

# Systemic Analysis of Supply Chain of Higher Education

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**Abstract:** This paper presents Higher Education Institute (HEI) supply chain system and it emphasizes the role of HEI in delivering the employable and knowledgeable graduates to the Nation. It provides the supply side (Schools) and the distribution side (Employers) of the supply chain, HEI being the processing unit. The paper shows the causal relations in the chain using system dynamics methodology and analyzes the dynamics. It analyzes the dynamics and discusses the importance of quality in enhancing the brand value of HEI.

**Key words:** Higher Education, Supply Chain, System Dynamics, Academic Quality.

## I. INTRODUCTION:

Higher education refers degree and above level after the formal schooling of 10+2. Generally after the higher education, students take up jobs and decide about their career, though some students may take up jobs after 10th class or after 10+2. The school education becomes a foundation and a stepping stone to secure admission into a preferred program in a choice institute but it is higher education that prepares them for career and living. In other words, higher education plays the prime role in molding the students to lead a life with service to the society. It is useful to view higher education or to be more specific a HEI, as a supply chain entity as the supply chain analysis provides a better understanding and brings in clarity on various components or activities of the system. Therefore, an attempt is made here to present the supply chain of the higher education system. Taking the first objective or prime service, that is, turning out high quality graduates depends on

1. Quality of the students admitted – general quality, discipline, commitment,
2. Quality of services provided by HEI – quality of teaching-learning process that depends on the quality of the teachers and quality of laboratory facilities, technical staff and the quality of the co-curricular, extra-curricular and personality development activities.

Quality of students, entering into higher education, varies as expressed by the performance in the previous class and the admission/entrance test, if any. The students prefer the high quality institutes as perceived by them based on their ranks in admission test or marks in the qualifying examination. Any institute gets the students based in its standing compared to other institutes in the perception of the candidates and their parents.

The Institute Perspective: Institute, providing higher education, is interested to admit students with good ranks, that is, of good quality and in good quantity or to fill hundred

percent seats. The student quality or the quality of the input to HEIs depends on the personal abilities and the quality of the school education obtained. The complex task of developing the students' quality and preparing them for life skills becomes more difficult if the quality of the student while joining is poor. The quality of the graduating students from HEI may also be poor unless HEI puts all efforts to improve the quality.

SUPPLY SIDE	HEI	DISTRIBUTION SIDE
Schools (Students Admitted) Quality of the Input	Academic and other services Quality of the Output (Outgoing students)	Employers (Internships and Projects) Placement of Students) Society Academic institutes

Figure 1: HEI Supply Chain Model

## HEI Supply Chain Model and Relationships:

As shown in Figure 1, students are admitted to HEI from the common pool of students completed their education in a higher secondary school. Therefore, the input quality or the quality of students joining the HEI depends on the academic and other services provided by the HEI to the students to enhance their knowledge and skills to make them employable. The prior quality of the students also decides the quality level of the outgoing students but the role of HEI is very crucial. The overview of the supply chain system of HEI is shown in Figure 1 and the detailed variables and their relationships in figure 2.

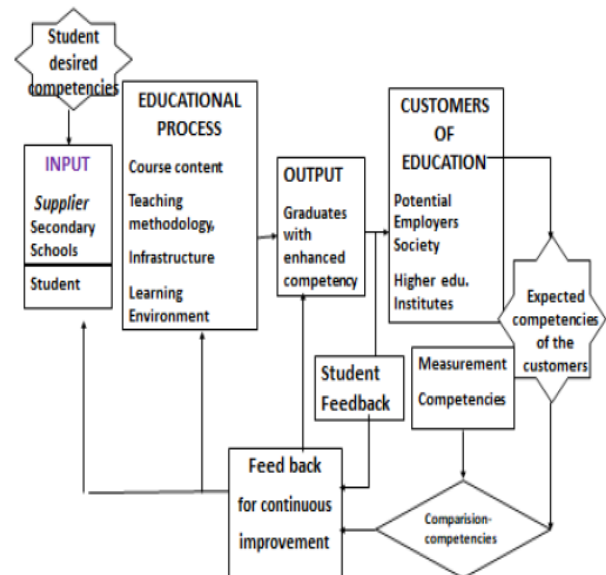


Fig. 2: Feedback controlled HEI Supply Chain System.

As shown in figs 1& 2, on the supply side, the source of the admitted students are schools and admission tests like JEE, EAMCET, etc. Whereas on the distribution side the destinations of the graduates, employers (industry, other organizations, government, etc.); the society at large as it indirectly draws the benefits from the services of the graduates; and the academic and research organizations. Here, the output is not a product but human beings and therefore, they are the direct customers in the present economic system as they pay for the services given and whereas the employers and others become the indirect customers as they do not pay directly to

HEI but the employment provided by them leads to better admissions in terms of input quality and the fees.

The role of the HEI is therefore crucial in molding the students so that they obtain jobs or take up productive profession. The input quality increases with the improvement of services at HEI and thereby the employment or engaging in a professional career.

Figure 2 explains the interaction between the schools, HEIs and the employing organizations in a supply chain paradigm. The students, after completing XII standards in schools, enter into a HEI for pursuing a degree. The student commitment, seriousness about studies, discipline, etc. mainly depends on her/his grooming in the school and also in the society where he lived. These two play a greater role in the quality of the students entering into HEI. Therefore, the HEI cannot determine quality of the students admitted though for some seats, it may be open to the College to admit them. However, they select among the candidates that have made an application. The employers demand a certain proficiency in the students in both technical and generic skills. The role of the HEI is to identify the knowledge level of the students while they are admitted and to prepare the students to satisfy the employers requirements.

The educational system is essentially a feedback control system where it transforms a learner into the learned as shown in fig.2. Here, training of students to become graduates is only considered, as many of the colleges perform only that. Some colleges may also provide services like research projects, consultancy, Entrepreneurship development programmes, etc. The Feedback controlled educational system includes an input in the form of a student, who has a desire to enhance his competencies to suit the requirements of the ultimate customer. The input is normally determined through the admission process. But this old practice of controlling quality primarily through selecting only high- quality students will no longer be feasible for most of the institutions amidst this mushrooming of colleges. In lieu of this, it calls for a greater emphasis on the quality of the educational process rather than the selection of the quality input. There is a need for systematically improving the educational environment to meet the needs of customers. But multiple customers entangle in complex relationships forcing the educators to grapple with the identification of just who their customers might be. Practicing TQM in the college helps to meet the demands of both the students and employers. Through feedback from stakeholders, the realization that the things are not going as well as expected causes disappointment, and anxiety in the administration. There must be a strong leadership at different

levels practicing inner democracy can pursue the growth model by recruiting appropriate faculty members and staff and by continuously motivating them through good academic climate to work for the common goals. This brings a dramatic change in the standards of education and thus in the brand image of the College.

## II. CAUSAL RELATIONSHIPS

The Figure 3 shows the details cause-effect relationships among the supply chain components. Here, the effects on HEI are shown and the likely results are discussed. As we observe the figure 3, by implementing TQM in the College, it can enhance the quality of the output, i.e., the graduating students. That leads to good placement in the companies triggering satisfaction in the students, parents, and the society, in general. Thus, the students with good ranks seek admission in the College. Year after year, it becomes a growth spiral making the College as a sought after by the students. The parents will be motivated to pay high fee for admission and the industries try to use the capabilities by providing research or consultancy projects. The College revenue thus increases and the College can spend more funds to improve the resources and facilities. On the contrary, if the College cannot provide good resources and facilities, morale of the teachers is low, and the work climate is poor, it becomes a downward spiral leading to a negative growth like the GDP of India at present.

## III. CONCLUSIONS:

The supply chain model of HEI and causal relations clearly show the role of HEI in improving the quality of the outgoing graduates and how it can improve the input quality, i.e., the quality of the admitting students. It further shows how it can increase the satisfaction of the stakeholders, its brand image and there by its revenue. If the College gets poor quality students and it always turns out the poor quality graduates, the college can never come out the vicious circle and always blaming the less quality students joining the College as the cause, forgetting its role.

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