

Paper 17 - Strategic Performance Management

Section A

[Question No.1 is compulsory and any 4 from the rest]

1. There were a large number of computer-education companies in South Africa in 1970s. These were concentrated in big cities, having population of 1,00,000 or more, as there was a prevalent belief that a computer-education company can succeed only in big cities.

Future Information (FI), a firm in computer-education business, was started by Peter Rice in Johannesburg in 1978. Peter Rice did not agree with the rest of the entrepreneurs in the industry about the location of the service centers. He decided to go to the smaller towns. According to Rice any town having at least one high school could house a successful computer-education centre. In 1983, 20 centers of FI were opened in small towns. These were like 'local' monopolies because the towns were not big enough to accommodate another centre.

In 1970s and early 1980s, there was a boom in computer-education business, but by the late 1980s, a downturn started in this business and many big firms went bankrupt. On the other hand, FI kept on going from strength to strength all this while – by 1990 its centers went up from 20 to 60. Now, it dawned on other firms that FI was following a pragmatic (through unconventional) approach. Rivals, therefore also to contemplate about following FI expansion strategy, as there was still a largely number of small towns left uncovered by any computer-education centre. FI realized that if this happens, they would be left behind. So the situation was like a pre-emptive game. Where every firm would like to enter each town first. FI calculated the payoff such game as follows:

Particulars	Enters	Does not enter
F ₁ Enters	-50, -50	100, 0
Does not enter	0,100	0,0

Required:

- (a) What are the limitations of Game Theory?
(b) Describe about the Mixed Strategy, optimal Strategy, Two person zero – sum Game.
(c) Write down the impact, if other companies enter into the business. [3x5=15]

Answer of 1:

(a) Limitations of the Game Theory:

Discussion of game theory has been restricted to the two-person zero-sum games. There are practically no applications of game theory to the real world situations. This is because of the assumptions underlying the theory.

The game model that is based on the assumption that each of the individuals involved not only acts rationally but preference ordering of the outcomes is determined by the order of magnitudes of their associated pay-offs, but also he assumes that the opponent is also rational in that sense. Besides, it is also assumed that both the players are having complete and equal knowledge about the strategies available to them and the resulting pay-offs. It can easily be visualized that in real world situations, it's only but rarely that each of the persons would have complete knowledge about all the strategies available to his competitor, as also of the exact pay-off values associated with various combinations of strategies.

The limitations of the Game Theory are given below:

Limitations

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- (i) The assumption that players have the knowledge about their own pay-offs and pay-offs of others is not practical.
- (ii) The techniques of solving games involving mixed strategies particularly in case of large pay-off matrix are very complicated.
- (iii) All the competitive problems cannot be analyzed with the help of game theory.

(b) Mixed Strategy: When the players use a combination of strategies and each player always kept guessing as to which course of action is to be selected by the other player at a particular occasion then this is known as mixed-strategy. Thus, there is a probabilistic situation and objective of the player is to maximize expected gains or to minimize losses. Thus mixed strategy is a selection among pure strategies with fixed probabilities.

Optimal Strategies: A course of action or play which puts the player in the most preferred position, irrespective of the strategy of his competitors is called an optimal strategy. Any deviation from this strategy results in a decreased pay-off for the player.

Two Person Zero-Sum Game: There are two types of two-person zero-sum games. In one, the most preferred position is achieved by adopting a single strategy and therefore the game is known as the *pure strategy game*. The second type requires the adoption by both players a combination of different strategies in order to achieve the most preferred position and is, therefore, referred to as the mixed strategy game.

(c) As it can be seen from the payoff matrix that if one of the firms enters, that firm gains 100 and the other does not get anything. While both enter then both lose 50. It dawned on other firms that FI was following a pragmatic (through unconventional) approach. Rivals, therefore also to contemplate about following FI expansion strategy, as there was still a largely number of small towns left uncovered by any computer-education centre. FI realized that if this happens, they would be left behind. So the situation was like a pre-emptive game, where every firm would like to enter each town first.

2. **(a) “Competitive intelligence is a process of gathering data, creating information and making decisions. Management accountants are trained to gather data, assimilate data into information and make decisions based upon information, frequently with their management counterparts.” – Justify the statements.**

(b) What is Process Analysis? Describe the objectives of Process Analysis.

(c) Describe the limitations of Value Chain Analysis.

[5+5+5]

Answer of 2:

(a) The above statement is related to the Role of Management Accountant in Competitive Intelligence.

Competitive intelligence may also be viewed as a competitiveness audit, a concept that management accountants are familiar with. Management accountants' training and experience make them well-suited to the requirements of the competitive intelligence process.

Management accountants may be actively involved in introducing a competitive intelligence process in several ways:

- (i) Identifying the need for a new or improved competitive intelligence process;
- (ii) Educating top management and other senior managers about that need;
- (iii) Developing a plan along with cross-functional team members for designing,

developing and implementing the new, improved competitive intelligence practice, including its underlying architectures;

- (iv) Identifying the appropriate tools and techniques for conducting competitor analysis;
- (v) Providing financial input, analysis and expertise to the competitive intelligence effort;
- (vi) Contributing to and using competitive intelligence in target costing;
- (vii) Ensuring that the competitive intelligence efforts are tied to the firm's goals, strategies, objectives and internal processes, as appropriate; and,
- (viii) Continually assessing the new, improved competitive intelligence process and its implications for the organization and continually improving the process.

(b) Process analysis is an approach that helps managers improve the performance of their business activities. It can be a milestone in continuous improvement. Process analysis approach consists of the following steps:

- (i) Definition of the scope and the objectives of the study,
- (ii) Documentation of the status quo and definition of performance measures,
- (iii) Assessment and performance evaluation, and
- (iv) Development of recommendations.

Objectives of Process Analysis

For many organizations their goals and objectives are fulfilled once they complete the review process and the Process Capture project stops at that point. For others it is important to move beyond the basic process documents and analyze the data collected and documents. In working with many organizations over 20 years, a good strategy with analysis is to look at the process through three angles to analyze and identify areas for change.

These are **Understanding**, **Quality** and **Efficiency**. By systematically reviewing the process through each of these steps, a much improved and comprehensive analysis will result.



The objectives of analyzing the process include:

- (i) Identify what makes maps difficult to understand and use
- (ii) Evaluate completeness
- (iii) Isolate bottlenecks
- (iv) Find redundancies
- (v) Examine resources allocation
- (vi) Measure process times

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(c) A value chain is the sequence of business functions in which utility is added to the products or services of the firm. Through proper analysis of each segment of the value chain, customer value is enhanced. No-value creating activities are eliminated.

In value chain analysis, each of the business functions is treated as an essential and value contributor and is constantly analyzed to enhanced value relative to the cost incurred. Like business functions, in value chain approach also, it is important that the efforts of all functions are integrated and co-ordinate to increase the value of the products or services to the customers.

Limitations of Value Chain Analysis are given below:

(i) Non availability of Data	Internal data on costs, revenues and assets used for Value Chain Analysis are derived from financial of a single period. For long term strategic decision- making, changes in cost structures, market prices and capital investments etc. May not readily available.
(ii) Identification of stages	Identifying stages in an industry's value chain is limited by the ability to locate at least one firm that participates in a specific stage. Breaking a value stage into two or more stages when an outside firm does not compete in these stages is strictly judgment.
(iii) Ascertainment of costs of Revenues and Assets	Finding the Costs, Revenues and Assets for each value chain activity poses/gives rise to serious difficulties. There is no specific approach and much depends upon trial and error and experiments methods.
(iv) Identification of cost Drivers	Isolating Cost Drivers for each value creating activity, identifying Value chain Linkages across activities and computing supplier and customer profit margins present serious challenges.
(v) Resistance from employees	Value chain Analysis is not easily understandable to all employees and hence may face resistance from employees as well as managers.

3. (a) Snow White Ltd has two departments - Cloth and Readymade Clothes. Ready Made Clothes are made by the Firm itself out of cloth supplied by the Cloth Department at its usual selling price. From the following figures, prepare Departmental Trading and Profit

Particulars	Cloth Department	Readymade Centre
Opening Stock as on 1 st April	3,00,000	50,000
Purchases	20,00,000	15,000
Sales	22,00,000	4,50,000
Transfer to Cloths Department	3,00,000	-
Expenses – Manufacturing	-	60,000
Selling	20,000	6,000
Closing Stock as on 31 st March	2,00,000	60,000

and Loss Accounts for the year ended 31st March:

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The Stock in the Readymade Clothes Department may be considered as consisting of 75% Cloth and 25% other expenses. The Cloth Department earned Gross Profit at the rate of 15% during the year.

General Expenses of the business as a whole came to ₹ 1,10,000.

(b) Explain the role of the Management Accountant in Value Chain Analysis. [10+5]

Answer of 3:

Dr. Departmental Trading and Profit and Loss A/c for the year ending 31st March (₹) Cr.

Particulars	Cloth	RM	Total	Particulars	Cloth	RM	Total
To, Opening stock	3,00,000	50,000	3,50,000	By Sales	22,00,000	4,50,000	26,50,000
To, Purchases	20,00,000	15,000	20,15,000	By, Transfer to RM	3,00,000		3,00,000
To, Transfer from cloth dept.		3,00,000	3,00,000	By, Closing Stock	2,00,000	60,000	2,60,000
To, Manufacturing Expenses		60,000	60,000				
To, Gross Profit c/d	4,00,000	85,000	4,85,000				
	27,00,000	5,10,000	32,10,000		27,00,000	5,10,000	32,10,000
				By, Gross Profit b/d	4,00,000	85,000	4,85,000
To, Selling Expenses A/c	20,000	6,000	26,000				
To, Profit C/d	3,80,000	79,000	4,59,000				
	4,00,000	85,000	4,85,000		4,00,000	85,000	4,85,000
				By, Profit b/d			4,59,000
To, General Expenses			1,10,000				
To, Stock Reserve [See note below]			1,575				
To, Net Profit			3,47,425				
			4,59,000				4,59,000

Note 1 : Stock Reserve to be additionally provided is ₹ 7,200 – 5,625 = ₹ 1,575; calculated as under :

Particulars	On Opening Stock	On Closing Stock
Rate of GP on Sales in Cloth Dept	Given = 15%	$(4,00,000 \div 25,00,000) \times 100 = 16\%$
Element of Cloth Stock in Readymade Clothes	75% of 50,000 = 37,500	75% of 60,000 = 45,000

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Stock Reserve required to be maintained	$37,500 \times 15\% = 5,625$	$45,000 \times 16\% = 7,200$
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Note 2: In this case, it is possible to ascertain the Reserve already created against Unrealized Profit in the Opening Stock. In the absence of information, the Reserve should be calculated on the difference in the Opening and Closing Stocks i.e. ₹ 10,000 in this question. Since the Closing Stock has increased, the Reserve calculated would be debited to P&L A/c. In case of decrease in Stocks, the Reserve would be credited to P&L A/c.

(b) Role of the Management Accountant in Value Chain Analysis

Management Accountants should recognize that the traditional, functional, internally oriented information is inadequate or the Firm engaged in global competition. In order to facilitate Value Chain Analysis, there should be a change in focus for Management Accounting. The Management Accountant's role will be scant in the following areas-

(i) Need for education, training and awareness:

Management Accountants should bring the importance of customer value to the forefront of Management's strategic thinking. They should take the initiative to bring the Value Chain message to major players in the Firm through seminars, articles, Value Chain examples and Company-specific applications.

(ii) Exploring for information:

VCA requires expertise in internal operations and information and also demands a great deal of external information. Management Accountants must seek relevant financial and non-financial information from sources outside the Firm.

(iii) Creativity:

Management Accountants must integrate databases and potential sources of timely information on competitive forces confronting the business. This calls for innovation and creativity in gathering and analyzing information for management decisions.

(iv) System design:

Designing internal and external information systems to assist managers in planning, monitoring and improving value-creating processes is another challenge facing Management Accountants.

(v) Cooperation:

Management Accountants should solicit support from all senior managers for allocating resources to develop and improve Value Chain-oriented Information Systems. The Management Accountant should ensure that the Top Management is committed to Value Chain Analysis and the organizational changes necessary for its successful implementation.

4. (a) Explain the meaning of Target Costing.

(b) "Cost Estimation, Permissible Cost Ranges, Capital Budgeting, Cost Principle Explanation, Review of cost reduction Targets and Final Review and Feedback" etc. - these are the role of Cost Accountant in a Target Costing Environment. - Explain the role of cost accountant of that environment.

(c) Describe about the Reverse Engineering.

[5+5+5]

Answer of 4:

(a) Target Costing:

Target costing is a process of determining the actual cost price of any product or service after considering the desired profit margin behind the same.

It helps in completing the product within the set price by changing the process for the same or by making the existing process more efficient. With target costing, a management team has a powerful tool for continually monitoring products from the moment they enter the design phase and onward throughout their product life cycles. It is considered one of the most important tools for achieving consistent profitability.

Process:

The **process** of target costing is as below:

- (i) Identification of customer needs and wants
- (ii) Selling price is planned for the needs.
- (iii) Target cost identified which is Expected selling price – Desired profit
- (iv) Product is designed, manufacturing process is fixed and suppliers are identified keeping the price in consideration.
- (v) The sample product is produced that meets the target and the production starts for selling purposes and the product is launched

Principles

There are **six key principles** in target costing:

- (i) Price-led costing (i.e target price less desired mark-up = target costs);
- (ii) Customer focus;
- (iii) Focus on design of products and processes;
- (iv) Cross- functional teams;
- (v) Life cycle cost reduction; and
- (vi) Value chain involvement.

One has to start from the market and then work back finally to the production process through design and development of product (or the service) that the customer needs at an acceptable price (known as the target price). Target Costing is applied in the design and developing stages. In other words, target costing is effective in managing costs in the new product design and development.

(b) Cost Accountant's a role in a Target Costing Environment

The role of a Cost Accountant in a Target Costing Team consists of the following activities –

- (i) **Cost Estimation:** To provide other members of the design team a running series of cost estimates based on initial designs sketch, activities based costing reviews of production processes, and "best guess" costing information from suppliers based on estimated production volumes.
- (ii) **Permissible Cost Ranges:** To provide estimates within a high-low range cost, since preliminary data may be vague. But, the estimated cost range should be modified as more information becomes available.
- (iii) **Capital Budgeting Analysis:** To provide capital budgeting requests generated by the design team based on types of equipment needed for the anticipated product design, product revenues and costs, rates of return etc, and to answer questions regarding uncertainties and risk analysis.

- (iv) **Cost Principles Explanation:** To work with the design team to help it understand the nature of various costs (such as cost allocations based on an Activity- Based Costing system), as well as the cost-benefit trade-offs of using different design or cost operations in the new product.
- (v) **Review of Cost Reduction Targets:** To track the gap between the current cost and the target cost that is the design team's goal, providing an itemization of where cost savings have already been achieved and where there has not been a sufficient degree of progress.
- (vi) **Final Review and Feed back:** To compare a product' actual cost to the target cost after the design is completed, and for as long as the Company sells the product. This is necessary since Management must know immediately if costs are increasing beyond budgeted levels and why these increases are occurring.
- (c) Target costing is as much a significant approach regarding the relationship of prices and costs, a discipline, and an integrated approach to decision making, as it is the application of a set of techniques and tools. However, a number of techniques and tools facilitate an effective and efficient target costing process.

Three externally-oriented analyses—**market assessment tools, industry and competitive analysis, and reverse engineering**—provide a firm with a foundation for defining the proposed new product and establishing its target price

Reverse Engineering

One of the tools that companies such as Xerox, Caterpillar, and the U.S. automobile companies are now using extensively is called reverse engineering or teardown analysis. These companies acquire competitors' products and disassemble them to investigate their design, material, likely manufacturing processes, product quality and attributes, and product costs. In this way, these companies really understand their competitors' products, how they differ from their own, and what they cost to produce. Some might argue that a number of companies have been doing reverse engineering for some time. The difference is the organization and degree to which it is being done by some companies, the resources that are committed to the process, and the use to which the analysis is put. Leading-edge companies such as Chrysler have built significant teardown facilities, committed sizable resources, and use the results of the analysis across the full spectrum of concept, design, procurement, process engineering, manufacturing, and post-sales activity. Rather than be a tangential exercise, which may or may not be used, in leading-edge companies reverse engineering has become central to a full understanding of the competitors' product and service offerings.

- 5(a) The Oil India Corporation is considering whether to go for an offshore oil drilling contract to be awarded in Bombay High. If they bid, value would be ₹ 600 million with a 65% chance of gaining the contract. They may set up a new drilling operation or move already existing operation, which has proved successful, to the new site. The probability of success and expected returns are as follows:**

Outcome	New Drilling Operation		Existing Operation	
	Probability	Expected Revenue (₹ in millions)	Probability	Expected Revenue (₹ in millions)
Success	0.75	800	0.85	700
Failure	0.25	200	0.15	350

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If the Corporation do not bid or lose the contract, they can use the ₹600 million to modernize their operation. This would result in a return of either 5% or 8% on the sum invested with probabilities 0.45 and 0.55.

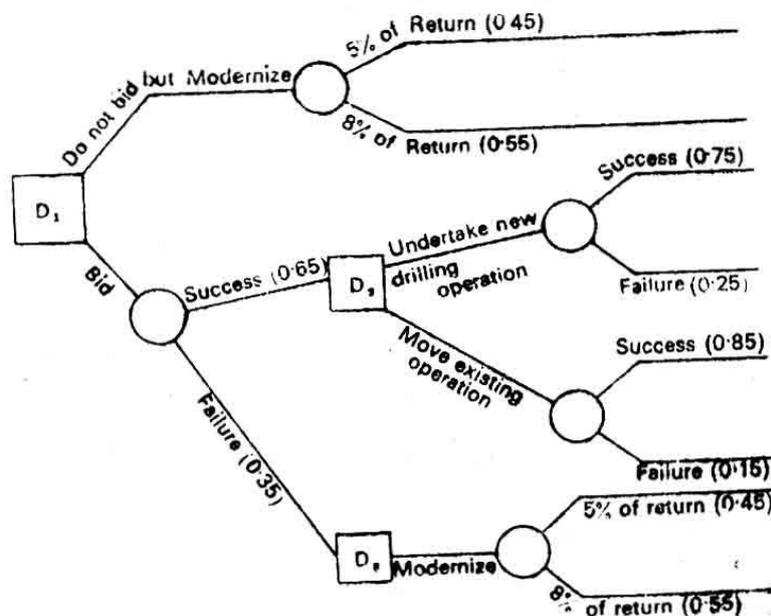
(Assume that all costs and revenue have been discounted to present value)

- (i) Construct a decision tree for the problem showing clearly the course of action.
- (ii) By applying an appropriate decision criterion recommended whether or not the Oil India Corporation should bid the contract.

(b) The total revenue from sale of 'x' units is given by the equation $R = 100x - 2x^2$, calculate the point price elasticity of demand, when marginal revenue is 20. [10+5]

Answer of 5:

(a)



Evaluation of Decision Points

Decision Points	Outcome	Probability	Conditional Values (₹)	Expected Values (₹)
D3 (i) Modernize	5% of Return	0.45	600×0.05	13.5
	8% of Return	0.55	600×0.08	26.4
				39.9
D2 (i) Undertaken new Drilling new	Success	0.75	800	600
	Failure	0.25	200	50
				650
(ii) Move Existing Operation	Success	0.85	700	595
	Failure	0.15	350	52.5
				647.5
D1 (i) Do not bid	5% of return	0.45	600×0.05	13.5
	8% of return	0.55	600×0.08	26.4
				39.9
(ii) Bid	Success	0.65	$650 + 647.5$	843.375
	Failure	0.35	39.9	13.965
				857.34

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			Less:	600.00
			Total	257.34

The decision on the basis of EMV will be to bid and if successful establish a new drilling operation.

(b) $R = Px = 100x - 2x^2$

Where, P = price and x = units.

Price (P) = $100 - 2x$

Now, $MR = \frac{dR}{dx} = 100 - 4x$

Again $P = 100 - 2x$

or, $\frac{P}{x} = 100 - 2$

If $P = 100 - 2x$

Then, $\frac{dp}{dx} = -2$

or, $\frac{dx}{dp} = \frac{1}{2}$

Now,

$$\begin{aligned} E_p &= \frac{1}{2} \times \left(\frac{100}{x} - 2 \right) \\ &= \frac{50}{x} - 1 \\ &= \frac{50}{20} - 1 \quad (\text{from equation (i) } x = 20, \text{ putting here}) \\ &= \frac{5}{2} - 1 \\ &= \frac{5-2}{2} = \frac{3}{2} \end{aligned}$$

As, per question:

$MR = 20$

$100 - 4x = 20$

or, $4x = 80$

or, $x = 20$ (i)

Therefore the Price of elasticity is $\frac{3}{2}$

Section B

[Question No.6 is compulsory and any 1 from the rest]

6. The Dabbawalas- Feeding Mumbai*

Hungry kya? What would you like: pizza from the local Domino's (30 minute delivery) or a fresh, hot meal from home? Most managers don't have a choice. It's either a packed lunch or junk food from a fast food outlet.

Unless you live in Mumbai, that is, where a small army of 'Dabbawalas' picks up 1,75,000 lunches from homes and delivers them to harried students, managers and workers on every

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working day. At your desk, 12.30 p.m. on the dot. Served hot, of course. And now you can order even through the Internet.

The Mumbai Tiffin Box Suppliers Association (MTBSA) is a streamlined 120 year old organization with 4,500 semi literate members providing a quality door-to-door service to a large and loyal customer base.

How has MTBSA managed to survive through these tumultuous years? The answer lies in twin process that combines competitive collaboration between team members with a high level of technical efficiency in logistics management. It works like this.

After the customer leaves for work, her lunch is packed into Tiffin provided by the *Dabbawala*. A color-coded notation on the handle identifies its owner and destination. Once the *Dabbawala* has picked up the Tiffin, he moves fast using a combination of bicycles, trains and his two feet.

A BBC crew filming *dabbawalas* in action was amazed at their speed. "Following our *Dabbawala* wasn't easy; our film crew quickly lost him in the congestion of the train station. At Victoria Terminus we found other fast moving *dabbawalas*, but not our subject. and at Mr Bapat's Ayurvedic Pharmacy, the lunch had arrived long before the film crew," the documentary noted wryly. So, how do they work so efficiently?

TEAM WORK AND TIMING

The entire system depends on team work and meticulous timing. Tiffins are collected from homes between 7.00 am and 9.00 am, and taken to the nearest railway station. At various intermediary stations, they are hauled onto platforms and sorted out for area wise distribution, so that a single Tiffin could change hands three to four times in the course of its daily journey.

At Mumbai's downtown stations, the last link in the chain, a final relay of *Dabbawalas* fan out to the Tiffin's destined bellies. Lunch hour over, the whole process moves into reverse and the Tiffins return to suburban homes by 6.00 p.m.

To better understand the complex sorting process let's take an example. At Vile Parle Station, there are four groups of *Dabbawalas*, each has 20 members and each member services 40 customers. That makes 3,200 Tiffins in all. These 3,200 Tiffins have to be collected by 9.00 am, reached the station and sorted according to their destinations by 10.00 am when the '*Dabbawala Special*' train arrives.

The railway provides sorting areas on platforms as well as special compartments on trains travelling south between 10.00 a.m. and 11.30 a.m.

During the journey, these 80 *dabbawalas* regroup according to the number of Tiffins to be delivered in a particular area, and not according to the groups they actually belong to. If 150 Tiffins are to be delivered in the Grant Road Station area, then four people are assigned to that station, keeping in mind one person can carry no more than 35-40 Tiffins.

During the earlier sorting process, each *Dabbawala* would have concentrated on locating only those 40 Tiffins under his charge, wherever they come from, and this specialization makes the entire system efficient and error-free.

Typically it takes about ten to fifteen minutes to search, assemble and arrange 40 Tiffins onto a crate, and by 12.30 p.m. they are delivered to offices.

In a way, MTBSA's system is like the Internet. The Internet relies on a concept called packet switching. In packet switched networks, voice or data files are sliced into tiny sachets, each with its own coded address which directs its routing.

These packets are then ferried in bursts, independent of other packets and possibly taking different routes, across the country or the world, and re-assembled at their destination.

Packet switching maximizes network density, but there is a downside: your packets intermingle with other packets and if the network is overburdened, packets can collide with others, even get misdirected or lost in cyberspace, and almost certainly not arrive on time.

ELEGANT LOGISTICS

In the *dabbawalas'* elegant logistics system, using 25 kms of public transport, 10 km of footwork and involving multiple transfer points, mistakes rarely happen. According to a Forbes 1998 article, one mistake for every eight million deliveries is the norm. How do they achieve at virtual six sigma quality with zero documentation? For one, the system limits the routing and sorting to a few central points. Secondly, a simple color code determines not only packet routing but packet prioritizing as lunches transfer from train to bicycle to foot.

COMPETITIVE COLLABORATION

MTBSA is a remarkably flat organization with just three tiers: the governing council (president, vice president, general secretary, treasurer and nine directors), the Mukadams and the Dabbawalas. Its first office was at Grant Road. Today it has offices near most railway stations.

Nobody is an employer and none are employees. Each *Dabbawala* considers himself a shareholder and entrepreneur.

Surprisingly, MTBSA is a fairly recent entity: the service is believed to have started in the 1880s but officially registered itself only in 1968. Growth in membership is organic and dependent on market conditions. This decentralized organization assumed its current form in 1970, the most recent date of restructuring. *Dabbawalas* are divided into sub-groups of 15 to 25, each supervised by four Mukadams. Experienced old timers, the Mukadams, are familiar with the colors and codings used in the complex logistics process. Their key responsibility is sorting Tiffins but they play a critical role in resolving disputes; maintaining records of receipts and payments; acquiring new customers; and training junior *dabbawalas* on handling new Customers on their first day.

Each group is financially independent but coordinates with others for deliveries: the service could not exist otherwise. The process is competitive at the customers' end and united at the delivery end. The Mukadams are also responsible for day-to-day functioning. And, more important, there is no organizational structure, managerial layers or explicit control mechanisms. The rationale behind the business model is to push internal competitiveness, which means that the four Vile Parle groups vie with each other to acquire new customers?

EARNINGS

Logistics is the new mantra for building competitive advantage, the world over. Mumbai's *dabbawalas* developed their home grown version long before the term was coined.

Their attitude of competitive collaboration is equally unusual, particularly in India. The operation process is competitive at the customers' end but united at the delivery end, ensuring their survival since a century and more. Is their business model worth replicating in the digital age is the big question.

Required:

- (a) Explain the objectives of the Six Sigma.
- (b) Discuss the strategies used by the organization to achieve the goals of the organization.
- (c) What do you understand by Competitive Collaboration? [3x5=15]

Answer of 6:

(a) Objectives of Six Sigma:

(i) Overall Business Improvement

Six Sigma methodology focuses on business improvement. Beyond reducing the number of defects present in any given number of products, a business employing Six Sigma methods must seek improvement through any means available. That means identifying and remedying problems wherever they occur. Six Sigma calls anything that damages business functionality in a way that increases defects, raises costs, slows productivity or reduces customer satisfaction a source of pain. The elimination or remediation of these sources of pain leads to overall business improvement.

(ii) Remedy Defects/Variability

Any business seeking improved numbers must reduce the number of defective products or services it produces. Defective products can irrevocably harm customer satisfaction levels, as each customer ending up with a defective product becomes a potential lost customer-and because the displeased customer will tend to pass the word about this defective product along. Then you've got to fix the defects, which can increase research and production costs dramatically.

(iii) Reduce Costs

Reduced costs equal increased profits. A company implementing Six Sigma principles has to look to reduce costs wherever it possibly can-without reducing quality. Cost reduction potential exists throughout a company. Acquire cheaper raw materials of equal or comparable value; reduce transportation costs via alternate shipping methods; streamline production and quality control processes with automation or improved equipment technology; cut personnel costs with outsourcing, downsizing or other methods; or reduce rent payments by moving production or sales facilities to different locations. Even the adoption of greener business practices can lead to reduced costs, as powered-down electronics, recycled paper and reduced wastage can have significant impact. No change is too small to consider.

(iv) Improve Cycle Time

Any reduction in the amount of time it takes to produce a product or perform service means money saved, both in maintenance costs and personnel wages. Additionally, customer satisfaction improves when both retailers and end users receive products sooner than expected. The company that can get a product to its customer faster may win her business, regardless of questions of quality or cost. There's a reason fast food was the definitive concept in food service during the 20th century.

(v) Increase Customer Satisfaction

The sources of pain that Six Sigma methodologies seek to remedy interrelate. Customer satisfaction depends upon successful resolution of all Six Sigma's other objectives. But customer satisfaction is an objective all its own. Every aspect of a business' self-representation, from marketing strategies to sales personnel performance, can have a positive or negative effect on customer satisfaction. Seek positive customer response to these self-representations, and customer satisfaction will improve.

(b) Organization's successful strategy depends on good systems. Again, the entire system depends on team work and meticulous timing. Tiffins are collected from homes between 7.00 am and 9.00 am, and taken to the nearest railway station. At various intermediary stations, they are hauled onto platforms and sorted out for area wise distribution, so that single Tiffin could change hands three to four times in the course of its daily journey.

At Mumbai's downtown stations, the last link in the chain, a final relay of *Dabbawalas* fan out to the Tiffin's destined bellies. Lunch hour over, the whole process moves into reverse and the Tiffins return to suburban homes by 6.00 p.m.

To better understand the complex sorting process let's take an example. At Vile Parle Station, there are four groups of *dabbawalas*, each has twenty members and each member services 40 customers. That makes 3,200 Tiffins in all. These 3,200 Tiffins have to be collected by 9.00 am, reached the station and sorted according to their destinations by 10.00 am when the '*Dabbawala Special*' train arrives.

The railway provides sorting areas on platforms as well as special compartments on trains travelling south between 10.00 a.m. and 11.30 a.m.

During the journey, these 80 *dabbawalas* regroup according to the number of Tiffins to be delivered in a particular area, and not according to the groups they actually belong to. If 150 Tiffins are to be delivered in the Grant Road Station area, then four people are assigned to that station, keeping in mind one person can carry no more than 35-40 Tiffins.

During the earlier sorting process, each *Dabbawala* would have concentrated on locating only those 40 Tiffins under his charge, wherever they come from, and this specialization makes the entire system efficient and error-free.

Typically it takes about ten to fifteen minutes to search, assemble and arrange 40 Tiffins onto a crate, and by 12.30 p.m. they are delivered to offices.

In the *Dabbawalas*' elegant logistics system, using 25 km of public transport, 10 km of footwork and involving multiple transfer points, mistakes rarely happen. According to a Forbes 1998 article, one mistake for every eight million deliveries is the norm. How do they achieve at virtual six sigma quality with zero documentation? For one, the system limits the routing and sorting to a few central points. Secondly, a simple color code determines not only packet routing but packet prioritizing as lunches transfer from train to bicycle to foot.

(c) Collaboration is a strategic alliance typically between two firms with the goal of providing mutual benefit for each firm. Collaborating with your competitors is like a double-edged sword. Sharing between firms is a smart strategy as long as the relationship is give-and-take and is one that will benefit both parties without compromising each of the firm's competitive position in the industry. Firms must be careful in what information is shared across this delicate communication trail.

To borrow a line from the Godfather, "keep your friends close, but your enemies closer". Discussion of competitive collaboration lends itself to the idea that learning and studying your enemy pays. Although there are infinite possibilities arising from collaborations, be wary of the risk of sharing knowledge with the enemy when it is core to your firm's competitive competencies.

Types of competitive collaboration

- (i) Joint Ventures
- (ii) Outsourcing agreements
- (iii) Product Licensing
- (iv) Cooperative research

In that case, the competitive collaboration is

MTBSA is a remarkably flat organization with just three tiers: the governing council (president, vice president, general secretary, treasurer and nine directors), the Mukadams and the *Dabbawalas*. Its first office was at Grant Road. Today it has offices near most railway stations.

Nobody is an employer and none are employees. Each *Dabbawala* considers himself a shareholder and entrepreneur.

Surprisingly, MTBSA is a fairly recent entity. The service is believed to have started in the 1880s but officially registered itself only in 1968. Growth in membership is organic and dependent on market conditions. This decentralized organization assumed its current form in 1970, the most recent date of restructuring. *Dabbawalas* are divided into sub-groups of 15 to 25, each supervised by four Mukadams. Experienced old timers, the Mukadams, are familiar with the colors and coding used in the complex logistics process. Their key responsibility is sorting Tiffins but they play a critical role in resolving disputes; maintaining records of receipts and payments; acquiring new customers; and training junior *Dabbawalas* on handling new Customers on their first day.

Each group is financially independent but coordinates with others for deliveries: the service could not exist otherwise. The process is competitive at the customers' end and united at the delivery end. The Mukadams are also responsible for day-to-day functioning. And, more important, there is no organizational structure, managerial layers or explicit control mechanisms. The rationale behind the business model is to push internal competitiveness, which means that the four Vile Parle groups vie with each other to acquire new customers?

7. Describe about the Elman and Jordan Artificial Neural Networks.

[5]

Answer of 7:

Elman and Jordan Artificial Neural Networks

Elman network also referred as Simple Recurrent Network is special case of recurrent artificial neural networks. It differs from conventional two-layer networks in that the first layer has a recurrent connection. It is a simple three-layer artificial neural network that has back-loop from hidden layer to input layer through so called context unit. This type of artificial neural network has memory that allowing it to both detect and generate time-varying patterns.

The Elman artificial neural network has typically sigmoid artificial neurons in its hidden layer, and linear artificial neurons in its output layer. This combination of artificial neurons transfer functions can approximate any function with arbitrary accuracy if only there is enough artificial neurons in hidden layer. Being able to store information Elman artificial neural network is capable of generating temporal patterns as well as spatial patterns and responding on them. Jordan network is similar to Elman network. The only difference is that context units are fed from the output layer instead of the hidden layer.

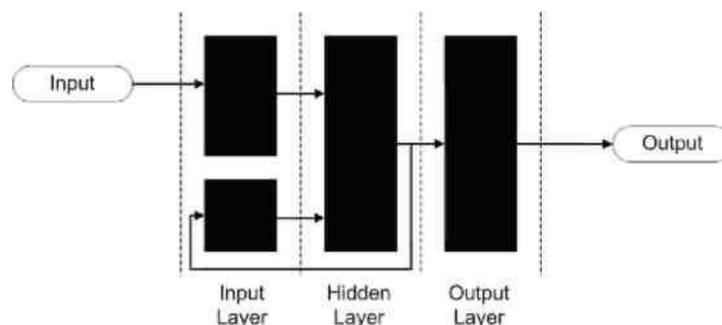


Fig. Elman Artificial Neural

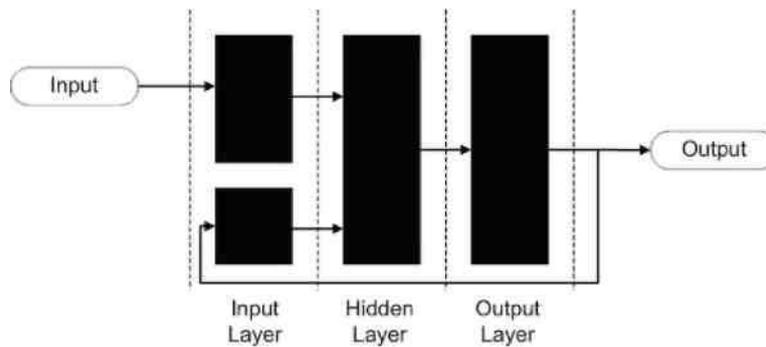


Fig. Jordan Artificial Neural Network

8. Discuss the importance of Decision Support Systems for gaining the Competitive Advantage. [5]

Answer of 8:

In a world of constant flux, informed and thoughtful decision-making is the cornerstone of business success. As a manager, you must make decisions that affect your business every day, some critical and some not so important. Decision Support Systems allow faster decision making, identification of negative trends, and better allocation of business resources all to the benefit of you and your organization.

Decision Support Systems (DSS): DSS are a specific class of computer-based information systems that support your decision-making activities. A decision support system analyzes business data and provides interactive information support to managers and business professionals during the decision-making process, from problem recognition to implementing your decision. Decision Support Systems use (1) Analytical models, (2) specialized databases, (3) a decision maker's own insights and judgments, and (4) an interactive, computer-based modeling process to support semi-structured business decisions.

A key component to any DSS is Business Intelligence reporting tools, processes, and methodologies. These provide you with rich reporting, monitoring, and data analysis, which are necessary for effective and fast decision-making.

Gain competitive advantage with Decision Support Systems In today's competitive business environment, what you need for maximum performance is to achieve competitive advantage. Without competitive advantage, your company will not be able to operate and will eventually cease to exist.

One way of gaining competitive advantage is through the use of computerized Decision Support Systems. The simplest and most tangible benefit of a Decision Support System is the ability to help you toward making better decisions. Your decisions are better in the sense that, once they are implemented, they have such effect as reducing costs, using assets more efficiently, increasing revenue, reducing risks, improving customer service, and so on. However, Decision Support Systems can provide your company with many other benefits including:

- Speeding up process of decision making
- Increasing organizational control
- Speeding up problem solving in an organization
- Helping automate managerial processes
- Improving personal efficiency
- Eliminating value chain activities

Section C [Any 1 from the rest]

9. (a) Discuss about Enterprise Risk Management and need for implementation of ERM.

(b) Distinguish between Basel I and Basel II.

(c) Describe the Transition Risk in the context of Corporate Risk.

[(5+5)+5+5]

Answer of 9:

(a) Enterprise Risk Management

The Enterprise Risk Management (ERM) is defined as "a process, affected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives".

From the above definition, ERM is:

- (i) A process, ongoing and following through an entity.
- (ii) Effected by people at every level of an organization.
- (iii) Applied in strategy-setting.
- (iv) Applied across the enterprise, at every level and unit, and includes taking an entity-level portfolio view of risk.
- (v) Designed to identify potential events affecting the entity and manage risk within its risk appetite.
- (vi) Able to provide reasonable assurance to an entity's management and board.
- (vii) Geared to the achievement of objectives in one or more separate but overlapping categories.

ERM is about designing and implementing capabilities for managing the risks that matter. The greater the gaps in the current state and the desired future state of the organizations risk management capabilities, the greater the need for ERM infrastructure to facilitate the advancement of risk management capabilities overtime. ERM is about establishing the oversight, control and discipline to drive continuous improvement of an entity's risk management capabilities in a changing operating environment.

ERM deals with risk and opportunities affecting value creation or preservation. ERM is a comprehensive and integrated approach to addressing corporate risk. ERM enables management to effectively deal with uncertainty and associated risk and opportunity, enhancing the capacity to build value. In ERM, a risk is defined as a possible event or circumstance that can have negative influences on the enterprise in question. Its impact can be on the very existence, the resources (human and capital), the products and services, or the customers of the enterprise, as well as external impacts on society, markets or the environment.

Need for Implementation of ERM

ERM needs to be implemented for the following reasons:

- (i) Reduce unacceptable performance variability.
- (ii) Align and integrate varying views of risk management.
- (iii) Build confidence of investment community and stakeholders.

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- (iv) Enhance corporate governance.
- (v) Successfully respond to a changing business environment.
- (vi) Align strategy and corporate culture.

Traditional risk management approaches are focused on protecting the tangible assets reported on a company's Balance Sheet and the related contractual rights and obligations. The emphasis of ERM, however, is on enhancing business strategy. The scope and application of ERM is much broader than protecting physical and financial assets. With an ERM approach, the scope of risk management is enterprise-wide and the application of risk management is targeted to enhancing as well as protecting the unique combination of tangible and intangible assets comprising the organization's business model.

(b) Comparison between Basel I and Basel II

Basel - I(1988 and amended in 1996)	Basel- II (to be in place by 2006 in G-10 countries and in India in 2008)
1. Basel I based on methodology for capital Adequacy.	1. Basel II based on 3 pillars.
2. Risk is not sensitive.	2. Risk is sensitive.
3. All credit exposures carried risk weight of 100 per cent - except for some sovereign exposures and mortgages.	3. Credit exposures carry risk weights based on credit qualities.
4. Risk Capital = Credit exposure * Risk Weights * 8 per cent can have lesser Capital than others	4. Risk capital: Similar to Basel I. But efficient Banks can have lesser capital than others
<p>Implications were</p> <ul style="list-style-type: none"> • Every bank had to maintain same 8 per cent capital. Thus Banks with good quality assets had no incentives. As a result credit quality had to be lowered to increase returns • Low rated exposures were subsidized by high rated exposures • No provision for economic pricing by 	<p>Implications are</p> <ul style="list-style-type: none"> • Banks with good quality assets have incentives because they can manage with lower capital • Better quality assets require lesser capital • Risk pricing can be done by banks based on credit risk perception • Provision exists for economic pricing by banks

(c) Transition Risk

Risk usually arises when technological obsolescence suddenly overtakes the company. This risk can be traced partly to the complacencies developed by the firms in certain industries under a protected economy when a favourable import duty structure is levied by the Government so that the indigenous industry is able to thrive. However, these approaches have led to a state where these protected companies, become secure due to their continuing profitability and do not recognize the obsolescence of their technology as they are insulated from the onslaught of new technology.

Many industrial estates in India that thrived during the middle of the 20th century came to grief towards the end of the century when globalization and liberalization gained pace hand

in hand. This was because the state-of-the-art technology that was espoused by advanced nations helped place their products with better quality at lower prices. This phenomenon has also happened in the IT field when new products were introduced very frequently based on new technology. The life of a technology which had been normally a decade or more, today suddenly finds itself reduced to a period of less than five years. This unexpected change of events in the history of IT has posed a transition risk for many industries. Technology has made many factors of productions namely men, machinery, and capital suddenly redundant.

As the time frame required for a turnaround or transition from one technology to another differs, companies face transition risk, according to their preparedness and their position in the life cycle. In addition, consumer behaviour has become an enigma clue to the wide variation and aspiration of different customers. This wide variety in the requirements of customers is also one of the factors leading to the extinction of technology that is no longer relevant to the customer, such as the case of black and white televisions.

10. (a) Describe the Argenti Model in the context of Predict Corporate Failure.

(b) "Just as diseases are identified by certain symptoms; industrial sickness can be identified by the following symptoms. These symptoms act as leading indicators of sickness, and if immediate remedial actions are not taken, the sickness will grow to the extent that the organization will find its natural death." – Justify the statements.

(c) "The causes of sickness can be categorized into two viz., internal causes and external causes. Internal causes are those that are internal to the organization over which the management of the organization has control." - Explain the Statement and explaining the Point Project formulation, Project Implementation, production.

[5+5+10]

Answer of 10:

(a) The models to predict Corporate Failure:

Several techniques have been developed to help predict why companies fail. However, these are not accurate and do not guarantee that the prediction will turn out to be true. These models are The Z-Score, Argenti Model, and the L.C. Gupta model amongst others.

Argenti Model

Another model for predicting corporate failure is the Argenti Model. Argenti's Model is perhaps the most distinguished from other models. J.Argenti developed a model which is intended to predict the likelihood of company failure. In his classification, Argenti (1976) distinguished 3 types of failure namely Type 1, Type 2 and Type 3 failures. Type 1 failure characterizes the failure of newly formed and therefore mainly small companies. Whereas, Type 2 is characterized by the presence of a very ambitious, charismatic and active manager with an outstanding personality. Due to over ambition the company is brought down. These failure types can occur to young organizations, but they usually survive longer than Type 1 companies. Type 3 failures only occur to mature companies that have been operating successful over a fair number of years and that often are of a major social and economic importance to the community. The largest characteristic of Type 3 companies is its insensitivity towards changes in the environment, whereas the world around it is changing with its environment.

(b) Above statement relates to Leading Indicator of Sickness in the perspective of Leading Indicator of sickness. Industrial sickness can be identified by following symptoms:

- Continuous reduction in turnover.
- Piling up of inventory,
- Continuous reduction of net profit to sales ratio.

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- Short term borrowings M high interest rate,
- Continuous cash losses leading to erosion of tangible net worth,
- Default in payment of interest on borrowings and default in repayment of term loan installments.
- The 'sundry debtors' as well as the 'sundry creditors' keep growing and reaching a disproportionately high level.
- Approaching the banker for temporary overdraft at frequent intervals.
- High turnover of personnel, especially at senior levels,
- Change in accounting procedure with to view to window dressing.
- Delay in finalization of accounts

These symptoms act as leading indicators of sickness, and if immediate remedial actions are not taken, the sickness will grow to the extent that the organization will find its natural death.

(c) The areas/stages in which these causes may exist and their effects can be studied under the following heads.

- Project formulation.
- Project implementation.
- Production.
- Marketing.
- Finance.
- General and personnel administration.

(i) Project Formulation: Most of sickness is attributed to ill-conceived projects. A project that may, prima facie present a rosy picture may have many hidden pitfalls. Irrational, hasty, over-optimistic decisions may result in choosing projects that may have inherent weaknesses. A project that has an inherent weakness is very unlikely to be a successful project. The existence of a few players in the chosen field, who are doing well, is not always a sound proof that the project will be a success. The existing players may have their own special advantages due to which they could have overcome the hurdles and Pitfalls those are present in the project.

A thorough investigation of the project during the identification and formulation stage is the *sine qua- non* of any project proposal. "Think before you act"—is the proverb that is worth practicing; Any amount of time and efforts spent at this stage is worth it as any hasty decision made at this stage will be very costly.

External factors play a major role in project formulation stage. The present stage of and the future course of the external environment are to be carefully studied for their influence on the project.

(ii) Project Implementation: Delayed implementation gives a project a difficult start. Unduly long time taken for project implementation results in time-overrun which is invariably followed by cost-overrun. Cost-overrun has the ill effect of affecting the financial viability of the project. The problem of Cost-Overrun will get more compounded if the finance necessary to meet the increased cost cannot be arranged in time. Any delay in arranging for the finance needed to meet the cost overrun will only further tend to increase the cost and this may land the project in trouble leading eventually to the death of the project and the project may not take off.

The following are some of the problem areas in implementation stage.

- The promoters may not be in a position to bring in funds to the required extent in time. In general Banks/Financial institutions insist that the promoters shall bring in their capital contribution to the project upfront before release of loan. Any delay in bringing the stipulated capital by the promoters will delay the drawal of loan, which will lead to delay in implementation.

- The loan disbursement may be delayed if the promoters are not able to comply with major terms and conditions of the loan agreement, For example, the loan agreement, inter-alia, may stipulate that collateral security to cover, say 25% of the loan amount shall be offered, The value of the property that the promoters offer as collateral security to the bank/financial institution may be short of the requirement. Or, when the value of the property meets the requirement, there may be other impediments like legal hurdles for clear, unencumbered title to the property etc.
- The cost of different components of project-cost may increase due to price escalation. The cost provided for some of the elements of project-cost might have been under estimated. It is also likely that some elements which are essential might have been left out. These factors lead to cost overrun which may delay the project implementation.
- There may be delay in getting power connection, water connection, approval from local bodies, approval from pollution control authorities etc., which may postpone project implementation.

(iii) Production: The major aspects of production that may lead to sickness are

- Increase in the cost of production.
- Decrease in the quantity of production.
- Quality of product not meeting the standards/customer expectation.
- Producing more quantity than can be sold, leading to accumulation of stock.

The increase in cost of production may be due to external factors like increase in the cost of raw materials, increase in the cost of consumables, power, etc., or due to internal factors like improper choice of raw material/raw material-source, wrong choice of production process etc.

Decrease in quantity of production may be due to defects/under performance of plant and machinery, defects in production process etc,

Defects in quality of products may be due to defects in raw material used, or due to unsatisfactory performance of machinery or due to ineffective supervision. In spite of the raw material, machinery and supervision being good, the advent of new technology may bring in product-obsolescence and the product may lose customer preference.

Lack of proper planning of product mix and lack of co-ordination between production and marketing departments may lead to piling up of inventory, which will only add to the cost of the product.