2009).

HEIs now overview education in more realistic terms as it is a process of creating livelihood (workforce development; Tuchman). Placement has become key to every education and purpose of enrollment is to procure a job. This very approach has make students consumer centric as they pay fees only for a specific outcome.

Private HEIs created such a market perception that education has evolved as a product which potential buyers with students as end-user and their parents as buyer. Similar to other businesses, Private HEIs adapt with new and genuine marketing strategies in to maintain their growth trajectory in highly volatile business environment. Effective marketing strategies are drawn in accordance to the stage an academic program is placed in its life cycle (APLC). So APLC is emerging as a time-line tool to determine the growth as well as survival strategies for private HEIs.

LITERATURE REVIEW

DM Gardner (1986) interprets that life cycle has huge impact on various industries and as well as in all the activities starting form inventory management, assembly line to channel sales. His studies shows that how it influence all human activities in the business process. Interpretations of Lifecycle techniques have been widely used in both private and public sector to fulfill variety of

business objectives, including comparative analysis, strategic planning, SWOT analysis, product modeling, branding and repositioning.

L Michelle Grantham (1997) suggested that the product life cycle model, has lots of limitations and all products may not experience all the stages. Various academic researchers and practicing manager consider its validity to predict the stage where the product and services actually lies depending on the marketing conditions. On the basis of which an in-depth analysis can be done to ascertain the appropriate marketing strategies that can be implemented at different stages of a product's life.

Jim Riley (2012) elaborately describes the stages a product goes through in PLC before it is withdrawn from the market or it is perished. All the products do not reach this final stage or follow the chronological steps. The concept of brand loyalty and brand positioning is integrated with PLC. He also discussed the various shapes of PLC Curve.

Edward H.K. (2012) states that APLC has four dominant sequential stages in time span. He introduced his own model by taking into consideration yearly admission data of various courses. He then analyzes various factors which determine the shape of the APLC curve. Based on the factors regression analysis was done to understand the growth patterns (enrollment peaks) in the various stages of APLC.

Sharma Harshinder (2016) introduced Product life-cycle management (PLM) as a succession strategy used by the practicing managers as a product experience various stages of life-cycle. The market conditions and the consumer behavior pattern in which the product performs may changes with time and should be managed accordingly.

Ram Komal Prasad, Manoj K. Jha and Sanjeev Verma (2019) explains various PLC models and its application in manufacturing industry. Industry experts are placed with various strategic decisions and these PLC models are key to take appropriate decisions. Marketing experts uses PLC philosophy to pursue various strategic options and undertake important decisions for products they are managing. The paper analyzes various stages of PLC and how key decision can be taken for effective product management.

Mukerji and Tripathi (2004) has taken examples of six course of IGNOU and discuss the APLC concept. It uses the admission figures from 1991 were admission was highest in 1997. It was considered as growth stage and then it declined subsequently. Six academic programs of IGNOU were considered namely BPP, BA, BCA, CIC, MBA and MCA to draw APLC curve.

Research Gap

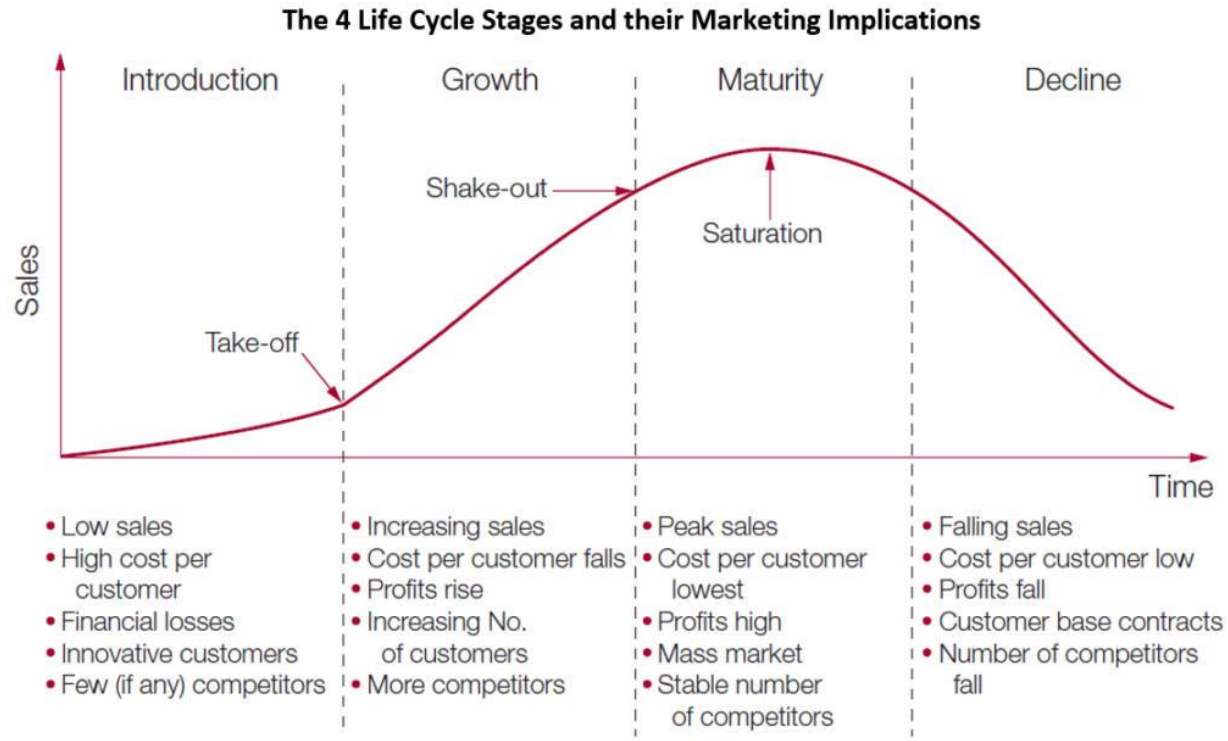
After doing literature review in various international and national research papers it was observed that main focus of all these work were on the theory and concept of Product Life Cycle (PLC) and its application on various products and services. There was only little work on Academic Product Life Cycle. In West Bengal there was literally on researches based upon Academic Product Life Cycles and Evaluation of marketing strategies. West Bengal has seen a boom in terms of investment in private higher education as well as student migration taking place in the same time. There was no evident research to find out the significance of marking strategies adopted by PHEIs on its enrollment performances in West Bengal. There was also no comprehensive work on developing Academic Product Life Cycle (APLC) for professional courses in West Bengal.

Concept of Product Life Cycle (PLC)

Theodore Levitt (1965), a renowned marketing management theorist has created basic concept of the life cycle of the product. Products are first launched in the market and then followed by customer's acceptance. If the products are in accordance to their needs then sales grow swiftly. Then product inters growth stage from introduction. Looking at the success of the product the competitors become more vigorous. The competitors launch similar products in the market to compete. Sales will slow down (Maturity) and then followed by decline.

Levitt developed the concept of the product life cycle with certain pre-assumptions;

1. Every product has a restricted life span
2. Each stage has different sales volume and different challenges of competition.
3. Each Cycle has rise and fall of profit.
4. Product required diverse marketing and financial strategy in each stage of cycle.



The PLC has 4 defined stages, each with its own set of sales volume and distinctive features as shown above. But various academicians in numerous occasions has raised ambiguity and showcased doubt about the usefulness of the PLC concept.

Criticisms of the PLC concept (Grantham, 1997) are as follows:

• Applicability of the PLC concept as a marketing instrument is often misleading as most of the product as well as services do not follow the stage wise pattern.

• It is very difficult to predict marketing outcomes and device marketing strategies accordingly most of the time it is highly theoretical..

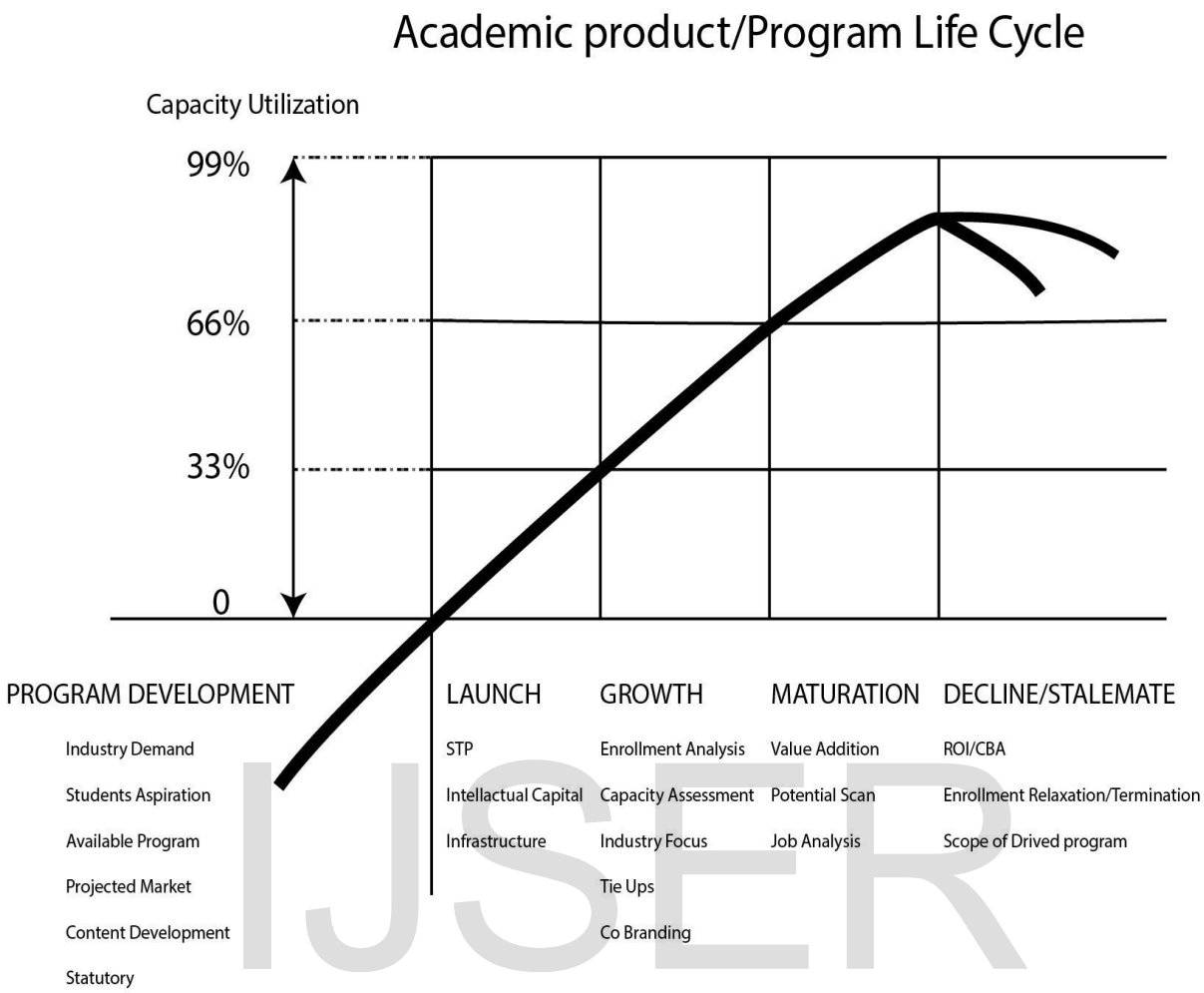
• Sometimes it even very difficult to analyze and understand the actual phase of the PLC for a particular product or service.

Concept of APLC

Marketers are innovating and simultaneously soul-searching to have triumph over competition. To manage aspirations private HEIs are re-engineering academic processes, outsourcing, setting new benchmarks, forming alliances to go global often falling back to APLC concept. The developments in private HEIs in recent past increase the scope to develop major strategies and tactics to stimulate revenue.

Admission managers manage their academic product offerings by analyzing the various phases of the APLC by optimizing the marketing mix variables. Marketing decisions are often based on the performance of academic products and plotting them in the correct stage. Integrated marketing communication and channel decisions will depend accordingly. Many marketing models are available for education marketers for decision makers but APLC can help you developed precision edu-marketing strategies.

The APLC mapping allows admission managers to forecast and conduct strategic planning accordingly to manage their academic products in various. The rationale of APLC is to decide the phase in which the academic product is currently and then manage it for growth.



Source: Black, Jim (2008) ;Perfecting enrollment strategy

APLC can be categories into 3 phases; Pre Launch, Launch and Post Launch. Pre Launch is actually the product development phase. An academic product is the outcome of Industry demand and Students aspiration. It is then followed by a macro analysis whether similar or alternative academic program is already available or not. Followed by we have to project the market viability and predict enrollment in the forthcoming years. If there is a projected future then the curriculum (Content) is developed. Before the launch the statutory compliance is done in form of requisite affiliation and approval.

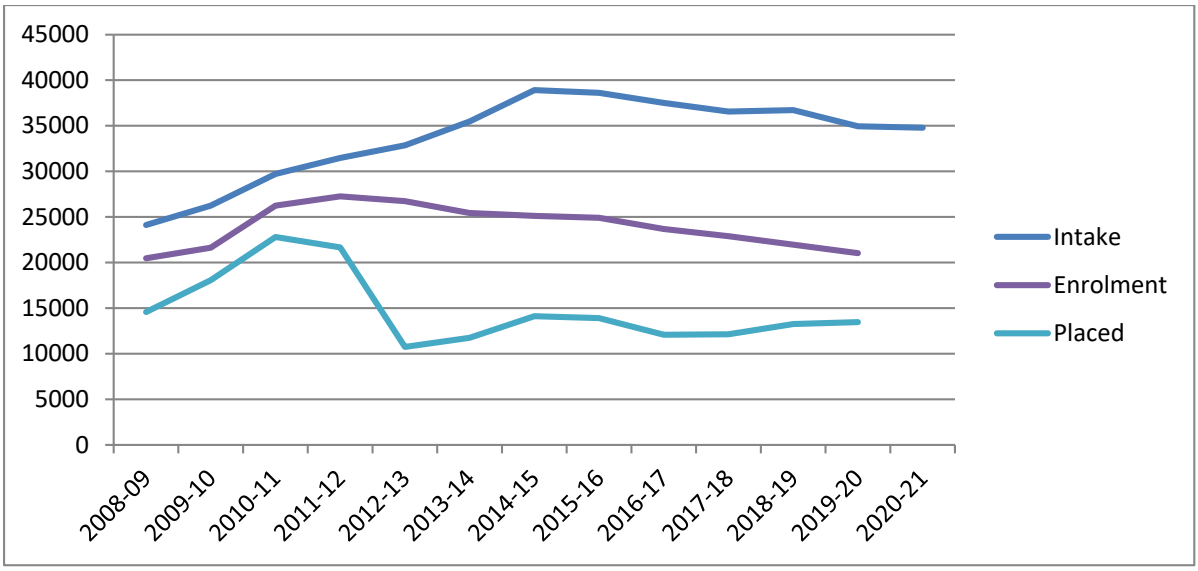
Launch is always based upon proper Segmentation, Targeting and positioning strategy and accordingly communication strategy is evolved. Teaching, Support staff and along with adequate infrastructure should be ready before the launch. Post launch has three stages Growth, Maturation and Decline. Enrollment Analysis will lead to growth potential and which is augmented with capacity assessment. All professional programs should be aligned with Industrial needs and tie up in this regard can be very essential to boast future growth. This phase is followed by maturation and decline.

Present Academic Scenario in West Bengal

At present West Bengal has 46 Universities of which 10 are private. In 2010-11 academic session the total admissions in higher education was around 13 lakhs. It increased up to 20 lakhs in 2017-18 academic session. But according to 2019 AISHE Report there are 876 PHEIs out of total 1370 HEIs in the state which is around 63%. 6.2 lakhs students enrolled in PHEIs and 9.8 lakhs enrolled in government institutions in 2018-19 academic sessions. The enrollment in private institutions is only 38%. In 2018 5 new PHEIs were established compare to 2 by the government. But the situation is not so conducive as per below explained data.

Secondary data in respect to two courses are plotted in a line curve portraying time line of 10 years (2008-09 to 2019-20). There are two figures depicting representation of 2 courses in terms of Approved intake, Enrolment and Placement. The source of the data is AICTE.

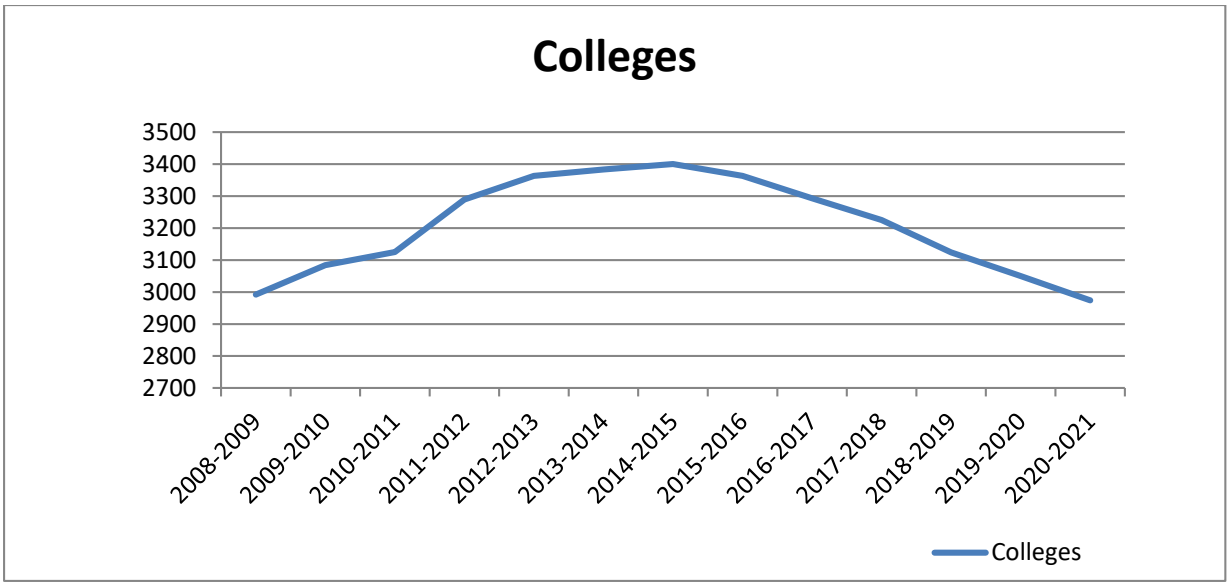
Engineering (B.Tech)



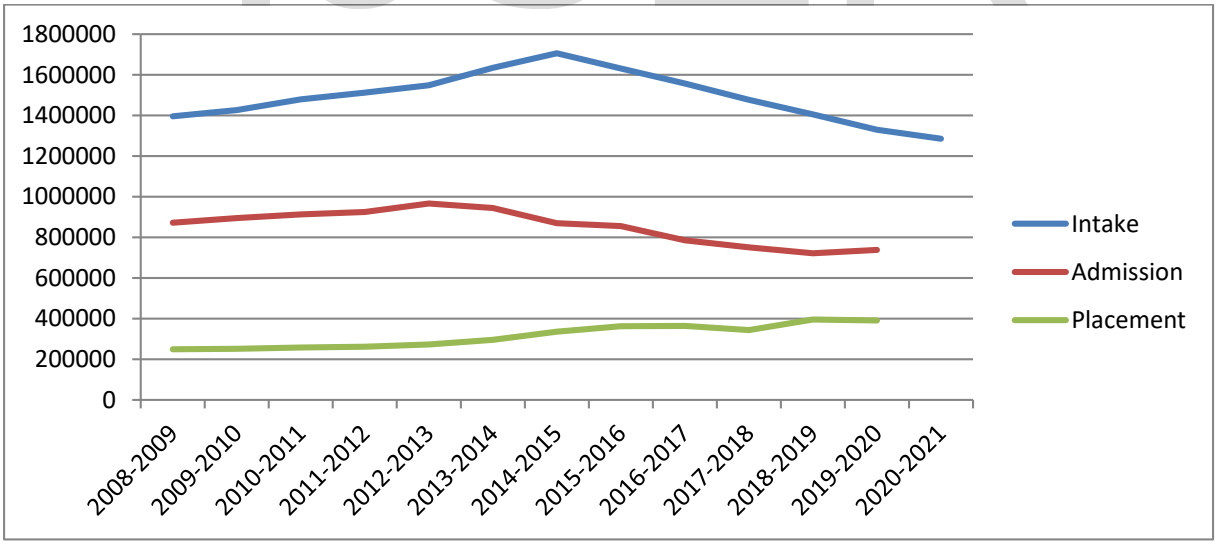
There has been a continuous increase in seats from 2008-09 to 2013-14 and onwards the curve has become a plateau due to the fact that enrolment shows a declining trend. Placement initially picked up with admissions and then it fall flat. Since 2011-12 the gap between intake and enrollment is widening

B.Tech – Pan India

India produces 1 million engineering graduates per year. Thomason College of Civil Engineering (now IIT Roorkee) started in 1847. At present India have around 3000 graduate Engineering colleges.



In the figure 1 we can see the growth in terms of number of engineering colleges' increases till 2013-14 followed by huge decline. The curve is a perfect U shaped where the number of colleges was below 3000 both in academic session 2008-09 and 2020-2021and picked around 3400 in 2014-15.



In figure 2, the intake curve is a perfect V shaped and in academic session 2011-12 has seen the peak in form of admissions, two years ahead of intake peak. But the admission figures in 2020-

21 are much less than that of 2008-09. In West Bengal, it was no exception admission has also picked in 2011-12 and is declining since then.

Problem Statement

Gross Enrolment Ratio (GER) is a statistical description determined by the number of students enrolled in a particular course or grade, irrespective of Age to available population corresponds to that population. It is express in terms of percentage. Here we have taken the population as available intake. GER = Total Admission / Total Intake X 100, it will help us to judge the effectiveness of marketing strategies in respect to admission targets.

The nature of GER curve in respect of four courses are given below which depicts the performance of each course over last 10 years. The enrollment performances in form of GER curve in terms of 4 professional courses are given below;

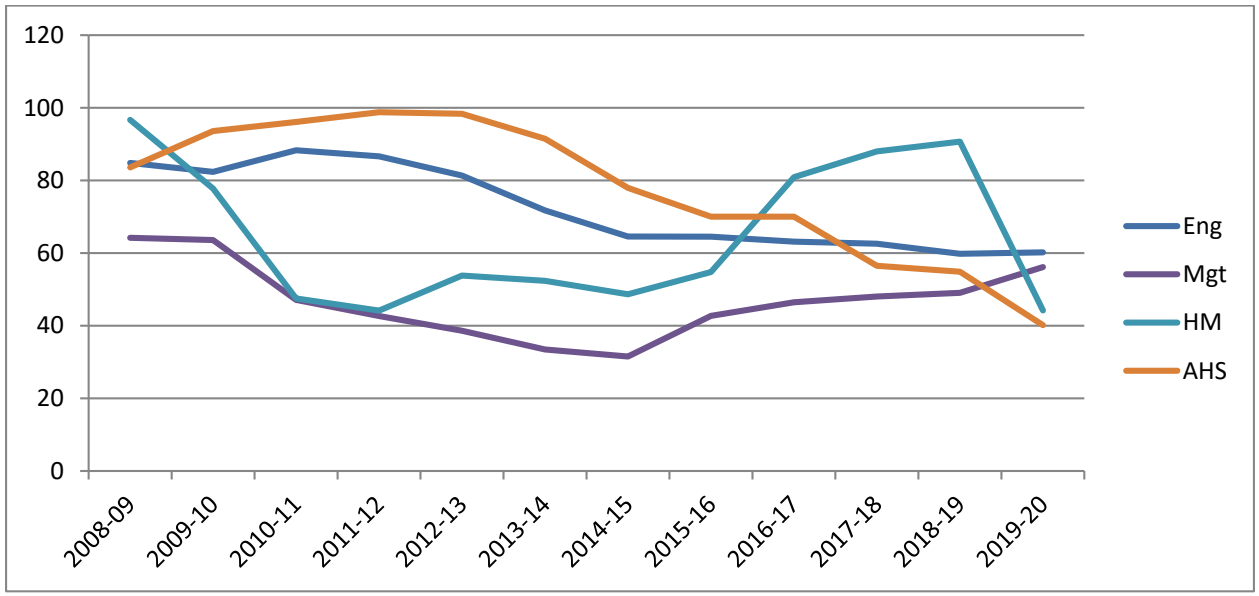
Engineering (B.Tech): Slow decline

Management (MBA): Steady Decline, recovery and slow growth

Hotel Management (BHMCT): Decline, Growth, Decline

AHS (B. Pharm): Steady decline

Gross Enrolment Ratio (GER) Curve



The Problem Statement is that;

The GER & Enrollment Curve of all four Professional Courses including B.Tech in PHEI has declined in last 10 years.

Research Objective

There is scarcity of meticulous theoretical and empirical research on the life cycles and above all lifecycles of academic programs are yet to be defined. Scouring through the scholastic world of PLC, we only found two researches on APLC which were mentioned above. Our research is focused on enrollment of B.Tech program in AICTE approved colleges in West Bengal with the following objectives;

1. To develop periodic APLC (PAPLC) curve on B.Tech enrollments within a time span of 10 years (2008-09 to 2018-19)

2. To develop Strategic decision Model based on APLC.

Research Methodology

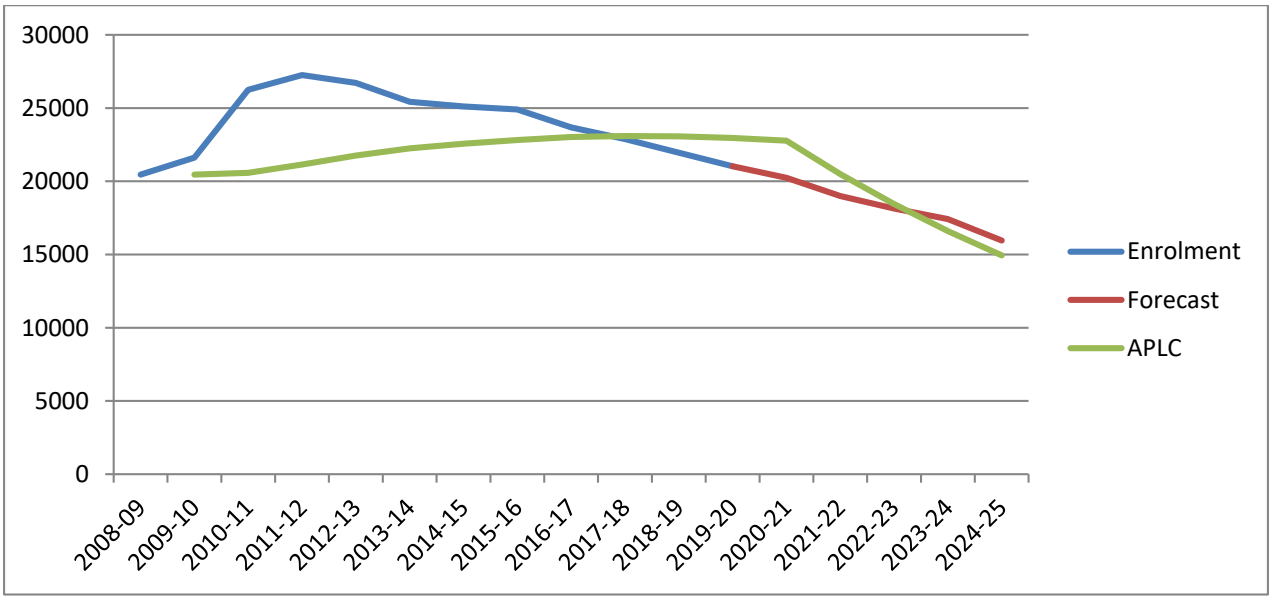
Secondary data was collected from the website of All India Council for Technical Education (AICTE). Enrollment and placement related data of last 10 years were used. Analysis was done on B.Tech course.The colleges which are only AICTE approved are taken in consideration. MS Excel Forecast tool and Single Exponential smoothing (SES) is used to plot the APLC of various courses. Even we tried to develop regression model based on available data to predict admission.

Developing Academic Product Life Cycle (APLC) curve

The primary objective is to understand the past and future enrolment performance for 4 professional courses in the private setup in a span of 15 years. The secondary data of time span 2008 to 2019 was available. Then for the next five year we used MS Excel Forecast tool and then plotted it in the graph.

Time series forecasting method, Single Exponential smoothing (SES) is also used here. It is used to eliminate trend and seasonal patterns. SES is plotted in a graph to develop the Periodic APLC (PAPLC) of B.Tech form 2008-09 to 2024-25.

Engineering (B.Tech)



In the span of 15 years B.Tech program in West Bengal shows very flat PAPLC with slow and steady growth followed by steady decline.

Regression Model

Based on the available data on B.Tech course we have developed regression model.

Multiple Regression	0.9307
R Square	0.8663
Adjusted R Square	0.8366

Adjusted R Square is 0.83 so we can say 83% variation in number of enrollment can be explained by the independent variable Promoter's Outlook & Intake. In a linear regression with multiple variables it is suggested to consider Adjusted R Square to judge the goodness of the

model. The result is reliable as Significance F is .0001 (less than 0.05) and concludes that regression model significantly good fit.

The regression line is: Y = 24581.1 + (-61.73)X1 + (0.49)X2.

Where,

Y = No. of Enrollments

X1 = Promoter's Outlook (No of Colleges)

X2 = Intake (AICTE approved seats)

In other words, each unit increase in number of B.Tech colleges the No. of enrollment may decrease by 62. Each unit increase in student's intake the No. of enrollment will increase by 0.49. So we can conclude enrollment of B.Tech in West Bengal is not based on promoter's outlook neither on available seats.

Strategic Implementation

Moreover the APLC curve provided us with the entire perspective of the program viability. This has been an important attribute for future investment. The investment pattern can be determined on the basis of APLC – GER Investment Matrix (AGIM).The matrix has four quadrants based on which investment strategy can be made. The investment strategies are Invest, Maintain, Hold and Divest which can based on four critical scenarios.

	APLC Rising	Stagnant	APLC Declining
GER Rising	**INVEST**		**MAINTAIN**
GER Declining	**HOLD**		**DIVEST** (B.Tech)

The four critical scenarios are as follows;

Invest: This is an ideal scenario for investors in education. Both APLC and GER is rising which indicates the enrolment are rising and gap between admission and intake is less. Taking into consideration other favorable condition like placement and economic growth the investors can think for further investment in the particular course. In West Bengal, there is no professional course for investment at this point of time as both APLC and GER is rising.

Strategic Task: Analyzing Industry demand, Availability of similar program, Student's Aspiration study and Market Projection

Maintain: When APLC is declining and GER is rising, a classical scenario when admissions are falling from a long time and GER is rising due to the fact that number of intake is reduced due poor enrolment performance. In this situation as cost rationalization has already taken place by

means of intake reduction the investor has to maintain the status co and follow the wait and watch policy.

Strategic Task: Focus of Industry tie Ups, Private ratings, Co Branding with Premium institutions and Capacity assessment

Divest: When APLC and GER are both declining it will better to divest or to utilize the capital investment in some other academic program. The B.Tech program in West Bengal is facing the same crisis.

Strategic Task: ROI, Scope of alternative program and Potential Scan

Hold: APLC is rising and GER is declining that means number of colleges and intake is increasing without taking account of present enrolment status The best move in this scenario will be to hold back the present operations and adopt rationalization. Otherwise after sometime you may have to divest as APLC and GER both will be declining.

Strategic Task: Enrolment Analysis, Enrolment relaxation and Scope of derived program

The other strategic aspect which is required to be addressed urgently;

1. Each course has to be treated as separate SBU.
2. Better understanding of Student's Aspiration and reduction of buyer – seller perceptual gap
3. Different Content Management strategy for different courses
4. Designing of Communication mix as per student preference

Conclusion

The Periodic APLC concept discussed here with an objective to overview various academic courses in respect to available macro dimensions. Except placement, the influence of other behavioral and social factors on students' academic program decision making process is not taken into consideration. The ability of the model is to study macro perspective like historical performance, trend and forecast the enrollments of the professional programs. Furthermost APLC – GER Investment Matrix (AGIM) will act as strategic tool for the educational entrepreneurs to make decision on further investment. Further to augment on the decision making regression model also justify the diagrammatical outcome of APLC.

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