

**Paper 17 - Strategic Performance Management**

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

## Paper 17 - Strategic Performance Management

Time Allowed: 3 Hours

Full Marks: 100

### Section - A

#### Question No 1 which is compulsory and carries 20 Marks

1. (a) The price (P) per unit at which company can sell all that it produces is given by the function  $P(x) = 300 - 4x$ . The cost function is  $500 + 28x$ , where 'x' is the number of units, find x, so that profit is maximum. 4

Answer: 1(a)

$$P = 300 - 4x$$

$$R = P(x) = 300x - 4x^2$$

$$C = 500 + 28x$$

$$P = R - C$$

$$\text{Profit} = 300x - 4x^2 - 500 - 28x$$

$$= -4x^2 + 272x - 500 \text{ (Say 'z')}$$

$$\frac{dz}{dx} = -8x + 272 = 0$$

$$-8x = -272$$

$$X = \frac{272}{8} = 34$$

$$\frac{d^2z}{dx^2} = -8, \text{ which is Negative}$$

Profit is maximum at  $x = 34$  units.

- (b) A company AB Ltd. has two divisions, Division X manufactures a special type of electrical component and Division Y sells a finished product for which it requires one component per unit from X division. Division X sells the component in the external market @ ₹ 180 per unit and division X is also working at almost full capacity. The variable cost of manufacturing per component is ₹ 102.

Division Y is now operating at 50 % capacity. It has received a special order for its product. As Y is keen to get this order. Division Y will meet the special order at a price of ₹ 1200 per unit and it offers a price of ₹ 120 per component to division X. The cost per unit of Division Y is as:

Particulars	₹
Other purchased component	500
Component supplied by Division X	12
Other variable overheads	320
Fixed overheads	180
Total cost per unit	1,120

- (i) As a manager of division X what decisions would you like to take on B's request for the supplies @ ₹120?  
(ii) Would it be any short-term economic advantage for AB Ltd. to make Division X transfer to Division Y at the price of ₹ 120? [2+2]

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

Answer: 1 (b)

- (i) Since Division X is operating to near full capacity and has an external market at a price of ₹180 per unit as a manager of the division it would not be in the interest of the divisional profitability to supply at a price of ₹120. The offer is refused.
- (ii) Since Division Y is working below the capacity it would be in its interest to get the special order. The fixed cost of ₹180 included in the cost is not pertinent. This is a sunk cost. Thus if Division Y were to buy the component even at the market price of ₹ 180 its overall variable cost would be  $500 + 180 + 320 = 1000$  and a contribution of ₹ 200 per unit can be earned from the special order. Therefore Division Y should buy the component at the price of ₹180 per component and accept its special order and when the price paid for the component is ₹180, Division Y will be indifferent as to the buyer.

**(c) Describe the objectives of Performance Appraisal.**

4

Answer: 1(c)

**Objectives of Performance Appraisal:**

- (i) To review the performance of the employees over a given period of time.
- (ii) To judge the gap between the actual and the desired performance.
- (iii) To help the management in exercising organizational control.
- (iv) Helps to strengthen the relationship and communication between superior – subordinates and management – employees. subordinates and management – employees.
- (v) To diagnose the strengths and weaknesses of the individuals so as to identify the training and development needs of the future.
- (vi) To provide feedback to the employees regarding their past performance.
- (vii) Provide information to assist in the other personal decisions in the organization.
- (viii) Provide clarity of the expectations and responsibilities of the functions to be performed by the employees.
- (ix) To judge the effectiveness of the other human resource functions of the organization such as recruitment, selection, training and development.
- (x) To reduce the grievances of the employees.

**(d) Discuss the importance of Decision Support Systems for gaining the Competitive Advantage.**

4

Answer: 1(d)

**Decision Support Systems (DSS):**

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. DSS allow faster decision-making, identification of negative trends and better allocation of business resources all to the benefit of you and your organization. DSS are a specific class of computer-based information systems that support your decision-making activities. A DSS analyses business data and provides inter-active information support to managers and business professionals during the decision-making process, from problem recognition to implementing your decision.

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

## DSS use:

- (i) Analytical models
- (ii) Specialized databases
- (iii) A Decision maker's own insights and judgments and
- (iv) An interactive, computer-based modeling process to support semi-structured business decisions.

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

## Gain Competitive Advantage with DSS:

One way of gaining competitive advantage is through the use of Computerized DSS. The other benefits of DSS are:

- 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.

(e) Discuss about the Unique Competitor Risk.

4

Answer: 1 (e)

### Unique Competitor Risk

This risk arises when a unique competitor enters the scene unexpectedly. Competition, even if intense, can be managed as long as the two opposing parties are equal. Each company has its portion of the pie and the market share of each company grows with the growth of the industry at the macro level. In this scenario, if a large company unexpectedly enters the market and creates an imbalance, it leads to unique competitor risk. This risk is a culmination of the big resources, high technology, and managerial skill that the unique competitor (new entrant) possesses.

This risk has happened whenever protected industry faces an open market. This phenomenon is equally applicable to manufacturing, trading, and service industries. When large players such as Du Pont, and Chevron entered the high-tech chemical industry in India, smaller companies that already existed in this industry had to completely restructure themselves to stay in business.

In the same manner, in retail trade, after the entry of big competitors such as the Reliance and Birla groups' small shopkeepers, street vendors, and other unorganized sector participants have all had to face big survival-related risks. For example, in the service sector, due to the entry of international consulting powerhouses such as Morgan Stanley, KPMG, and Deloitte, there has been a tremendous impact on small firms, individual consultants, and individual auditors. More than the strength of the unique competitor, the unexpectedness of their entry causes a big risk and this risk needs to be managed very intelligently. As can be seen from the examples, the unexpected entry of the unique competitor actually creates business risks relating to the survival of the smaller group of entrepreneurs.

## Section – B

Answer any five questions, each question carries 16 Marks

2. (a) Describe the Strategic decisions which help in Managing Risk.

8

- (b) "The causes of sickness can be categorized into two viz., internal causes and external causes. Internal causes are those that are internal to the organisation over which the management of the organisation has control." – Explain the Statement and explain the terms Project formulation, Project Implementation and production. 8

Answer: 2 (a)

## Strategic Decision for Risk Management —

**Risk Handling:** In ideal risk management, a prioritization process is followed whereby risks with the greatest loss and the greatest probability of occurring are handled first, and risks with lower probability loss are handled later.

**Risk Reduction:** This strategy is attempted to decrease the quantum of losses arising out of a risky happening e.g. earthquake, storm, flood etc. It involves methods that reduce severity of the loss arising from risk consequences. Risk reduction can be achieved through (i) loss prevention, and (ii) loss control.

**Risk Avoidance:** This is prevention and a proven strategy. This strategy results in complete elimination of exposure to loss due to a specific risk. It may involve avoidance of an activity, which is risky. It includes deliberate attempt on part of the person taking risk decision not to perform an activity or not to accept a proposal, which is risk prone. This strategy can be approached in two ways: (a) Don't assume risk, and (b) Discontinue of an activity to avoid risk.

**Risk Retention:** This strategy is adopted when risk cannot be avoided, reduced or transferred. It involves accepting the loss when it occurs by taking risky proposal or risky assignment where there are no other alternatives to avoid risk. It can be a voluntary or involuntary action. When it is voluntary, it is retained through implied agreements. Involuntary retention occurs when the organization is unaware of the risk and faces it when it comes up.

**Risk Transfer:** It means causing another party to accept the risk, typically by contract. It involves a process of shifting risk responsibility on others. Insurance is one type of risk transfer, which is widely used in common parlance.

**Risk Hedging:** It is a systematic process of reducing risk associated with an investment proposal or in some other assignments where risk is inevitable i.e. the risk is of such nature that it cannot be avoided altogether.

**Risk Diversification:** It involves identifying both systematic and unsystematic risks. Systematic risk is inherent and is peculiar to the type of business/firm and can be reduced or diversified through functional level strategy. The unsystematic risk is external to the organization and is termed as 'market risk'. The identification of characteristics of market risk through statistical correlation 'beta, which is a measure of market risk, lends itself for manipulation through portfolio management. This strategy is followed in reduction of risk of single portfolio by investing in shares, debentures, bonds, treasury bills etc. to reduce overall risk of the portfolio.

**Risk Sharing:** Taking an insurance coverage for the exposure is the common method of sharing risk. By paying insurance premium, the company shares the risk with an insurance company. The insurance company can also share its risk with other insurance companies by doing reinsurance.

**Risk Pooling:** It is the process of identification of separate risks and put them all together in a single blanket, so that the monitoring, integrating or diversifying risk can be implemented.

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

## Answer: 2 (b)

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

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

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 load 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-obsolence and the product may lose customer preference.

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

3. (a) Amit Ltd. provides the following details on its new product.

Years 1 and 2: R & D costs: ₹ 2,40,000, Design costs ₹ 1,60,000

Years 3 to 6: Other functional costs:

Function	One-time costs	Costs per unit
Production	₹ 1,00,000	₹ 25
Marketing	₹ 70,000	₹ 24
Distribution	₹ 50,000	₹ 16
Customer service	₹ 80,000	₹ 30

The sale quantities during the product Life Cycle at various selling prices are

Selling price per unit (₹)	400	480	600
Sale Quantity in units	5,000	4,000	2,500

Ignoring time value of money, compute the Net incomes generated over the product Life Cycle of various prices. Which price should the company select? 10

- (b) A company is planning to market a new model of a doll. Rather than setting the selling price of the doll based only on production cost estimation management polls the retailers of the doll to see how many dolls they will buy for various prices. From this survey, it is determined at the unit demand function (the relationship between the amount 'x' each retailer would buy and the price he would pay) is  $x = 30,000 - 1500P$ . The fixed cost of the production of the dolls are found to be ₹28,000 and cost of Material & labour to produce each doll is estimated to be ₹8 per unit. What price should the company charge retailer in order to obtain a maximum profit? Also find the maximum profit.

6

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

**Answer: 3 (a)**

## Income Statement

Particulars	Option I	Option II	Option III
1. Life Cycle Sales Quantity	5,000 units	4,000 units	2,500 units
2. Life Cycle Selling Price p. u.	₹400	₹480	₹600
3. Life Cycle Sales Revenue (1x2)	₹ 20,00,000	₹ 19,20,000	₹ 15,00,000
4. Life Cycle Functional Costs			
(i) Research and Development	₹ 2,40,000	₹ 2,40,000	₹ 2,40,000
(ii) Design	₹ 1,60,000	₹ 1,60,000	₹ 1,60,000
(iii) Production One Time Variable	5000 × ₹ 25 = ₹1,25,000	4000 × ₹25 = ₹1,00,000	2500 × ₹25 = ₹62,500
(iv) Marketing One Time Variable	₹ 70,000 5000 × ₹ 24 = ₹1,20,000	₹ 70,000 4000 × ₹ 24 = ₹96,000	₹ 70,000 2500 × ₹24 = ₹60,000
(v) Distribution One Time Variable	₹ 50,000 5000 × ₹ 16 = ₹ 80,000	₹ 50,000 4000 × ₹ 16 = ₹ 64,000	₹ 50,000 2500 × ₹16 = ₹ 40,000
(vi) Customer Service One Time Variable	₹ 80,000 5000 × ₹ 30 = ₹1,50,000	₹ 80,000 4000 × ₹30 = ₹1,20,000	₹ 80,000 2500 × ₹30 = ₹75,000
Life Cycle Total Costs	₹ 11,75,000	₹ 10,80,000	₹ 9,37,500
5. Life Cycle Net Income	₹ 8,25,000	₹ 8,40,000	₹ 5,62,500

**Conclusion:** The Company may select Price of ₹480 to maximize Profits. Assumed that R&D Costs and Design Costs represent Total Costs incurred in 2 Years.

**Answer: 3 (b)**

$$X = 30,000 - 1,500P$$

$$x - 30,000 = -1,500P$$

$$\therefore P = \frac{30,000 - x}{1,500}$$

$$\text{Revenue} = \frac{30,000x - x^2}{1,500}$$

$$C = 8x + 28,000$$

$$\text{Profit (p)} = \frac{30,000x - x^2}{1,500} - 8x - 28,000$$

$$\frac{dp}{dx} = 1/1,500 (30,000 - 2x) - 8 = 0$$

$$\text{or, } 30,000 - 2x - 12,000 = 0$$

$$\text{or, } -2x = -18,000$$

$$\text{or, } x = 18,000/2 = 9,000$$

$$\text{or, } \frac{d^2p}{dx^2} = -2, \text{ which is Negative}$$

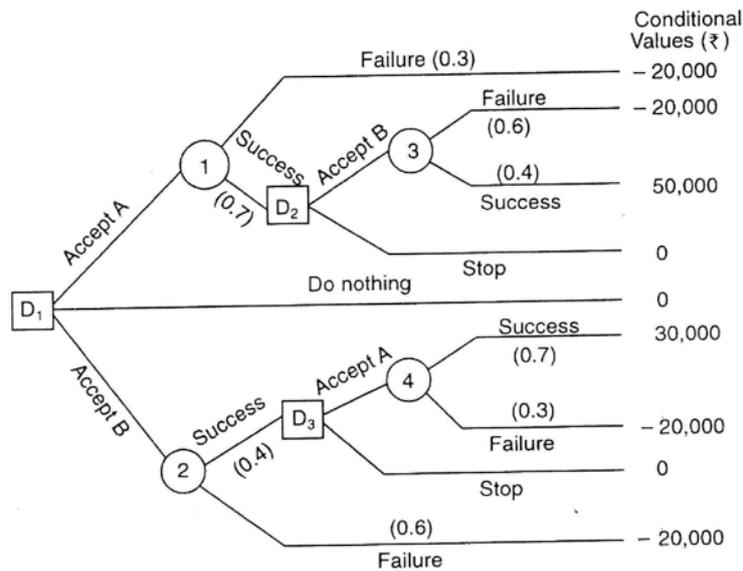
$$\text{Profit} = \frac{30,000 \times 9,000 - 9,000^2}{1,500} - 72,000 - 28,000 = 26,000$$

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

4. (a) A business man has two independent investments A and B available to him; but he lacks the capital to undertake both of them simultaneously. He can choose to take a first and then stop, or if A is successful then take B, or vice versa. The probability of success on A is 0.7 while for B it is 0.4. Both the investments require an initial capital outlay of ₹ 20,000 and both return nothing if the venture is unsuccessful. Successful completion of A will return ₹30,000 (overcost). And successful completion of B will return ₹ 50,000 (overcost). Draw the decision tree and determine the best strategy. 12
- (b) Explain the role of the Management Accountant in Value Chain Analysis. 4

Answer: 4 (a)

The appropriate decision tree corresponding to the given information is depicted in the following:



### Evaluation of decision and chance nodes

Decision Point			Outcome	Probability	Conditional value (₹)	Expected value (₹)
D <sub>3</sub>	(i)	Accept A	Success	0.7	30,000	21,000
			Failure	0.3	-20,000	-6,000
						15,000
	(ii)	Stop	—	—	—	0
D <sub>2</sub>	(i)	Accept B	Success	0.4	50,000	20,000
			Failure	0.6	-20,000	-12,000
						8,000
	(ii)	Stop	—	—	—	0
D <sub>1</sub>	(i)	Accept A	Success	0.7	30,000 + 8,000	26,600
			Failure	0.3	-20,000	-6,000
	(ii)	Accept B	Success	0.4	50,000 + 15,000	26,000
			Failure	0.6	-20,000	-12,000
(iii)	Do nothing	—	—	—	0	

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

Since the EMV at node 2 is highest, the best strategy at node  $D_1$  is to accept course of action A first and if A is successful, then accept B.

**Answer: 4 (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.

5. (a) Explain the objectives of Six Sigma. 8  
(b) State the problems addressed by Supply Chain Management. 8

**Answer: 5(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

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

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.

Answer: 5(b)

### Supply Chain Management must address the following problems:

- **Distribution Network Configuration:** Number, location and network missions of suppliers, production facilities, distribution centers, warehouses, cross-docks and customers.
- **Distribution Strategy:** Questions of operating control (centralized, decentralized or shared); delivery scheme, e.g., direct shipment, pool point shipping, cross docking, direct store delivery (DSD), closed loop shipping; mode of transportation, e.g., motor carrier, including truckload, Less than truckload (LTL), parcel; railroad; intermodal transport, including trailer on flatcar (TOFC) and container on flatcar (COFC); ocean freight; airfreight; replenishment strategy (e.g., pull, push or hybrid); and transportation control (e.g., owner-operated, private carrier, common carrier, contract carrier, or third-party logistics (3PL)).
- **Trade-Offs in Logistical Activities:** The above activities must be well coordinated in order to achieve the lowest total logistics cost. Trade-offs may increase the total cost if only one of the activities is optimized. For example, full truckload (FTL) rates are more economical on a cost per pallet basis than LTL shipments. If, however, a full truckload of a product is ordered to reduce transportation costs, there will be an increase in inventory holding costs which may increase total logistics costs. It is therefore imperative to take a systems approach when planning logistical activities.

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

These trades-offs are key to developing the most efficient and effective Logistics and SCM strategy.

- **Information:** Integration of processes through the supply chain to share valuable information, including demand signals, forecasts, inventory, transportation, potential collaboration, etc.
- **Inventory Management:** Quantity and location of inventory, including raw materials, work-in-process (WIP) and finished goods.
- **Cash-Flow:** Arranging the payment terms and methodologies for exchanging funds across entities within the supply chain.

6. (a) Describe the causes of corporate failure and their example. 8
- (b) Discuss Altman's Model and Explain the Five Z-Score constituent Ratios. 8

Answer: 6(a)

## Causes of Corporate Failure:

### Technological causes

Traditional methods of doing work have been turned upside down by the development of new technology. If within an industry, there is failure to exploit information technology and new production technology, the firms can face serious problems and ultimately fail. By using new technology, cost of production can be reduced and if an organization continues to use the old technology and its competitors start using the new technology; this can be detrimental to that organization. Due to high cost of production, it will have to sell its products at higher prices than its competitors and this will consequently reduced its sales and the organization can serious problems.

This situation was seen in the case of Mittal Steel Company taking over Arcelor Steel Company. Arcelor Steel Company was using its old technology to make steel while Mittal Steel Company was using the new technology and as a result, Mittal Steel Company was able to sell steel at lower price than Arcelor Steel Company due to its low cost of production. Arcelor Steel Company was approaching corporate failure and luckily, Mittal Steel Company merged with Arcelor Steel Company and became Arcelor Mittal Steel Company, thus preventing Arcelor from failure.

### Working capital problems

Organizations also face liquidity problems when they are in financial distress. Poor liquidity becomes apparent through the changes in the working capital of the organization as they have insufficient funds to manage their daily expenses.

Businesses, which rely only on one large customer or a few major customers, can face severe problems and this can be detrimental to the businesses. Losing such a customer can cause big problems and have negative impact on the cash flows of the businesses. Besides, if such a customer becomes bankrupt, the situation can even become worst, as the firms will not be able to recover these debts.

### Economic distress

A turndown in an economy can lead to corporate failures across a number of businesses. The level of activity will be reduced, thus affecting negatively the performance of firms in several industries. This cannot be avoided by businesses.

The recent economic crisis in the USA led to many cases of corporate failures. One of them is the insurance AIG insurance company. It is facing serious problems and it might close its door in the near future.

### Mismanagement

Inadequate internal management control or lack of managerial skills and experience is the cause of the majority of company failures. Some managers may lack strategic

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

capability that is to recognize strengths, weaknesses, opportunities and threats of a given business environment. These managers tend to take poor decisions, which may have bad consequences afterwards.

Furthermore, managers of different department may not have the ability to work closely together. There are dispersed department objectives, each department will work for their own benefits not towards the goal of the company. This will bring failure in the company. One example can be WorldCom, where the finance and legal functions were scattered over several states and communication between these departments were poor.

## **Over-expansion and diversification**

Research has shown that dominant CEO is driven by the ultimate need to succeed for their own personal benefits. They neglect the objective set for the company and work for their self-interest. They want to achieve rapid growth of the company to increase their status and pay level. They may do so by acquisition and expansion.

The situation of over expansion may arise to the point that little focus is given to the core business and this can be harmful as the business may become fragment and unfocused. In addition, the companies may not understand the new business field. Enron and WorldCom can be an example for this situation where the managers did not understand how growing overcapacity would influence its investment and therefore did not comprehend the risks associated with it.

## **Fraud by management**

Management fraud is another factor responsible for corporate collapse. Ambitious managers may be influenced by personal greed. They manipulate financial statements and accounting reports. Managers are only interested in their pay checks and would make large increase in executive pay despite the fact that the company is facing poor financial situation. Dishonest managers will attempt to tamper and falsify business records in order to fool shareholders about the true financial situation of the company. These fraudulent acts or misconduct could indicate a serious lack of control. These frauds can lead to serious consequences: loss of revenue, damage to credibility of the company, increased in operating expenses and decrease in operational efficiency.

## **Poorly Structured Board**

Board of Directors is handpicked by CEO to be docile and they are encouraged by executive pay and generous benefits. These directors often lack the necessary competence and may not control business matters properly. These directors are often intimidated by dominant CEO and do not have any say in decision making. Example Enron and WorldCom where poorly structured board was a contributor towards their failure.

## **Financial distress**

Firms that become financially distressed are found to be under- performing relative to the other companies in their industry. Corporate failure is a process rooted in the management defects, resulting in poor decisions, leading to financial deterioration and finally corporate collapse. Financial distresses include the following reasons also low and declining profitability, investment Appraisal, Research and Development and technical insolvency amongst others.

A firm may fail, as its returns are negative or low. A firm that consistently reports operating losses probably experiences a decline in market value. If the firm fails to earn are turn greater than its cost of capital, it can be viewed as having failed. Falling profits have an obvious link with both financial and bankruptcy as the firm finds it is not generating enough money to meet its obligations as they fall due.

Another cause that will lead the company to fail is the investment appraisal. Many organizations run into difficulties as they fail to appraise investment projects carefully. The long-term nature of many projects means that outcomes are difficult to forecast and

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

probabilities are usually subjective. "Big project gone wrong" is a common cause of decline. For example, the acquisition of a loser company, this has happen in the case for the failure of Parmalat Co Ltd of Italy, which made the acquisition of several losses making company where Inappropriate evaluation of the acquired company, its strengths and weaknesses.

**Answer: 6(b)**

## **The Altman Model: Z-Score**

The Z-Score model is a quantitative model developed by Edward Altman in 1968, to predict bankruptcy or financial distress of a business. The Z-score is a multi variate formula that measures the financial health of a company and predicts the probability of bankruptcy within 2 years. This model involves the use of a specified set of financial ratios and a statistical method known as a Multiple Discriminant Analysis. (MDA). The real world application of the Altman score successfully predicted 72% of bankruptcies two years prior to their failure. The model of Altman is based on a linear analysis in which five measures are objectively weighted and summed to arrive at an overall score that then becomes the basis for classification of companies into one of the two a priori groupings that is bankrupt or non-bankrupt. These five indicators were then used to derive a Z-Score. These ratios can be obtained from corporations' financial statements.

**The Five Z-Score Constituent Ratios are:**

- **Working Capital/Total Assets (WC/TA):-** a firm with negative working capital is likely to experience problems meeting its short-term obligations.
- **Retained Earnings/Total Assets (RE/TA):** - Companies with this ratio high probably have a history of profitability and the ability to stand up to a bad year of losses.
- **Earnings before Interest & Tax/ Total Assets (EBIT/TA):** - An effective way of assessing a firm's ability to profit from its assets before things like interest and tax are deducted.
- **Market Value of Equity/ Total Liabilities (MVE/TL):** - A ratio that shows, if a firm were to become insolvent, how much the company market value would declines before liabilities exceed assets.
- **Sales/Total Assets (SL/TA):** - A measure of how management handles competition and how efficiently the firm uses assets to generate sales.

Based on the Multiple Discriminant Analysis, the general model can be described in the following form:  $Z = 1.2WC/TA + 1.4 RE/TA + 3.3 EBIT/TA + 0.6 MVE/TL + 1.0 SL/TA$ .

7. (a) **Mention the benefits of adopting a Balanced Score Card approach to the Performance Management.** 8
- (b) **"Data quality management incorporates a virtuous cycle in which continuous analysis, observation, and improvement lead to overall improvement in the quality of organisational information across the board. This virtuous cycle incorporates five fundamentals data quality management practices, which are ultimately implemented using a combination of core data services."**- Discuss the five fundamentals. 8

**Answer: 7(a)**

The benefits of adopting a Balanced Scorecard approach to performance management may include:

- (i) **Wholistic approach:** It brings strategy and vision as the centre of Management focus. It helps firms to assess overall performance, improve operational processes

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

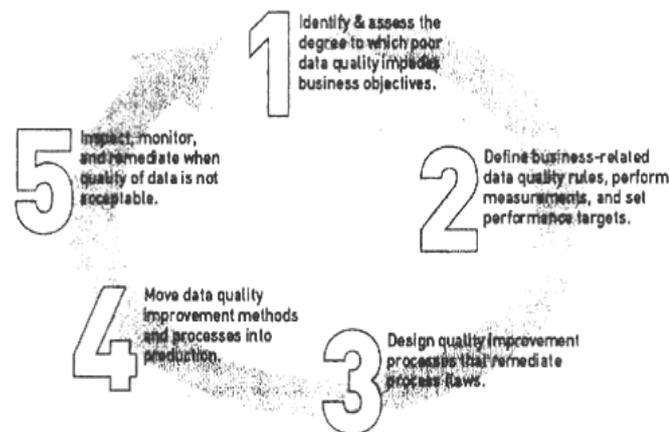
and enable Management to develop better plans for improvements. It provides Management with a comprehensive picture of business operations.

- (ii) **Overall Agenda:** It brings together in a single Management Report, various aspects like customer orientation, shortening the response time, improving quality, etc. of a competitive agenda.
- (iii) **Objectivity:** It emphasizes the need to provide the user with a set of information, which addresses all relevant areas of performance in an objective and unbiased manner.
- (iv) **Management by Objectives:** The methodology of BSC facilitates communication and understanding of business goals and strategies at all levels of the Firm. Thus it enables Management by Objective.
- (v) **Feedback and Learning:** It provides strategic feedback and learning. BSC guards against sub-ordination. It emphasizes an integrated combination of traditional and non-traditional performance measures.
- (vi) **System Approach:** It helps Senior Managers to consider all the important performance measures together, and allows them to see whether an improvement in one area has been achieved at the expense of another.

## Answer: 7(b)

The objective of this cycle is to transition from being an organization in which the data stewards react to acute data failures into an organization that proactively controls and limits the introduction of data flaws into the environment.

- (i) Data quality assessment, as a way for the practitioner to understand the scope of how poor data quality affects the ways that the business processes are intended to run, and to develop a business case for data quality management;
- (ii) Data quality measurement, in which the data quality analysts synthesize the results assessment and concentrate on the data elements that are deemed critical based on the selected business users' needs. This leads to the definition of performance metrics that feed management reporting via data quality scorecards;
- (iii) Integrating data quality into the application infrastructure, by way of integrating data requirements analysis across the organization and by engineering data quality into the system development life cycle;
- (iv) Operational data quality improvement, where data stewardship procedures are used to manage identified data quality rules, conformance to acceptability thresholds, supported by
- (v) Data quality incident management, which allows the data quality analysts to review the degree to which the data does or does not meet the levels of acceptability, report, log, and track issues, and document the processes for remediation and improvement.



# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

8. Answer any four questions below:

[4×4]

- (a) Discuss the rule of dominance of the Game Theory.
- (b) Describe about the Nash Equilibrium.
- (c) Explain the Statistical Process Control (SPC) methods.
- (d) Discuss the needs for implementation of ERM.
- (e) Explain the usage of Artificial Neural Network (ANN).

Answer: 8(a)

**Rule of Dominance**

This rule is applicable to a zero-sum game between two persons, with any number of strategies. For a pay-off matrix of large size, the rule of dominance can be applied to reduce the size by carefully eliminating rows and/or column prior to final analysis to determine the optimum strategy selection for each person.

**In general the following rules are adopted:**

- (i) In a pay-off matrix if all the elements of any row (say  $i$ th) are less than or equal (i.e.,  $<$ ) to the corresponding elements of any other row (say  $j$ th), then the  $i$ th strategy is dominated by  $j$ th row; in other words the player (or person) A will ignore or reject the  $i$ th row. Thus the pay-off matrix is reduced.
- (ii) In a pay-off matrix if all the elements of any column (say  $r$ th) are greater than or equal to (i.e.  $>$ ) to the corresponding elements of any other column (say  $s$ th) then the  $r$ th strategy is dominated by  $s$ -th strategy; in other words the player B will ignore or reject the  $r$ -th strategy, hence again the pay-off matrix is reduced.
- (iii) A pure strategy may be dominated if it is inferior to the average of two or more other pure strategies.

Answer: 8(b)

**Nash Equilibrium:**

All games do not have a dominant strategy for every player. In case of payoff matrix of Table below, Firm A has no dominant strategy. Its best decision depends on what Firm B does: if B advertises A must advertise, while if B decides not to advertise, A benefits by not advertising.

**TABLE: Payoff Matrix: Advertising Game**

<b>Firm A</b>	<b>Firm B</b>		
	<b>Advertise</b>	<b>Don't Advertise</b>	
	Advertise	20;10	
Don't Advertise	12; 16	30:0	40: 5

Now suppose both firms must make decisions at the same time, then what should Firm A do? The answer is: Firm A must try to determine what action Firm B is likely to take. In other words, Firm A must put itself in Firm B's place, and see what is best from B's point of view: advertising or not advertising. In the above Table above, if Firm A advertises, B earns 10 by advertising and 0 by not advertising. If Firm A does not advertise, B gets 16 by advertising and 5 by not advertising. Thus, Firm B has a dominant strategy—advertises (irrespective of what A does). Now, given that Firm B is rational, Firm A knows that Firm B will advertise and, therefore, Firm A should choose the best strategy from column 1. Obviously, now A will choose to advertise as it gains 20 against 12 if it does not advertise. This is Nash Equilibrium for this game. A Nash equilibrium is a set of strategies such that each player believes (correctly) that it is doing the best it can, given the strategy of the opponents. Since

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 1

---

player is satisfied that it has made the best decision possible, he has no incentive to deviate from the chosen strategy. Thus, the Nash strategies are stable.

The distinction between Nash equilibrium and the dominant-strategy equilibrium may be well understood. In dominant strategy case, each player chooses his best strategy, irrespective of the strategies of other players. While in case of Nash equilibrium each player chooses a strategy that is his best choice, subject to what strategies the opponent chooses.

As is obvious from the discussion so far, Nash equilibrium is possible only if we assume that all players understand the game and are rational. This may not be true always. If you are cautious and are also concerned that your opponent may not be fully knowing the game or is likely to be irrational then you may choose a strategy which maximizes the minimum gain that can be earned, known as maximin strategy.

## Answer: 8(c)

Statistical process control (SPC) monitors specified quality characteristics of a product or service so as:

To detect whether the process has changed in a way that will affect product quality and  
To measure the current quality of products or services.

- **Control** is maintained through the use of control charts. The charts have upper and lower control limits and the process is in control if sample measurements are between the limits.
- **Control Charts for Attributes**

**P Charts** - measures proportion defective.

**C Charts** - measures the number of defects/unit.

- **Control Charts for Variables**

X bar and R charts are used together - control a process by ensuring that the sample average and range remain within limits for both.

- **Basic Procedure**

- (i) An upper control limit (UCL) and a lower control limit (LCL) are set for the process.
- (ii) A random sample of the product or service is taken, and the specified quality characteristic is measured.
- (iii) If the average of the sample of the quality characteristic is higher than the upper control limit or lower than the lower control limit, the process is considered to be "out of control".

## Answer: 8(d)

Need for Implementation of ERM —

ERM needs to be implemented for the following reasons:

- Reduce unacceptable performance variability.
- Align and integrate varying views of risk management.
- Build confidence of investment community and stakeholders.
- Enhance corporate governance.
- Successfully respond to a changing business environment.
- Align strategy and corporate culture.

Answer: 8(e)

## **Artificial Neural Network (ANN)**

An Artificial Neural Network (ANN) is a mathematical model that tries to simulate the structure and functionalities of biological neural networks. Basic building block of every artificial neural network is artificial neuron, that is, a simple mathematical model (function). Such a model has three simple sets of rules: multiplication, summation and activation.

## **Usage of Artificial Neural Networks**

One of the greatest advantages of artificial neural networks is their capability to learn from their environment. Learning from the environment comes useful in applications where complexity of the environment (data or task) make implementations of other type of solutions impractical. As such artificial neural networks can be used for variety of tasks like classification, function approximation, data processing, filtering, clustering, compression, robotics, regulations, decision making, etc. Choosing the right artificial neural network topology depends on the type of the application and data representation of a given problem. When choosing and using artificial neural networks we need to be familiar with theory of artificial neural network models and learning algorithms. Complexity of the chosen model is crucial; using too simple model for specific task usually results in poor or wrong results and over complex model for a specific task can lead to problems in the process of learning. Complex model and simple task results in memorizing and not learning. There are many learning algorithms with numerous tradeoffs between them and almost all are suitable for any type of artificial neural network model. Choosing the right learning algorithm for a given task takes a lot of experiences and experimentation on given problem and data set. When artificial neural network model and learning algorithm is properly selected we get robust tool for solving given problem.