Paper-17: Strategic Performance Management

Time Allowed: 3 Hours **Full Marks: 100**

Whenever necessary, suitable assumptions should be made and indicate in answer by the candidates.
Working Notes should be form part of your answer

Section –A
[Question 1 is compulsory and answers any 3 from the rest]

1. Case study of Competitive Intelligence

Wilbur Stratton was invited to work with a Global Technology Vendor that wanted to establish and understand the maturity of the sustainability technology market in the UK. The objective was to enable the company to make informed decisions about how to structure and develop the sustainability technology services strategy to support new customers. The report gathered critical information from competitors looking to strengthen specific technology solutions.

The Market Intelligence Report was a modified research report to identify the size, scope and strategy behind the technology services, consulting, systems integrators and outsourcing market in the UK. It provided a breakdown of where organizations are focusing, what their strategies are for future sustainable technology offerings and which companies are leading the way with innovation.
The research report included a summary of findings about where organizations are in terms of the different phases of development with their sustainable technology offerings, along with the commitment behind this and how it is being taken to market.

The report provided a high level overview of what the technology industry is taking to market in terms of sustainable technology offerings and the scope of market within competitors.
The report described competitors' commitment to this issue and a real time understanding of the size and scope of the market background. It provided the material to develop a proposal for the global Board of Directors to consider for the future strategy of the sustainability function across the UK business.

Required:

(a) Describe the objectives of Competitive Intelligence.
(b) Discuss the Role of the management accountant in Competitive Intelligence.
(c) List the outcomes of Competitive Intelligence Research Report?

[4+8+3]

Solution:

(a) Objectives of Competitive Intelligence

Organizations develop competitive intelligence programs with the following objectives in mind:

(i) To provide an early warning of opportunities and threats, such as new acquisitions or alliances and future competitive products and services;
(ii) To ensure greater management awareness of changes among competitors, making the organization better able to adapt and respond appropriately;
(iii) To ensure that the strategic planning decisions are based on relevant and timely competitive intelligence; and
(iv) To provide a systematic audit of the organization's competitiveness that gives the CEO an unfiltered and unbiased assessment of the firm's relative position.

(b) 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.

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.

(c) The outcomes were

(i) The technology industry is taking to market in terms of sustainable technology offerings and the scope of market within competitors.
(ii) competitors' commitment to this issue and a real time understanding of the size and scope of the market background
(iii) It provided the material to develop a proposal for the global Board of Directors to consider for the future strategy of the sustainability function across the UK business.

2.(a) Discuss about Certainty Equivalent.

(b) Desktop Co. manufactures and sells 7,500 units of a product. The full Cost per is ₹100. The Company has fixed its price so as to earn a 20% return on an Investment of ₹9,00,000.

Required:

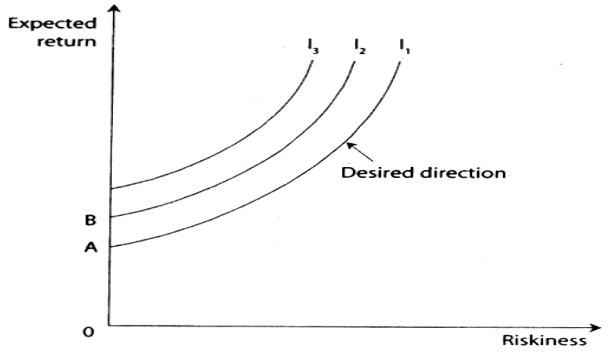
(i) Calculate the selling Price per unit from the above. Also, calculate the mark- up % on the Full cost per unit.
(ii) If the Selling Price as calculated above represents a mark- up% of 40% on variable Cost per unit, calculate the variable Cost per unit.
(iii) Calculate the Company's Income if it had increased the Selling Price to ₹115. At this price, the Company would have sold 6,750units. Should the company have increased the Selling price to ₹230?
(iv) In response to competitive pressures, the Company must reduce the price to ₹105 next year, in order to achieves sales of 7,500 units. The company also plans to reduce its investment to ₹8,25,000. If a 20% return on Investment should be maintained, what is the Target cost per unit for the next year?

(c) Describe the Components of Performance Management. [6+4 +5]

Solution:

(a) The most important application of risk versus return (or mean/variance) indifference analysis concerns the construction of portfolios of financial assets and therefore lie beyond the scope of the study. However there is one useful concept which should be noted is that the certainty equivalent of a course of action involving risk. This is defined

as the sum of money, available with certainty, which would leave the decision-maker as satisfied as if he had undertaken the risky action. This may be interpreted, in terms of the indifference curves, as the vertical intercept of the curve which includes the course of action concerned. In figure below for instance, ₹A is the certainty equivalent of any combination of risk and return in the indifference curve I, and ₹B is the certainty equivalent of any combination of curve I_2.



A risk-averse individual or company always wants to gauge the degree of risk and compute a return correspondingly as a compensation for the additional risk. Normally, a risk-free rate of return is available to any individual on a safe deposit of monies with the Government for a minimum return. Any reinvestment of such monies with a higher degree of risk would have to compensate for the incremental risk. This is known as a risk premium and is defined as the minimum differential that an investor requires to part with his stake. The certainty equivalent is the guaranteed compensation and it is the amount of expected 'pay-off less risk premium'.
As per the dictionary certainty equivalent has been defined as the amount of payoff, such as money or utility that an individual would have to receive to be indifferent between that pay off and a given gamble. For a risk-averse person, the certainty equivalent is less than the expected value of the gamble as the individual prefers to reduce uncertainty.
Applying the risk premium concept to the two types of securities, namely, equity and debt, the definitions are given below:

- In a stock market, risk premium is the difference between the expected returns from a stock minus the risk free rate.
- The return from equity is a combination of dividend yield and capital gains. A stock market always takes into consideration the two factors and reflects the risk premium to a corresponding prevalent risk free rate.
- In the case of debt, the risk premium is the difference between bond interest rate and risk-free rate and sometimes it is also referred to as credit spread.

This method has application not only in regard to the investments in securities but also in relation to risks involved in individual projects, and in comparison of different projects for ranking purposes. A certain probability coefficient is attached to each outcome and the net present value is computed for each outcome. The value of certainty equivalent coefficient is a summation of such coefficients with the respective weightage of each probability. The value of this certainty equivalent coefficient ranges between zero and one. A value of one indicates absolute certainty and as such the risk is neutral. Certainty equivalent coefficient varies with the different types of investments and is inversely proportional to risk. Higher the risk, the certainty coefficient is lower. For instance, certainty equivalent coefficient is higher for a replacement investment as against a new product investment.

(b)

(i) Computation of Selling Price and mark – up % on the Full cost per unit

Target sale Price per unit = Full cost + Target Profit = ₹100 + $\frac{₹9,00,000 \times 20\%}{7,500 \text{ units}}$	**₹124**
So, Mark – up price is	**24%**

(ii) Computation of Variable Cost per unit:

Above sale Price ₹124 = VC + 40% thereon, i.e. 140% on VC. So, var. Cost = $\frac{₹124}{140\%}$ = **₹89**

(iii) Calculate the company's Income if selling price are increased

Present Contribution at 7,500 units = (₹124 – ₹89) x 7,500 units =	₹2,62,500
Revised Contribution at 6,750 units = (₹115 – ₹89) x 6,750 units =	₹1,75,500
	₹87,000

Hence, Increase in Sale Price is not beneficial, due to reduction in Contribution by **₹87,000**

(iv) Calculate the company's Target Profit if selling price are reduced and Target cost if investment is ₹ 8,25,000

Target Profit for next year = $\frac{₹8,25,000 \times 20\%}{6,750 \text{ units}}$ = ₹24

(c) Components of Performance Management

(i) Performance Planning: Performance planning is the first crucial component of any performance management process which forms the basis of performance appraisals. Performance planning is jointly done by the appraise and also the reviewee in the beginning of a performance session. During this period, the employees decide upon the targets and the key performance areas which can be performed over a year within the performance budget, which is finalized after a mutual agreement between the reporting officer and the employee.

(ii) Performance Appraisal and Reviewing: The appraisals are normally performed twice in a year in an organization in the form of mid reviews and annual reviews which is held in the end of the financial year. In this process, the appraisee first offers the self filled up ratings in the self appraisal form and also describes his/her achievements over a period of time in quantifiable terms. After the self appraisal, the final ratings are provided by the appraiser for the quantifiable and measurable achievements of the employee being appraised. The entire process of review seeks an active participation of both the employee and the appraiser for analyzing the causes of loopholes in the performance and how it can be overcome. This has been discussed in the performance feedback section.

(iii) Feedback on the Performance followed by personal counseling and performance facilitation: Feedback and counseling is given a lot of importance in the performance management process. This is the stage in which the employee acquires awareness from the appraiser about the areas of improvements and also information on whether the employee is contributing the expected levels of performance or not. The employee receives an open and a very transparent feedback and along with this the training and development needs of the employee is also identified. The appraiser adopts all the possible steps to ensure that the employee meets the expected outcomes for an organization through effective personal counseling and guidance, mentoring and representing the employee in training programmers which develop the competencies and improve the overall productivity.

(iv) Rewarding good performance: This is a very vital component as it will determine the work motivation of an employee. During this stage, an employee is publicly recognized for good performance and is rewarded. This stage is very sensitive for an employee as this may have a direct influence on the self esteem and achievement orientation. Any contributions duly recognized by an organization helps an employee in coping up with the failures successfully and satisfies the need for affection.

(v) Performance Improvement Plans: In this stage, fresh set of goals are established for an employee and new deadline is provided for accomplishing those objectives. The employee is clearly communicated about the areas in which the employee is expected to improve and a stipulated deadline is also assigned within which the employee must show this improvement. This plan is jointly developed by the appraisee and the appraiser and is mutually approved.

3.(a) "Advertising is an almost universal tool. You can use it to gain your customers' interest, create desire for your product and service and then prompt them to buy."- Explain the above statement.

(b) A person wants to invest in one of three alternative investment plans; Stock, Bonds, Debentures. It is assumed that the person wished to invest all of the funds in a plan. The payoff matrix based on three potential economic conditions is given in the adjoining table:

Alternative Investment	Economic Conditions		
	High Growth (₹)	Normal Growth (₹)	Slow Growth (₹)
Stock	10,000	7,000	3,000
Bonds	8,000	6,000	1,000
Debentures	6,000	6,000	6,000

Determine the best investment plan using each of the following criteria:
(i) Laplace (ii) Maximin (iii) Maximax

(c) Describe the objectives of Performance Appraisal. [5+(3+1+1)+5]

Solution:

(a) The above statement asked about the Advertising Strategy. Advertising is an almost universal tool. You can use it to gain your customers' attention, attract customers' interest, create desire for your product and service and then prompt them to buy. Advertising is defined by the American Marketing Association as:- 'Any paid form of non-personal presentation and promotion of ideas, goods or services by an identifiable sponsor'. Some people believe direct mail is classed as an advertising activity.

There are many ways you can advertise your business, and the opportunities are growing. Advertisements can be placed in local and national press, in magazines, and on the internet. You can also create ads for poster sites, radio, cinema and TV. Advertising can be as simple as dropping leaflets through doors in your local town, or placing posters in shop windows. You can use direct mail to carry out a mail shot to potential customers, existing customers or lapsed customers.

With the more simple advertisements the printer or the person who has sold you the space should be able to help you construct them. For more ambitious campaigns you probably will need the help of an ad agency.

To create your strategy you need to have a clear understanding of:
- The message you want to send - this should be simple and consistent throughout your activities.
- The target audience you want to reach - at this stage you should know what products or services you want to send to which market segments.

You will then need to decide which type of activity will best reach your target audience, and carry your message. Cinema advertising is good for targeting young people; trade magazines are good for targeting specific industries, whilst leisure and lifestyle titles could be used to target particular age groups.
Businesses often find impact can be significantly improved by repeating campaigns or running the same campaign in different media e.g. posters and leaflet drops.

(b) Let AG: Accelerated Growth; NG Normal Growth; SG: Slow Growth

Payoff Table (IN ₹)

Act (Investment)	States of nature		
	S_1 : AG	S_2 : NG	S_3 : SG
1	2	3	4
A_1 : Stocks	10,000	7,000	3,000
A_2 : Bonds	8,000	6,000	1,000
A_3 : Debentures	6,000	6,000	6,000
Probability **[Note]**	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

Note: Under Laplace criterion of equal likelihoods.

(i) Laplace Criterion:

EMV (A_1 : Stocks) $= ₹\ \frac{1}{3}(10,000 + 7,000 + 3,000) = ₹\ \frac{20,000}{3} = ₹\ 6,666.67$

EMV (A_2 : Bonds) $= ₹\ \frac{1}{3}(8,000 + 6,000 + 1,000) = ₹\ \frac{15,000}{3} = ₹\ 5,000$

EMV (A_3 : Debentures) $= ₹\ \frac{1}{3}(6,000 + 6,000 + 6,000) = ₹\ \frac{18,000}{3} = ₹\ 6,000$

Max. (EMV) = ₹ 6,666.67, which corresponds to acts A_1. Hence, under Laplace criterion act A_1 : Stock, can be taken as the optimal act.

(ii) Maximin Criterion:

The maximum No. of the three columns is: 10,000; 7,000; 6,000.
Minimum Payoffs of the maximum = ₹ 6,000, which corresponds to act A_3.
Hence, under the Maximin Criterion, act A_3 : Debenture is the optimal choice.

(iii) Maximax Criterion:

The maximum No. of the three columns is : 10,000; 7,000; 6,000
Maximum Payoffs of the maximum = ₹ 10,000, which corresponds to act A_1.
Hence, according to the maximax criterion, the act A_1 : stock is the optimal choice.

(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.

4. (a) Two breakfast food manufacturing firms A and B are competing for an increased market share. To improve its market share, both the firms decide to lunch the following strategies:

A_1, B_1 = Give coupons
A_2, B_2 = Decrease price
A_3, B_3 = Maintain present strategy
A_4, B_4 = Increase advertising

The pay- off matrix, shown in the following table describes the increase in market share firm A and decrease in market share for firm B:

		Firm B			
		B_1	B_2	B_3	B_4
Firm A	A_1	35	35	25	5
	A_2	30	20	15	0
	A_3	40	50	0	10
	A_4	55	60	10	15

Determine the optimal strategies for each firm and value of the game.

(b) Limitation of Value Chain Analysis **[10+5]**

Solution:

(a) The first step is to search for a saddle point. There is no saddle point in the problem. The second step is to observe if the pay off matrix can be reduced in size by rules of dominance. Since each element of second row is less than the corresponding elements of second row, second row is dominated by first row because payoffs are less attractive for firm A. Thus after deleting the second row, the reduced matrix becomes:

		Firm B			
		B_1	B_2	B_3	B_4
Firm A	A_1	35	35	25	5
	A_3	40	50	0	10
	A_4	55	60	10	15

In the reduced matrix, each element of second column is more than the corresponding elements in first column therefore second column is dominated by first column because pay offs are less attractive (more loss) for B. Thus after deleting the second column, the reduced matrix becomes:

		Firm B		
		B_1	B_3	B_4
Firm A	A_1	35	25	5
	A_3	40	0	10
	A_4	55	10	15

Further compare rows 2 and 3 and then columns 1 and 2 and delete the less attractive row and column from A's and B's point of view. The reduced payoff matrix is as shown:

		Firm B		
		B_3	B_4	Prob
Firm A	A_1	25	5	q_1
	A_4	10	15	q_2
	Prob.	P_1	P_2	

The reduced 2 x 2 payoff matrix also does not have the saddle point. Thus, both the firms A and B use mixed strategies.

For Firm A: Let p_1 and p_2 be probabilities of selecting strategy A_1 (Give coupons) and A_4 Increase advertising) respectively. Then the expected gain to Firm A when Firm B uses its B1 and B_2 strategies is given by:

$25p_1 + 10p_2$ and $5p_1 + 15p_2$; $p_1 + p_2 = 1$

For Firm A, the probability p_1 and p_2 should be such that expected gains under both conditions are equal, i.e.,

$25p_1 + 10p_2 = 5p_1 + 15p_2 \Rightarrow 25p_1 + 10(1 - p_1) = 5p_1 + 15(1 - p_1)$

$\therefore$ $25p_1 = 5$ or $p_1 = \frac{1}{5}$ and $p_2 = 1 - p_1 = \frac{4}{5}$

For Firm B: Let q_1 and q_2 be probabilities of selecting strategies B_3 (maintain present strategy) and B_4 (Increase advertising respectively. Then the expected loss to firm B when firm A uses its A_1 and A_4 strategies should be:

$25q_1 + 5q_2 = 10q_1 + 15q_2$; $q_1 + q_2 = 1$

$\Rightarrow$ $25q_1 + 5(1 - q_1) = 10q_1 + 15(1 - q_1)$

$\therefore$ $25q_1 = 10$ or $q_1 = \frac{2}{5}$ and $q_2 = 1 - q_1 = \frac{3}{5}$

The expected gain and loss to firm A and firm B can be computed as shown below:
Value of the game = Expected gain to Firm A

Expected gain of firm A: (i) $25p_1 + 10p_2 = 25(1/5) + 10(4/5) = 13$

or

(ii) $5p_1 + 15p_2 = 5(1/5) + 15(4/5) = 13$.

Value of the game = Expected loss to Firm B

Expected loss of firm B(i) $25q_1 + 5q_2 = 25(2/5) + 5(3/5) = 13$

or

(ii) $10q_1 + 15q_2 = 10(2/5) + 15(3/5) = 13$

Hence optimal strategies for both the manufacturers are that firm A should adopt strategy A_1(Give coupons) and strategy A_4 while firm B should adopt strategy B_3 (maintain present strategy) and strategy B_4 (Increase advertising), and the value of the game is 13.

(b) Limitations of Value Chain Analysis

(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.

5.(a) The monopolist faces the demand curve P = 100 - $\frac{1}{2}$q and he produces the same product in 2 plants. The cost functions for these plants are $C_1 = 10q_1$, $C_2 = 0.25q_2^2$.

(i) How much will he allocate in both the markets?
(ii) How much are the profits?

(b) The long run demand and cost functions of a firm under monopolistic competition is are given as P = 7 – q and TC = $q^3 – 11q^2 + 32q$

(i) What is the equilibrium price and output for the firm?
(ii) What is the economic profit of the firm?

(c) Discuss the objectivity of the Divisional Profitability.

(d) Describe about the Nash Equilibrium. [(3+2) +(2+1)+2+5]

Solution:

(a) (i) This problem relates to the multiple plant monopolist where at equilibrium MR = MC_1-MC_2. [Where MR = Marginal Revenue, MC = Marginal Cost]

As P = 100 - $\frac{1}{2}$q, MR = 100 – q = 100 – ($q_1 + q_2$) [as $q = q_1 + q_2$]

Now $MC_1 = \frac{d}{dq_1}(TC_1)$ = 10 and $MC_2 = \frac{d}{dq_2}(TC_2) = \frac{1}{2}q_2$.

$\therefore MR = MC_1 \Rightarrow 100 – q_1 - q_2 = 10 \Rightarrow q_1 + q_2 = 90$ .....(1)

$MR = MC_2 \Rightarrow 100 - q_1 - q_2 = \frac{1}{2}q_2 \Rightarrow q_1 + 1.5q_2 = 100$ ..... (2)

Solving equation (1) & (2) we get, $q_1 = 70$ and $q_2 = 20$ which is the optimal allocation.

(ii) We observe $P = 100 - \frac{1}{2}q$

$\Rightarrow P = 100 - \frac{1}{2}(q_1 + q_2) = 55.$

$\therefore$ Profit (π) $= TR - TC_1 - TC_2 = Pq - 10q_1 - 0.25q_2$

$= 55 \times 90 - 10 \times 70 - 0.25\ (20)^2$ [as $q = q_1 + q_2 = 90$]

$= 4150.$

(b) (i) Under monopolistic competition, the firm will be in long run equilibrium if price equals average cost.

Now $AC = \frac{TC}{q} = q^2 - 11q + 32$

$\therefore P = AC \Rightarrow 7 - q = q^2 - 11q + 32$

$\Rightarrow q^2 - 10q + 25 = 0 \Rightarrow q = 5.$

Putting the value of q in the demand curve we get $p = 7 - 5 = 2$.

(ii) In the long run, as P = AC, the firm under monopolistic competition only earns normal profits.

(c) Objective of Divisional Profitability:

The objective is to develop performance measurement systems for divisions that are significant investment centers in large organizations. Such systems should:

(i) Provide information for economic decisions,
(ii) Facilitate the control of division operations,
(iii) Motivate managers to achieve high levels of divisional performance so as to further the objectives of the entire organization, and
(iv) Serve as a basis for evaluating the performance of divisional managers.

(d) 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

		Firm B	
		Advertise	**Don't Advertise**
Firm A	Advertise	20 ;10	30; 0
	Don't Advertise	12 ; 16	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 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.

6.(a) The following information is available of a concern; Calculate E.V.A. :

12% Debt Capital	**₹ 2,000 Crores**
Equity Capital	**₹ 500 Crores**
Reserve and Surplus	**₹ 7,500 Crores**
Risk – Free rate	**9%**
Beta Factor	**1.05**
Market Rate of Return	**19%**
Equity (market) risk premium	**10%**
Net operating profit after Tax	**₹ 2,100 Crores**
Tax Rate (say)	**30%**

(b) "Methods of pricing policy can be classified into 5 broad categories. One of them on that category is pricing Policies based on Market Conditions. There are 5 different types of market in Economics and certainly there are different types of pricing policies - Monopoly and Oligopoly is not different." – Explain the above statement.

(c) Mention the Advantages and Disadvantages of EPS. [5+5+5]

Solution:
(a)

Calculation of Net Operating Profit after Tax

Particulars	**₹ in Crores**
Net Operating Profit after Tax	2,100
Add: Interest % Net profit [(2,000 x 12%) x (1 – 0.30)	168
Net Operating Profit After Tax	2,268

Calculation of Operating Capital

Particulars	**₹ in Crores**
12% Debts	2,000
Equity Share Capital	500
Reserve and Surplus	7,500
	10,000

Calculation of Return on Capital Employed

Return on Capital Employed = Net Operating Profit after Tax / Operating Capital
= (2,268 / 10,000) x 100 = 22.68%

Calculation of Weighted Average Capital Employed

Cost of Debt (k_d)	$\frac{12\%(1-0.30)}{10,000} \times 2,000 =$	1.68%
Cost of Equity(K_e)	$\frac{[9\% + 1.05\,(19\% - 9\%)]}{10,000} \times 8,000 =$	15.60%
Weighted Average Capital Employed (WACC)		17.28%

Calculation of Economic Value Added

(22.68% - 17.28%) x10,000 = ₹ 540

(b) The method pricing policies can be classified into 5 broad categories. These are

(i) Cost Oriented Pricing
(ii) Competition Oriented Pricing
(iii) Demand Oriented Pricing
(iv) Pricing Based on Other Economic Considerations
(v) Pricing Policies based on Market Conditions

Pricing based on market conditions can be classified into 6 categories. These are

(i) Perfect Competition
(ii) Monopoly
(iii)Temporary Monopoly
(iv) Duopoly
(v)Oligopoly
(vi) Monopolistic Competition

Monopoly:

Monopolies are almost always nationalized enterprises for which criterion for maximization of profit is not justifiable. In reality, a firm enjoys monopoly position only because it has succeeded in eliminating or absorbing its competitors. It is therefore probable that, initially, it was better organized and more efficient.

The technical advantages which are benefit large firms in certain branches of industry can also neutralize, at least partly, the harmful effects of a monopoly. Finally, "any defacto monopoly must be prepared to defend itself, on the one hand, against the emergence of substitute competitors and, on the other, against the competition of substitute products, which imposes a limitation on its profit realization".

In general, to prevent the entry of new firms, a monopolist must set entry-preventing prices, i.e., it should hold prices at a level which will tend to discourage new firms from entering that particular branch of industry. This presupposes an implicit estimation of production costs of possible competitors, and of the profits which will be required to attract them.

On the contrary, in order to fight the competition of substitute products, a monopoly must establish its price policy on the basis of a demand curve which will actually take those products into account. When the uses of goods produced by a monopoly are many, the degree of monopoly can vary enormously from one use to another. In case of coal, for instance, sales range from the industrial market- in which the fuel oil competition is extremely active – to blast furnace coke market – in which coal enjoys a technical monopoly.

So profit maximization demands that management collect more detailed econometric data in the environment of monopoly, than in that of perfect competition.

Oligopoly:

In oligopolistic situations, entrepreneurs attempt to avoid price wars which are ruinous for the industry. Being aware of the fact that their rivals can do the same, they refrain from seeking to increase their share of the market through price cuts. As a result, oligopoly can attain certain stability characterized by: a) the 'price leadership' of a firm, b) the reduction of hidden prices, and c) competition in fields other than that of price (like competition in fields other than that of price (like promotion, packaging, etc.). We have already discussed the nature of oligopoly pricing with the help of models.

Now, about the lowering of hidden prices. It can assume various forms. It is contingent upon the customer, upon the size of the order, upon the geographical area and the existence of inferior brands. This policy has the advantage that it precedes adjustments of official prices and in this way contributes to the stability of oligopolists.

Finally, non-price competition is a substitute for price competition. It is much less dangerous because its effects are felt in the long run. So the possibilities of reactions from competition are more limited.

(c) Advantages and Disadvantages of EPS

Advantages of EPS:

(i) Easily Understood by shareholders
(ii) Calculation is precisely defined in IFRS 22 / IAS 33 avoiding ambiguity
(iii) Often used as a performance measure between companies, sectors, periods within the same organization.

Disadvantages of EPS

(i) Research shows a poor correlation between EPS growth and shareholder value
(ii) Accounting treatment may cause ratios to be distorted.

Section –B
[Answer any one]

7.(a) Discuss about the Hopfield Artificial Neural Network.
(b) Explain about the Data Quality and System Development Life Cycle.
(c) Describe about the Data Quality practices and Core Data Services
(d)"Supply Chain activity can be grouped into Strategic, Tactical and Operational Activity". – Describe about the Operational Activity. [5+5+5+5]

Solution:

(a) Hopfield Artificial Neural Network

A Hopfield artificial neural network is a type of recurrent artificial neural network that is used to store one or more stable target vectors. These stable vectors can be viewed as memories that the network recalls when provided with similar vectors that act as a cue to the network memory. These binary units only take two different values for their states that are determined by whether or not the units' input exceeds their threshold. Binary units can take either values of 1 or -1, or values of 1 or 0. Consequently there are two possible definitions for binary unit activation a_i (equation (6) and (7)):

$$a_i = \begin{cases} -1 & \text{if } \sum_i w_{ij} s_j > \theta_i, \\ 1 & \text{otherwise.} \end{cases} \qquad (6)$$

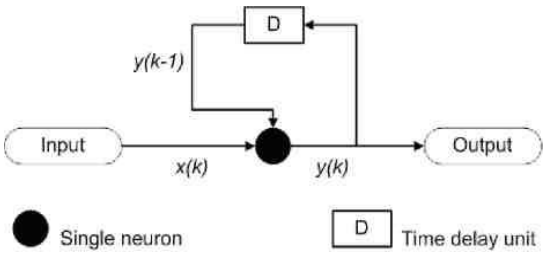
$$a_i = \begin{cases} -1 & \text{if } \sum_i w_{ij} s_j > \theta_i, \\ 1 & \text{otherwise.} \end{cases} \qquad (7)$$

Where:

- w_{ij} is the strength of the connection weight from unit j to unit I,
- s_j is the state of unit j,
- θ_i is the threshold of unit i.

While talking about connections w_{ij} we need to mention that there are typical two restrictions: no unit has a connection with itself (w_{ij}) and that connections are symmetric $w_{ij} = w_{ji}$.

The requirement that weights must be symmetric is typically used, as it will guarantee that the energy function decreases monotonically while following the activation rules. If non-symmetric weights are used the network may exhibit some periodic or chaotic behaviour. Training a Hopfield artificial neural network involves lowering the energy of states that the artificial neural network should remember.



Simple "one neuron" Hopfield artificial neural network.

(b) Data Quality and the System Development Life Cycle

Data quality becomes an afterthought, with staff members reacting to discovered errors instead of proactively rooting out the causes of data flaws. Because data quality cannot just be an afterthought, once there are processes for identifying the business impact of data quality as well as the capability to define rules for inspection and monitoring, the next step is to integrate that inspection directly into the business applications. In essence, the next practice is to establish the means by which data quality management is designed and engineered across the enterprise application architecture.

However, because traditional approaches to system requirements analysis and design have concentrated on functional requirements for transactional or operational applications, the information needs of downstream business processes are ignored until long after the applications are put into production. Instead, engineering data quality management into the enterprise requires reformulating the view to requirements analysis, with a new focus on horizontal and downstream information requirements instead of solely addressing immediate functional needs.

To continue our example, with the understanding that invalid addresses lead to increased shipping costs, there are two approaches for remediation. The reactive approach is to subject all addresses to a data cleansing and enhancement process prior to generating a shipping label as a way of ensuring the best addresses. While this may result in reducing some of the increased costs, there may be records that are not correctable, or are not properly corrected. Yet if the data validity rules are known, they can be integrated directly into the application when the location data is created. In other words, validating and correcting the address when it is entered by the customer prevents invalid addresses from being introduced into the environment altogether.

(c) Instituting a data quality management program means more than just purchasing data cleansing tools or starting a data governance board, and establishing a good data management program takes more than just documenting a collection of processes. An iterative cycle of assessment, planning, execution, and performance management for data quality requires repeatable processes that join people with the right sets of skills with the most appropriate tools, and the staff members who are to take part in the program need to have the right kinds of tools at their disposal in order to transition from theory to actual practice. This suggests a combination of the right technology and the proper training in the use of technology, employing data services such as:

- Data integration, to ensure suitable means for extracting and transforming data between different kinds of systems.
- Data profiling, used for data quality assessment, data Validation, and inspection and monitoring.
- Parsing and standardization and identity resolution, which is used for data validation, identification of data errors, normalization, and data correction.
- Record linkage and merging, also used to identify data errors and for resolving variance and subsequent data correction.

These are a subset of the core data services for standardizing sound data management practices. Standardizing the way data quality is deployed and using the right kinds of tools will ensure predictable information reliability and value. When developing or reengineering the enterprise architecture, implementing the fundamental data quality practices will ultimately reduce the complexity of the data management framework, thereby reducing effort, lowering risk, and leading to a high degree of trust in enterprise information.

(d) Operational Activity

(i) Daily production and distribution planning, including all nodes in the supply chain.
(ii) Production scheduling for each manufacturing facility in the supply chain (minute by minute).
(iii) Demand planning and forecasting, coordinating the demand forecast of all customers and sharing the forecast with all suppliers.
(iv) Sourcing planning, including current inventory and forecast demand, in collaboration with all suppliers.
(v) Inbound operations, including transportation from suppliers and receiving inventory.
(vi) Production operations, including the consumption of materials and flow of finished goods.
(vii) Outbound operations, including all fulfillment activities, warehousing and transportation to customers.
(viii) Order promising, accounting for all constraints in the supply chain, including all suppliers, manufacturing facilities, distribution centers, and other customers.
(ix) From production level to supply level accounting all transit damage cases & arrange to settlement at customer level by maintaining company loss through insurance company.
(x) Managing non-moving, short-dated inventory and avoiding more products to go short dated.

8. (a) Define the following term in the context of Supply Chain Management
(i) Collaboration , (ii) Scheduling ,(iii) Currency Conversion, (iv) Facility Location , (v)Supplier Integration in New Product Development.

(b) Explain the potential impact Computers and MIS on different levels of management.
[(2 x 5) +10]

Solution:

(a) (i) Collaboration

Collaboration is defined as the process by which partners adopt a high level of purposeful co-operation to maintain a trading relationship over time. The relationship is bilateral; both parties have the power to shape its nature and future direction over time. Mutual commitment to the future and a balanced power relationship are essential to the process. While collaborative relationships are not devoid of conflict, they include mechanisms for managing conflict built into the relationship.

(ii) Scheduling

Scheduling involves taking decisions regarding the allocation of available capacity or resources (equipment, labor and space) to jobs, activities, tasks or customers over time. Scheduling thus results in a time-phased plan, or schedule of activities. The schedule indicates what is to be done, when, by whom and with what equipment. Scheduling seeks to achieve several conflicting objectives: high efficiency, low inventories and good customer service. Scheduling can be classified by the type of process: line, batch and project.

(iii) Currency Conversions

Issues with currency conversion add complexity to the global sourcing process. The absence of fixed exchange rates can be a problem. Fluctuations in exchange rates can have a significant impact on the costs and profits made by the buyer and the seller. U.S. purchasing departments are particularly at a disadvantage. Their unfamiliarity in dealing with foreign currencies leads to higher costs in two ways: 1) the buyers attempt to put all currency risk on the supplier which causes the supplier to include charges for hedging; 2) In an attempt to avoid dealing with foreign currency, buyers' use U.S. subsidiaries who accept U.S. dollars but charge higher markups. The unfamiliarity of vendors and suppliers with currency conversion issues can cause supply chain slowdowns and force businesses to revert to using paper invoices, bound ledgers and filing cabinets leading to delays and increased costs in the supply chain.

(iv) Facility Location

Location decisions are a basic determinant of profitability in international logistics. Decisions on where to manufacture, to assemble, to store, to transship and to consolidate can make the difference between profit and loss. Because of international differences in basic factor costs and because of exchange rate movements, location decisions are very important. Also, these decisions involve substantial involvement in fixed assets in the form of facilities and equipment. Location decisions, therefore, can have a continuing impact over time on the company's financial and competitive position. As movement towards global manufacturing increases, organizations should consider location decisions through total cost analysis which includes activity related costs such as manufacturing, transportation and handling as well as inventory holding costs, tariffs, and taxes.

(v) Supplier Integration in New Product Development

Supplier integration into new product/process/service development suggests that suppliers are providing information and directly participating in decision making for purchases used in the new product/process/service. This integration can occur during idea generation, preliminary business/ technical assessment, product/process/service concept development, product/process/service design and development and prototype build, test or production ramp up.

(b) The potential impact of computers on top level management may be quite significant. An important factor which may account for this change is the fast development in the area of computer science. It is believed that in future computers would be able to

provide simulation models to assist top management in planning their work activities. For example, with the help of a computer it may be possible in future to develop a financial model by using simulation technique, which will facilitate executives to test the impact of ideas and strategies formulated on future profitability and in determining the needs for funds and physical resources. By carrying sensitivity analysis with the support of computers, it may be possible to study and measure the effect of variation of individual factors to determine final results. Also, the availability of a new class of experts will facilitate effective communication with computers. Such experts may also play a useful role in the development and processing of models. In brief, potential impact of computers would be more in the area of planning and decision making.

Futurists believe that top management will realize the significance of techniques like simulation, sensitivity analysis and management science. The application of these techniques to business problems with the help of computers would generate accurate, reliable, timely and comprehensive information to top management. Such information will be quite useful for the purpose of managerial planning and decision making. Computerized MIS will also influence in the development, evaluation and implementation of a solution to a problem under decision making process.

Potential impact of Computers and MIS on middle management level will also be significant. It will bring a marked change in the process of their decision making. At this level, most of the decisions will be programmed and thus will be made by the computer, thereby drastically reducing the requirement of middle level managers. For example, in the case of inventory control system; computer will carry records of all items in respect of their purchase, issue and balance. The reorder level, reorder quantity etc. for each item of material will also be stored in computer after its predetermination. Under such a system, as soon as the consumption level of a particular item of material will touch reorder level, computer will inform for its purchase immediately. The futurists also foresee the computer and the erosion of middle management as the vehicles for a major shift to recentralization. The new information technology will enable management to view an operation as a single entity whose effectiveness can only be optimized by making decisions that take into account the entity and not the individual parts.

The impact of Computers and MIS today at supervisory management level is maximum. At this level managers are responsible for routine, day-to-day decisions and activities of the organization which do not require much judgment and discretion. In a way, supervisory manager's job is directed more towards control functions, which are highly receptive to computerization. For control, such managers are provided with accurate, timely, comprehensive and suitable reports. A higher percentage of information requirements of executives is met out at this level.

Potential impact of Computers and MIS on supervisory level will completely revolutionize the working at this level. Most of the controls in future will be operated with the help of computers. Even the need of supervisory managers for controlling the operations will be substantially reduced. Most of the operations/activities now performed manually will be either fully or partially automated.

Section – C
[Question no. 9 is compulsory and any one of the rest]

9.(a) CASE STUDY: AIG

Corporate failures do not come much bigger than the once-mighty AIG. Envied in the insurance world for its consistently big increases in premium income and profit, it was one of only two major players to enjoy a coveted AAA rating.

AIG grew with breathtaking speed to become the world's largest insurance group, reaching a peak market capitalization of $213bn in 2001.

At the end of the third quarter 2007, AIG's consolidated assets were $1.072trn and shareholders' equity was $104.07bn; in early 2008, it was the 18th largest public company in the world. Less than a year later it had notched up annual losses of nearly $100bn and was rescued by the US government with a lending facility of $182.5bn, meaning that it had effectively been nationalized.

Among the many people to lose their jobs and reputations were the legendary chairman Hank Greenberg and Joseph Cassano, who headed up its financial products subsidiary AIGFP.

AIG's weaknesses stemmed in large measure from risk blindness and the over-riding need to grow the company and its profits by 15 per cent p.a. in an often extremely competitive environment.

It started to go wrong when the New York attorney-general Eliot Spitzer accused the company of bid-rigging with insurance brokers. Nothing was ever proven against AIG, but another more serious allegation was substantiated; that it had produced misleading accounts and used spurious reinsurance policies to inflate profits.

One executive went to jail, the company paid out $1.6bn to settle civil charges and Greenberg paid $15m to settle charges from the Securities and Exchange Commission (SEC), the US regulator, for having altered AIG's records to boost results between 2000 and 2005.

The resulting fall in share price and, above all, reduced security ratings were a body blow to the company's financial products operation in London.

When the AAA rating disappeared it became more expensive for the company to post cash collateral for its derivative products, destroying profit. And worse was to follow. The really devastating news came in the shape of the sub-prime crisis, which destroyed AIG's credit default swap portfolio.

An apparently risk-free source of wealth turned almost overnight into a liability of unimaginable proportions. This is a classic example of risk blindness caused by a desire to pursue profit at almost any cost.

[Full abbreviation bn = billion, trn = trillion]

Required:

(a) Discuss the any four causes of Corporate Failure.
(b) Describe the step taken for preventing the Corporate Failure.
(c) Discuss the result for AIG after the corporate failure happen? [8+4+3]

Solution:

(a) Causes of corporate failure:

There are many causes of corporate failure. These are (i) Technological ;(ii) Working capital; (iii) Economic Distress ; (iv) Mismanagement ; (v) Over expansion and diversification ; (vi) Fraud by Management; (vii) Poorly Structured board ; (viii) Financial Distress.

(i) Technological:

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.

(ii) 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.

(iii) 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 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.

(iv) 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.

(b) It is a fact that some companies perform well and that some underperform and some fails. In many, if not most cases, these companies are led by executives that are quite experienced. Below are some recommendations that can help to reduce the risk of failures of organizations:

(i) Appointment of non-executive directors

The non-executive directors will bring their special expertise and knowledge on strategies, innovative ideas and business planning of the organization. They will monitor the work of

the executive management and will help to resolve situations where conflict of interest arises. Overall, the non-executive directors will act as a Cross Check.

(ii) Audit committees

Very often, there is occurrence of fraud in management and financial reporting. The presence of the audit committees will help to resolve this problem. Audit committees have the potential to reduce the occurrence of fraud by creating an environment where there is both discipline and control.

(iii) Development of environment learning mechanism

Some organizations fail because they lose touch with their environment. Therefore, to counter this problem, there is a need to develop the environmental learning mechanism. Through it, new information can be brought on continuous basis. This is mainly done by carrying customer-feedback surveys. In this way, the organization can realign itself with the new needs and challenges.

(iv) Focus on research and development

Organizations can generate new knowledge by investing and focusing more on research and development. Thus, there will be more ideas how to make the products much better than that of their competitors.

It can be deducted that a director has a big responsibility that he has to assume there commendations mentioned above can help directors to reduce corporate failure, provided that the directors abide. Proper planning also is critical to the success of a business.

(c) AIG's weaknesses stemmed in large measure from risk blindness and the over-riding need to grow the company and its profits by 15 per cent p.a. in an often extremely competitive environment.

It started to go wrong when the New York attorney-general Eliot Spitzer accused the company of bid-rigging with insurance brokers. Nothing was ever proven against AIG, but another more serious allegation was substantiated; that it had produced misleading accounts and used spurious reinsurance policies to inflate profits.

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When the AAA rating disappeared it became more expensive for the company to post cash collateral for its derivative products, destroying profit. And worse was to follow. The really devastating news came in the shape of the sub-prime crisis, which destroyed AIG's credit default swap portfolio.

10. (a) Describe the Artificially Intelligent Expert system (AIES) Model in the context of Corporate Bankruptcy Prediction Models. [5]

or

(b) Discuss about the Unique Competitor Risk. [5]

Solution:

(a) Artificially Intelligent Expert System (AIES) Models

Initially considered numeric machines, it was later realized that computers can also process symbols to exhibit the intelligent behaviour of humans' cognitive activities like problem solving. This realization triggered a search for programs that could emulate human cognitive skills in an acceptable way. Hence, a body of knowledge dealing with designing and implementation of such programs started to emerge sine 1950s. Since this 'intelligence' of computers is contained in machines, and not in human brains, their exhibited behaviour is known as 'Artificial Intelligence' (AI).

Humans use their intelligence to solve problems by applying reasoning based on the knowledge possessed in their brains. Hence, knowledge plays the pivotal role in human intelligence. AI, in order to be as competitive as human intelligence or at least comparable, should benefit from similar knowledge in application of its reasoning to the problem posed. Expert systems (ES) were developed to serve this purpose for AI.

An ES initiates from the process of transferring knowledge, which is considered to be 'the bottleneck problem' of ES. Two automation processes have dominated research in the field of knowledge acquisition: 'machine teaching' and 'machine learning', of which latter has assumed more significance than former.

'Learning' may be considered as a system capable of improving its performance on a problem as a function of previous experience. A machine may learn under strict or no supervision, yet moderate supervision is observed more in practice.

Subsequent research resulted into a variety of supervised machine learning methods, which proved quite successful in solving problems for different domains, including bankruptcy prediction. Following discussion provides a basic understanding of most commonly used techniques and their application in bankruptcy prediction.

OR

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.