Extension of Structured System Analysis in Investment Decisions

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Abstract: **The knowledge is Sole Collection of Sound Principles from all the disciplines. Often Principle of one Discipline is equally applicable in other discipline. Structured System analysis is a Modeling Technique used in software engineering to partition a large problem in small problems and modeling at different abstract layers. Finally it gives a keen understanding of a system to software Designers. This paper is an attempt to extend the technique in effective investment decision making in areas such as stock market and investment in industry etc..Due to any major investment decision in particular economic sphere, various particular segments of industries are affected. Affected industries are divided into three distinct zones namely Pre, Concurrent and Post Zone. These zones are crucial for tune of investment and exact timing of investment.**

Keywords: **Data Flow Diagrams, Entity, Process, Software Analysis, Software Methodology, Structured System Analysis, Stock Market analysis.**

1. INTRODUCTION

Structured System Analysis:

Structured system analysis is widely used system analysis method to understand and design software systems across the globe. The reason is simple one, it is so understandable and systematic. It immensely helps an analyst to partition a large problem into small problems and to represent the intricacy and complexity of a system in layered fashion at various abstract levels of comprehension.

The three main principles of Structured System Analysis Methodology are-

1. A Large Problem or System must be partitioned into Smaller Problems or Sub Systems.

2. A Model of the System must be developed. The Data Flow Diagrams are most widely used Modeling Method.

3. The Modeling must be done in Layered Fashion, Starting from low level of abstraction to Higher Levels of Abstraction.

Data Flow Diagrams (DFD):

As Mentioned above, The Data Flow Diagrams are most widely used Modeling Method. The Basic Data flow diagram represents the entire Problem or System as one Single Process and is called '0 Level DFD'

For Example, if a System for Investments is being analyzed, The Structured System Analysis will start modeling the system as following,
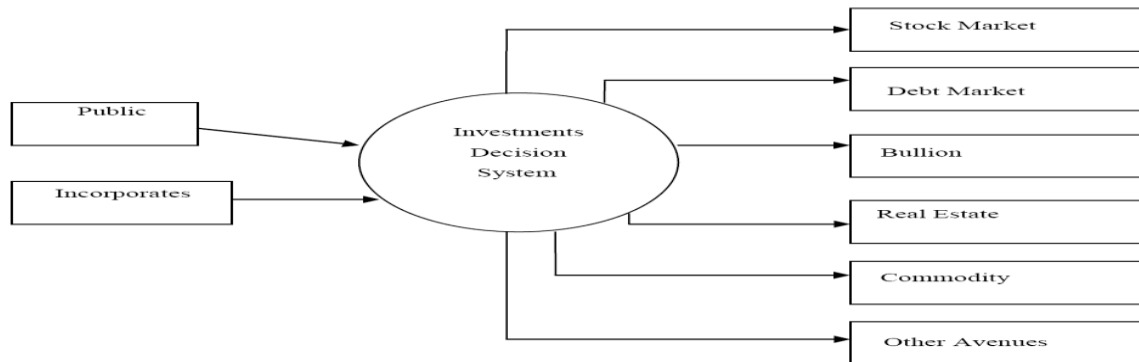
0 LEVEL DFD

The arrows represent the content and Direction of Data Flow. A Rectangle represents an entity and a Circle represents a Process.

The '0 Level DFD' represents entire system as one process. Later at higher level the system is blown into smaller systems like Stock Market Decision System, Debt Market Decision System etc. Subsequently they will be depicted as '1 Level DFD'.
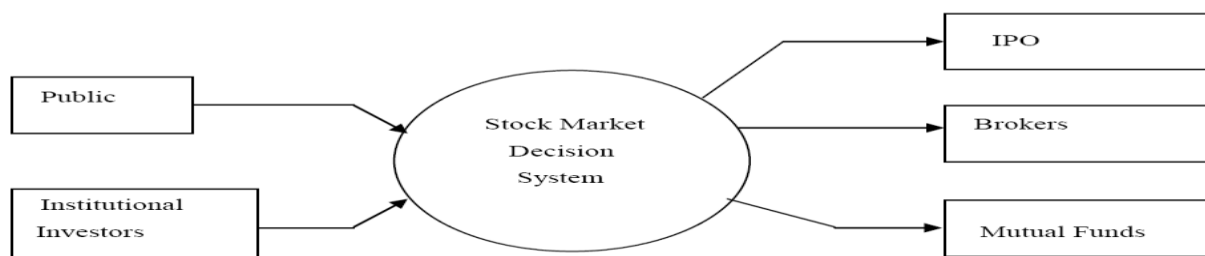
1 LEVEL DFD

Thus, A large Investment Decision System is Broken into smaller systems such as Stock Market Decision System, Debt Market Decision System, Real Estate Investment Decision System etc.

Even Stock Market Decision System can be blown into various sub systems pertaining to Stock analysis which will be represented in '2 Level DFD' , at next level of abstraction. The modeling goes on till the minutest details are understood well.

2. ANALYSIS AND DISCUSSIONS

**Extension of Structured System Analysis in Investment Decisions:**

Here The Objective is to extend the Structured System Analysis in the arena of Investments in order to arrive at the best investment decisions.

The three basic principles of the Structured System Analysis, which are Problem Partitioning, Modeling and Layered Abstraction, have been ported but suitable assumptions have been made in the case of Investment Entities, Investment Data Flow and Investment Processes. The Basic input to the system is Investment in a particular Economic activity in terms of Money to be invested or Capacity addition. For Example, in the next five year plan of India, an Investment of Rs. 2.5 Lakh. Crores in Power sector to add a power production capacity of 60,000 Mw is envisaged. Thus any Investment Process depicted by a circle represents tune of Investment or Capacity Addition. This Capacity Addition will have multiplicative impact in various spheres of Economic activities such as Power Capital Goods, Power Transmission Line and Power Distribution etc. These Related Economic Activities are the Entities, which will be represented by the Rectangles. The Arrows will represent the tune of investment flow or capacity addition in particular Economic Activities because of the overall capacity addition in the Origin Sector. Besides this, Time of investment is also an important factor

in Investment Decisions. Some Economic activities start early and some economic activities happen as a consequence later because of the investment in the origin sector.

Therefore in development of a model for Investments, a concept of Pre, Concurrent and Post Zones is introduced. Pre Zone is comprised of Economic activities, which will start before the Capacity Addition in the Origin Sector, Concurrent Zone is comprised of Economic activities, which will start concurrently with the Capacity Addition in the Origin Sector and Post Zone is comprised of Economic activities, which will start after the Capacity Addition in the Origin Sector.

The Following Diagram will represent the '0 Level Investment Flow Diagram' in the Analysis of Investment Repercussions because of the Capacity Addition in a Sector.

0 Level Investment Flow Diagram
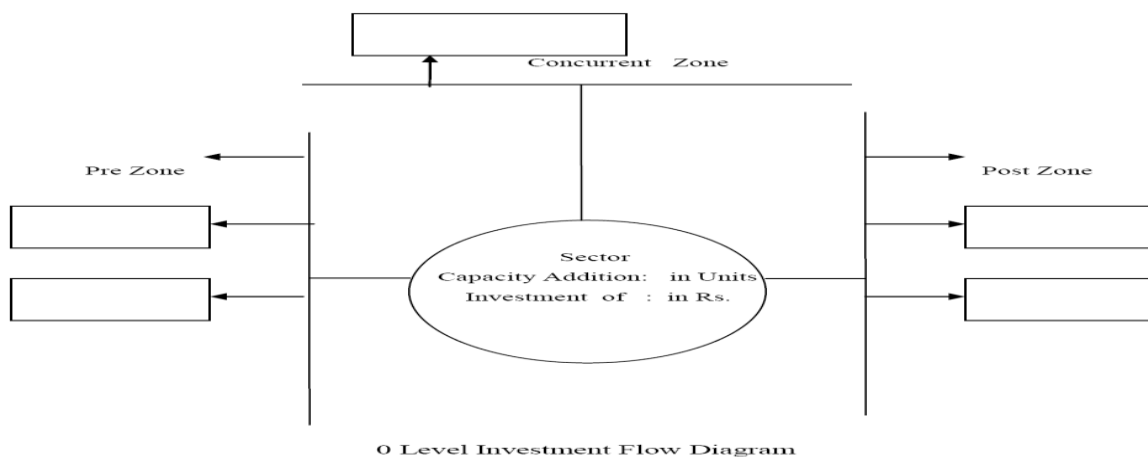
Definitions:

Sector: The sector is the particular sphere of economic activity, which is being analyzed. for example, Power sector or Agriculture sector.

Pre Zone: The sectors or the particular sphere of activities, which will benefit first due to the investment in the Sector being analyzed. The manufacturing in these sectors will start before the manufacturing in the Sector in focus could begin as they act as essential input to the sector in the focus. For example, Capital Goods are one activity in Pre Zone if the sector in focus is Power Sector and Fertilizer, Pumps, Tractors and Irrigation civil work are activities in Pre Zone, if the sector in focus is Agriculture.

Concurrent: The sectors or the particular sphere of activities, which will benefit next.

Zone: The manufacturing in these sectors cumulatively will be the manufacturing outputof the Sector in the focus. For example, if Agriculture is sector in focus then Cotton, Tea, Rubber plantation etc. are in concurrent zone or Thermal power, Hydro Power, Unconventional Power generation are in the concurrent Zone, ifthe sector in focus is Power Sector. All the By-Products and Consumables should also be considered in the Concurrent Zone. Example of By-Product is Petrochemical Products, if the Sector in Focus is Refineries. Similarly Dyes, Colors and Resins are Consumables in case of Textile or Plastics Sector, they must be considered in the concurrent zone of respective Sectoral Analysis. Any Growth in such Sectors will spur growth in Consumables sectors also.

Post Zone: The sectors or the particular sphere of activities, which will benefit later due to the investment in the Sector being analyzed. The manufacturing in these Sectors will start after the manufacturing in the Sector in focus begins as the essential input to these Sectors is the output from the Sector in Focus. Since input to Cotton yarn and Apparel is Cotton, input to Tyre Industry is Rubber and input to Food processing industry like Biscuits, Bread is Wheat, these Sectors like Cotton Yarn, Tyre, and Food Processing fall in Post Zone, if the Sector in Focus is Agriculture.

Circle: Represents Investment Process in The Sector, which is being studied. It must be labeled with sector name and Proposed Investment in terms of Capacity Addition.

Rectangles: Represents the sectors, which will be affected by the process of Investment in the sector in Focus. The sectors must be understood well in terms of Input and Output Requirements and must be classified into pre, concurrent and post zones.
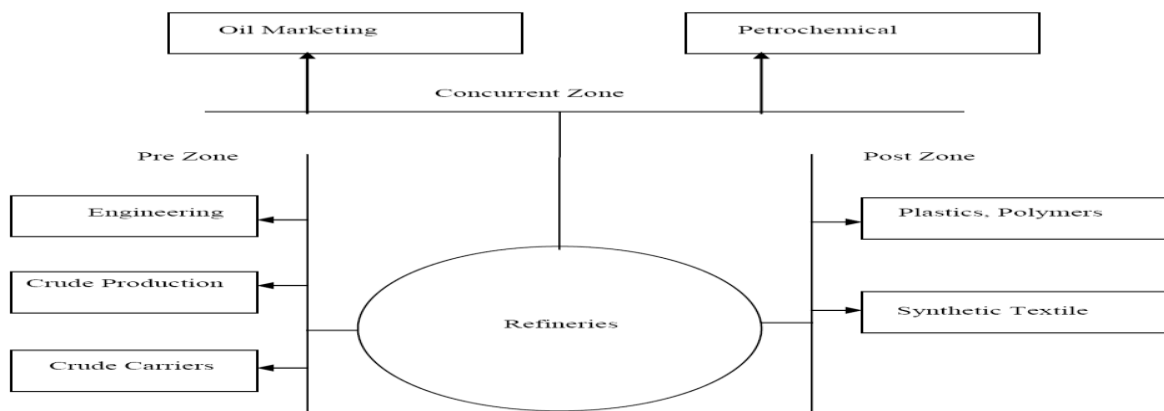
Arrow: Ideally an arrow must be labeled with Capacity Addition (or Investment value) to be effected in the respective sector due to Investment Process in the sector in Focus.
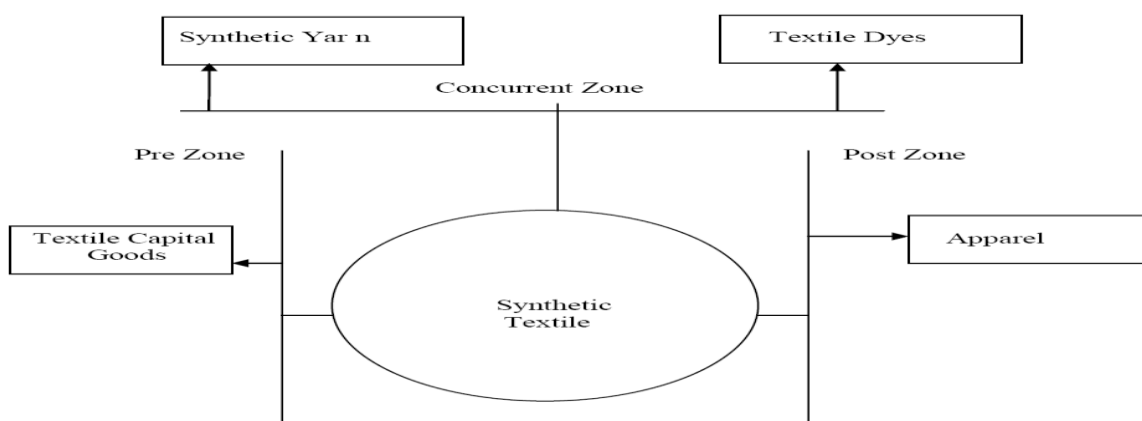
Example.1 Sector – Power:
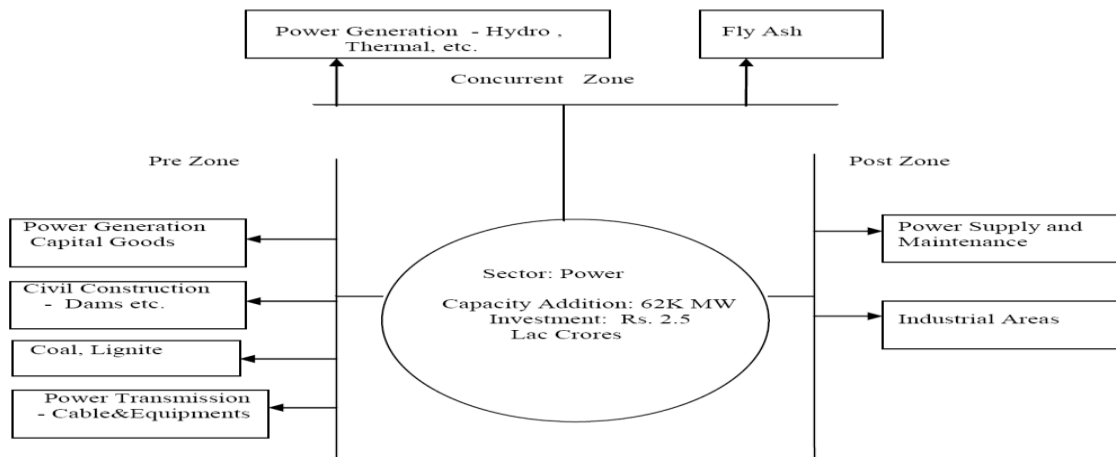
0 Level Investment Flow Diagram for Power Sector
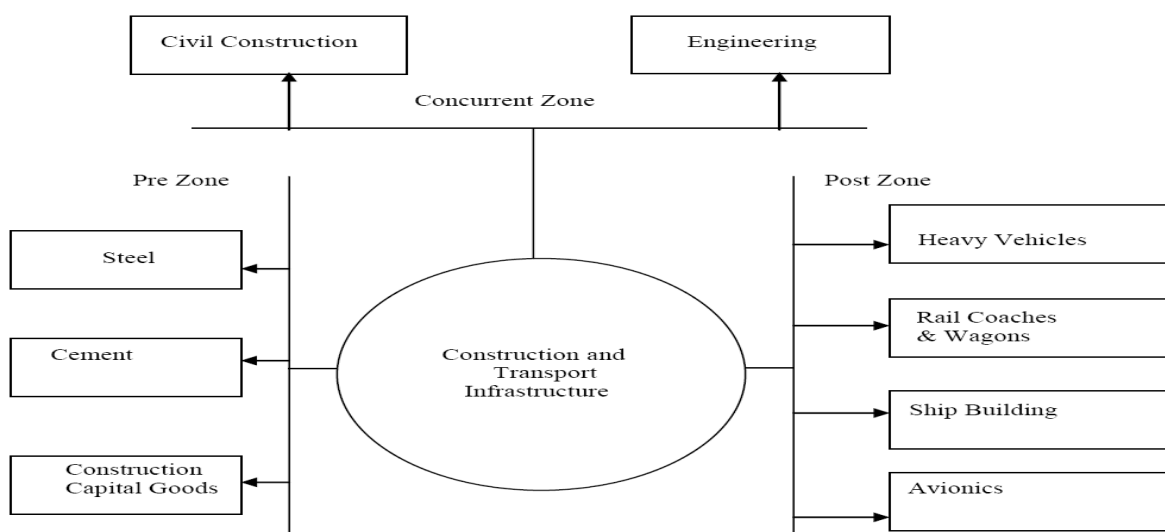
Example-2 Sector – Refineries:

0 Level Investment Flow Diagram for Refineries

Example 3. Sector – Synthetic Textile [Post Zone - Refineries]:

1 Level Investment Flow Diagram for Synthetic Textile

Example 4. Sector – Construction and Transport Infrastructure

0 Level Investment Flow Diagram for Construction and Transport Infrastructure

3. CONCLUSIONS

1. The Investment Flow Diagrams are designed to help two Types of investors. Firstly, to the Investors in Stock Markets and secondly, to entrepreneurs and Industries.

2. The Pre zone helps an Investor in Stock Market to identify the sectors which will benefit first from any substantial Investment or Capacity Addition in a particular Sector by The Governments, Industries or FDI. The Fundamentals of These stocks are expected to build up early. A high valuation of Power Generation Capital goods stocks and Cement stocks in the current Indian Stock markets is attributed to Substantial Governmental Investment in Infrastructure and power sectors. Such Stocks fall in Pre-Zones in the Investment Flow Diagrams.

3. Pre Zone also helps entrepreneurs and investors to decide opportunities, tune and timing of investment in a particular economic sphere.
   The Pre, Concurrent and Post Zones help an Industry or an entrepreneur to understand opportunities, tune and timing of investment needed in a particular sector with respect to present Business scenario and schedule their Investment Plans timely.

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