SYSTEMS THINKING

A Brief Introduction

FACULTY OF DECISION SCIENCES

Have you ever had the feeling that the same problems arise constantly, despite repeated efforts? And, for some reason, it's hard to make any changes. For example, every time it rains, Mumbai floods. Your favourite IPL team has never won the championship, in spite of having the best players. The best coaching and long hours of study has not improved the performance of your child. In all these examples you may have observed that **the issue is important; the problem faced is not a one-off event; the problem is familiar and has a well-known history and people have unsuccessfully tried to solve the problem before.** What is common in these examples is that these are all '**Systems**' and what you observe as patterns or trends is nothing but the manifestation of the System's behaviour.

What is Systems Thinking?

The essence of systems thinking and practice is in 'seeing' the world in a particular way, because how you 'see' things affects the way you approach situations or undertake specific tasks. Systems thinking will, therefore, help you to view systems from a broad perspective that includes **seeing overall structures, patterns and cycles in systems**, rather than seeing only specific events in the system. This broad view can help you to quickly identify the real and the root causes of issues and know just where to work to address them.

In the Systems Thinking module, we shall be giving you a brief preview of the wonderful world of Systems Thinking and introducing you to two Systems Thinking methodologies, namely Systems Dynamics and Soft Systems Methodology. You will learn, how focusing on the entire system, can help you identify solutions that were otherwise not obvious.

Suggested Reading

- The Fifth Discipline – Peter M. Senge
- Thinking in Systems – Donella H. Meadows
- Seeing the Forest for the Trees – Dennis Sherwood

Syllabus

Break down of the sessions along with the topic that will be covered during your course, unless events beyond one's control, is as under:

SYSTEMS ANALYSIS : SYLLABUS			
S No	**Content**	**Names of the Topics**	**Sessions**
1	Intro	Systems Definitions and Characteristics and	2
2		Laws of System	1
3	Systems Dynamics	Introduction to Systems Dynamics	2
4		Drawing of CLD	1
5		Case Study CLD	1
		Systems Archetypes	2
6		Leverage	1
7		SFD : Intro	1
8		SFD : Vensim	2
9		Case Study Archetypes, SD & SFD	2
10	Soft Systems Methodology	Introduction to SSM, Rich Picture (Step 1 & 2)	1
11		Development of RS and RD, Conceptual Model (Step 3 &4)	1
12		Bal of Seven Step Process	1
13		Case Study SSM	2
14	Semex	Discussion	3
15		Semex	4
		Subject Total	**27**

COMPENDIUM OF REFERENCE PUBLICATIONS

S.No	Author	Title	Publisher	ISBN
1.	Alan Waring	Practical Systems Thinking	International Thomson Publishing	ISBN 1-86152-614-8
2.	**Dennis Sherwood**	**Seeing the forest for the trees – Applying Systems Thinking**	**Nicholas Brealey Publishing London.**	**ISBN 1-85788-311-X**
3.	Morgan D Jones	The Thinker's Toolkit	Member of the Crown Publishing Group	ISBN 0-8129-2808-3
4.	Hugh J Miser & Edward S Quade	Handbook on Systems Analysis	Elsevier Science Publishing Company	ISBN 0 471 90743 X.
5.	Michael C Jackson	Systems Methodology for the Management Sciences	A Division of Plenum Publishing Corporation	ISBN 0-306-43877-1
6.	Stephen G. Haines	The Systems Thinking Approach to Strategic Planning and Management	St Lucie Press Boca Raton London.	ISBN 1-57444-278-3
7.	Nic J.T.A. Kramer & Jacob de Smit	Systems Thinking	Martinus Nijhoff Social Sciences Division	ISBN-90 207 0587 3
8.	E.S. Quade and W.I Boucher	Systems Analysis and Policy Planning Applications in Defence	American Elsevier Publishing Co. Ltd	ISBN 444-00033-X
9.	Robert Wright	Systems Thinking - A Guide to Managing in a Changing Environment	Society of Manufacturing Engineers	ISBN 0-87263-353-5
10.	**Peter Senge**	**Fifth Discipline: The Art & Practice of the Learning Organisation**	**Crown Publishing Group 2010**	**ISBN 0307477649 & 9780307477644**

Video link for Intro to Systems Thinking: https://youtu.be/EbLh7rZ3rhU?si=pjYhQQ_oTr7y1U-n