

## PAPER – 5: STRATEGIC COST MANAGEMENT AND PERFORMANCE EVALUATION

### \*\*\* CASE STUDY\*\*\*

#### Competitive Advantage



1. BA is the second largest airline in the Country “D”. Aviation industry in the Country “D” is growing fast. In 2011, 45 million people travelled to/ from/ or within the Country “D”. By 2020 that doubled to 100 million. This number is expected to treble to 300 million by 2030. Also, by 2025, Country “D” is expected to be the third largest air transport market in the world, behind the US and China.

Government is trying to meet the significant growth potential of aviation Industry. However, it will create challenges also for the airline industry and its industry partners.

Government also wants to ensure that broader business and policy environment should not place hurdles which inhibit growth and reduce the level of benefits that aviation can deliver to the nation. The industry, its supply chain partners, and the government and policy makers have a clear mandate to work in collaboration towards the common goal of ensuring that aviation’s economic and social benefits are fulfilled.

Despite of operating in World’s fastest growing market BA struggles for passengers. Also, BA is facing following problems:

- Aviation Turbine Fuel (ATF) prices constitute about 40% of operational costs in Country “D” and are taxed higher here than anywhere else in the World. The Central government charges 14% duty on ATF. While the state government pile on their own local tax that can go as high as 29%.
- The currency depreciation is hitting Airline harder. About 25% to 30% of their costs, excluding ATF, are dollar denominated, from aircraft lease rents, maintenance costs to ground handling and parking charges abroad etc.
- With the entry of Low Budget Carriers, full-service carrier like BA that have higher overhead costs have been forced to offer discount to passengers looking for great bargain.
- Continuous improvements in tourism infrastructure, tourism policies, human resources development, airport infrastructure density are among the areas that could further enhance Country “D”’s competitiveness. Ease of doing business over the last five years has risen.

- The intense competition among domestic airlines carriers, the need to capture a slice of the ever-expanding market and passenger price sensitivity makes the airlines difficult to raise ticket prices.

Together, these factors have now plunged Country “D”’s aviation industry to its most precarious phase in the last three years or so.

BA is facing huge competition as a “year of sharp U-turns” for “D”’s aviation industry from record profit in Financial Year 2019-20 to mega losses, resulting in direct need of recapitalisation. BA has been appealing to the government for a decade for a reduction in taxes on fuel, but all in vain. ATF is 35-40% more expensive in Country “D” than in the rest of the world, because of relatively high tax rates.

**Required**

ADVISE the strategy that BA should follow in order to gain superior performance and competitive advantage over its competitors.

**Ethical and Nonfinancial Considerations**

2. **Moon Limited** is in the business of manufacturing copper rods. The copper rods are sold to various cable wires manufacturers across the country. The growth in economy, especially the power sector, has led to a sharp increase in demand of cable wires and copper rods. The company is considering an opportunity to set up its own copper wire manufacturing plant and gain a share of cable wire’s market. A detailed study was carried out to understand the market of cable wires, market growth, competitive landscape, financial feasibility etc. The Chairman has asked the Director of Finance to review the financial feasibility study and highlight concerns, if any.

The following paragraphs contain summarised information of financial study carried out:

- The project of setting up a new cable wire manufacturing plant is expected to yield a Net Present Value of ₹200 crores considering a project life of 20 years. The initial cost of setting up the plant is ₹500 crores which is readily available with the company. The project would yield an IRR of 17.5% which is higher than the IRR of other plants under operation.
- The plant would employ about 70% of labour on contractual basis. These labours would mostly comprise immigrants from neighbouring countries. The feasibility study has assumed that the immigrants labours would be paid 15% less wage than that paid to other workers. However, the wage paid to immigrants would still be higher than the minimum wage requirements. The contribution to retirement funds is also not considered in the project evaluation. The company feels that immigrant workers would not stay beyond a period of a year and thus there is no requirement to contribute to retirement funds.
- The existing plants of the company do not have free space available and hence the company will need to buy land adjacent to its existing plant. A part of the proposed

land to be acquired falls under the forest reserve area where no commercial activity is allowed. The company officials are in liaison with the government officials to get the land parcel approved. A certain amount of the value of land would be paid to certain government officials through a consultant. This cost is not a part of the project evaluation report.

- The new plant would also produce certain chemically harmful waste which would be disposed off into a nearby river after treatment. The company however does not have any technology to treat the waste fully. A new treatment plant would cost about ₹100 crores.

The finance director has forwarded the entire report to you for comments.

**Required**

- (i) LIST Various non-financial and ethical consideration in decision making.
- (ii) EVALUATE the impact of the various issues in the financial study and give your RECOMMENDATION.

**\*\*\*QUESTIONS\*\*\***

**Total Quality Management**

3. WEI Ltd has a dedicated set of production facilities for an auto component – coded X pertaining to the gearbox of its leading car – GX2. With a vendor park set up in the vicinity of the parent manufacturing plant, the Just – in – Time system ensures that no stock of materials; work in progress or finished goods are held.

At the beginning of the year 2021, the planned information relating to the production of component X through the dedicated facilities is as follows:

- (i) Each unit of component X has input materials; 5 units of materials A at ₹20 per unit and 4 units of materials B at ₹10 per unit.
- (ii) Variable cost per unit of component X (excluding materials) is ₹25 per unit worked on.
- (iii) Fixed costs of the dedicated facilities for the period: ₹2,50,000.
- (iv) It is anticipated that 7.5% of the units of X worked on in the process will be defective and will be scrapped.

It is estimated that customers will require replacement (free of charge) of faulty units of component X at the rate of 1 % of the quantity invoiced to them in fulfillment of orders.

WEI Ltd. is pursuing a TQM philosophy. Consequently all losses will be treated as abnormal in recognition of a zero-defect policy and will be valued at variable cost of production.

Actual statistics for each of the years 2021-2023 for component X are shown given below–

	2021	2022	2023
Worked on in the process (units)	6,005	7,500	7,000
Invoiced to customers (units)	5,500	6,500	6,500
<b>Total costs:</b>			
Materials A and B (₹)	8,40,700	10,50,000	9,80,000
Variable costs of production (₹) (Excluding materials costs)	1,50,125	1,87,500	1,75,000
Fixed costs (₹)	2,87,500	2,62,000	2,90,000

No changes have occurred from the planned price levels from materials, variable overhead or fixed overhead costs.

Actual free replacements of component X to customers were 250 units and 40 units in years 2022 and 2013 respectively.

WEI Ltd. authorized additional expenditure during the year 2022 and 2023 as follows:

2022: Equipment accuracy checks of ₹ 10,000 and staff training of ₹ 5,000.

2023: Equipment accuracy checks of ₹ 10,000 plus ₹ 15,000 of inspection costs; also staff training costs of ₹ 5,000 plus ₹ 3,000 on extra planned maintenance of equipment.

**Required**

- CHECK whether in the year 2021 actual results were achieved at the planned level in respect of (i) quantities and losses and (ii) units cost levels for material and variable costs.
- Use figures arrived (a) in order to CALCULATE the value of the internal and external failure costs for year 2021.
- PREPARE a statement for the years 2022 and 2023 which provide reconciliation between the number of components invoiced to customers with those worked on in the production process. The statement should show the change from the planned quantity of process losses and changes from the planned quantity of replacement of faulty components in customer hands.
- PREPARE a statement for the years 2022 and 2023 which shows actual internal failure costs, external failure costs, appraisal costs and prevention costs.

- (e) Give an ANALYSIS, which explains the meaning and inter – relationship of figures given above in table and in the analysis in (a), (b), (c) & (d).

[Note: Ignore fractions in case of units]

### Supply Chain Management

4. An apparel manufacturing company has a factory in Ahmedabad, making denim clothing for customers of all ages. It sells its clothing from its factory outlet store located within the city. Until 6 months back, the company had a business model wherein the products manufactured at its factory would be sent to its factory outlet store. Customers would visit the store and choose apparel suiting their tastes. Production was based on prediction of customer demand. This “made to stock” model has been placed for many years.

Few months back, the store manager noticed many customers exiting without making any purchases. Tracking this and after obtaining feedback from customers over sometime, it was found that many products were unacceptable to the customers’ tastes - either the shade or design of denim was not what they wanted or that the apparel was not of the correct fit for them. The management then decided to provide customers a choice of either choosing from their standard apparel range that has already been made (“made to stock” model) or to offer them a “made to order” option.

The company now displays its range of denim material at the factory outlet. Customers can go through the samples and choose the material of their choice. Company certified tailors would then take measurements based on the customers’ preferences. A detailed order customized to the customers’ needs would then be drawn up. The factory has set up a separate tailoring division that would stitch the apparel specifically for these “made to order” sales. For this new machines and production line resources have been put in place.

Customized products are manufactured and be made available to the customer within 3 working days’ time from the date of placing the order. The customer comes to the store and picks up the apparel ordered. For delays beyond this timeline, the customer gets to pay 5% less on the order value. This is done to attract and maintain customers, who would otherwise choose to purchase apparel offered by rival competitors. Therefore, speed of delivery of the customized product is critical for the company. This is the main selling point for the company to operate the “made to order” business model.

If further modifications are needed due to errors on part of the company (quality / finishing issues), the apparel would need to be modified / re-stitched once again. The company will bear the cost of modification or replacement of garment.

This new “made-to-order” has been in place for the past 6 months. At the stage of project proposal, the management found it a lucrative option for the company because:

- (i) Customers are willing to pay a higher price to have customized clothing as compared to the standard fitting.
- (ii) It would attract more customers to the store

- (iii) If the model works well, the dependence on the “made to stock” model can reduce. Savings in inventory stock, obsolescence and warehousing costs will benefit the company's bottom-line.

Customers have been very enthusiastic in availing this customization facility offered by the company. Sales have increased manifold in the last few months. Therefore, the management is interested to understand the metrics related to their “made to order” business mode to assess its success and risks. Some of the non-financial metrics are:

Metric	Month					
	1	2	3	4	5	6
Orders needing modification on account of errors in order taking or manufacturing process (% of sales orders made under "made to order" model)	15%	12%	10%	8%	5%	4%
Orders delivered beyond the 3 working days timeline (% of sales orders made under "made to order" model)	5%	4%	3%	6%	7%	5%
Production downtime (hours)	44	88	22	141	132	123
Labor idle time due to unavailability of material (hours)	25	22	17	13	24	22
Ratio of "made to order" to total sales from the factory outlet (Ratio of sales value)	16%	22%	25%	32%	34%	38%
Repeat orders by customers availing this facility (% of customers giving repeat order / total customers availing "made to order" facility)	4%	21%	33%	54%	60%	63%

**Required**

ANALYZE the non-financial measures of quality of the division over the six-month period. Focus on the production performance, delivery cycle performance and customer satisfaction.

**Value Chain Analysis**

5. X is a leading toy manufacturing firm. Having commenced its commercial operations in the year 1990, the firm has a state-of-the-art manufacturing facility in India. It sells toys through retail outlets and the firm's website. X has been pioneering the concepts of quality and safety in toys and has been instrumental in raising the quality standards of toys in the Indian Market.

X's mission is to influence parents to spend on toys that enable every child to grow with quality toys that contributes to his/ her wholesome development.

X procures the materials from a number of different suppliers. All of the purchased material are dispatched to its warehouse located at its factory and are held there unless they are moved to production. After production is completed, finished toys are moved to X's retail outlets by its own vehicles. Each week, the vehicles follow the same time

schedule regardless of the weight they are carrying. Finished toys that are sold through the X's website are dispatched to its distribution centre.

X has recently got the contract to manufacture a new toy that is 'Ty-Z', a mini cartoon based on a character from a famous international animated film. X has not been given any target price, hence is free to set the selling price of 'Ty-Z', however, must pay a royalty of 10% of the selling price to the film director. X is also planning to sell 'Ty-Z' through its retail outlets.

X has decided to follow a target costing technique for 'Ty-Z'. Marketing manager has determined the selling price to be around ₹1,750 per 'Ty-Z'. X needs a margin of 26% of the selling price of 'Ty-Z'.

For the estimated costs per 'Ty-Z' refer Annexure.

**Required**

DISCUSS three primary activities of value chain through which X can minimise gap if any.

**Annexure**

Estimated Costs per 'Ty-Z'

	₹
Material C	150.50
Material D	122.50
Other Material	see note below
Labour (0.4 hours at ₹1,050 per hour)	420.00
'Ty-Z'- specific production overhead cost	132.30
'Ty-Z'- specific selling and distribution cost	166.60
<b>Note-</b> Each 'Ty-Z' requires 0.70 kg of 'other materials'. These 'other materials' are procured from a supplier at a cost of ₹280 per kg and around 5% of all purchased materials are found to be downgraded.	

**Theory of Constraints**

- CIMC produces two types of products CZ and CD at its manufacturing plant. Both the products are produced using the same materials, machinery, and skilled labour. Machine hours available for the year is 4,000 hours.

Information relating to products are as follows:

Particulars	CZ	CD
Selling Price <i>per unit</i>	₹16,000	₹4,000
Material Costs <i>per unit</i>	₹7,000	₹1,200
Machine Hours <i>per unit</i>	1.6 hrs.	0.8 hrs.
Maximum Annual Demand	2,000 units	1,600 units
Online Booking (already accepted for)	400 units	1,200 units

Due to poor productivity levels, late order and declining profits over recent years, the CEO has suggested the introduction of throughput accounting in the company.

The total of all factory costs is ₹1,42,60,000, excluding material.

**Required**

- (i) Using throughput accounting, PREPARE statement to determine the optimum production mix and maximum profit for the next year.
- (ii) CALCULATE the amount of profit lost due to acceptance of online booking of the products.
- (iii) RECOMMEND the options to be followed in order to avoid any loss of profit.
- (iv) LIST various ways through which price customization could be done.
- (v) Given that products CZ and CD are respectively in 'maturity stage' and 'introduction stage' of their life cycle. STATE the most appropriate pricing policy that could be followed by the CIMC for CZ and CD as per their life cycle.

**Ethical and Non-Financial Considerations**

7. WXY Limited specializes in the manufacture of chemical intermediaries in a very competitive business environment. WXY is a public listed company, with majority of its shareholders being institutional investors like mutual funds, banks and insurance companies.

It is located in a water scarce zone in Tamil Nadu. There are restrictions on the tapping and usage of groundwater under the relevant laws. Penal provisions of the law will apply in case of violations. The production process requires water and the amount of water that the company can draw is limited to 19,000 kilo-litres (1 Kilo-litre is 1,000 litres). Purchase of water is not an option as availability is highly erratic and exorbitant on cost.

The company manufactures two types of chemicals "W" and "Y" and these are sold in kilograms. The company is in the process of making the business plan for the year 2023.

Based on the actual operating data for 2022 and taking into consideration the inflation and possible price increases that it can obtain from the market, the following product costing details have been arrived at:

Product	W	Y
Capacity Volume kg. (not inter-changeable)	8,25,000	9,30,000
Selling Price per kg.	₹2,000	₹1,000
Variable Cost per kg.	₹1,500	₹650
Water (litre/ kg.)	12.5	10

Under the relevant income tax laws prevalent, companies with a turnover of ₹250 Cr. (Crores) or less are taxed at a lower rate of 25% as against the normal 30%. The

company intends to keep its sales for 2021 equal to ₹250 Cr. or slightly lesser to avail this concessional income tax benefit.

With capacity constraints, the company has calculated that it would be still beneficial for the company to stick to ₹250 Cr. as only a marginal increase in turnover is possible over ₹250 Cr.; after a higher tax @30%, the PAT would be still lower than the PAT arrived at after doing just ₹250 Cr. and availing the lower income tax rate.

CFO asked management consultant to work out the volumes in kg. of products “W” and “Y” which would give an optimal (maximum) contribution given the constraints on capacity, water usage and turnover to avail the concessional income tax benefit.

Consultant works out with the following product mix using Linear Programming. She also proposes another mix which does not meet the constraint on water usage where the company could end up drawing excess water than permitted by 113 kilo-litres but would result in an increase of ₹30 lacs in contribution. She says that it is easily possible to do this by managing reporting to the water authorities.

Product		Optimal	Suggested
W (Volume in kg.)		8,00,000	7,85,000
Y (Volume in kg.)		9,00,000	9,30,000
Contribution in ₹Cr.		71.5	71.8
	<b>Constraints</b>		
Sales	<= 250 Cr.	250	250
Volume of "W" in kg.	<= 8,25,000	8,00,000	7,85,000
Volume of "Y" in kg.	<= 9,30,000	9,00,000	9,30,000
Water usage (in KL)	<= 19,000	19,000	19,113

**Required**

The CFO is not satisfied with the calculations. He wants you (Sr. Finance Manager) to come up with a proper DISCUSSION.

**Direct Product Profitability (DPP)**

- Quebec Ornamental Company (QOC) has been a name to count on for quality and service. It has been designing wide range of ornamental products for more than two decades using the highest-quality standard. Such quality is achieved through years of experience and the integrity that is maintained by its employees. They are known for their perfection. WIK approached QOC to make inquiry of two products. The two products are indoor fountain known as ‘O-1’ and a large gnome known as ‘O-2’ for garden. Mr. X, the management accountant of QOC, has estimated the variable costs per unit of ‘O-1’ and ‘O-2’ as being ₹622.50 and ₹103.75 respectively. He estimated his calculations based on the following information:

- Products Data

	O-1	O-2	Other Products
Production/ Sales (units)	10,000	20,000	80,000
Total Direct Material Costs	₹22,50,000	₹7,50,000	₹60,00,000
Total Direct Labour Cost	₹15,00,000	₹5,00,000	₹60,00,000

- (2) Total variable overheads for QOC are ₹1,20,00,000 out of which 30% belong to the procurement, warehousing and use of direct materials. While all other variable overheads are related to direct labour
- (3) QOC presently allocate variable overheads into products units using percentage of total direct material cost and total direct labour cost.
- (4) WIK is willing to purchase 'O-1' at ₹740 per unit and 'O-2' at ₹151 per unit.
- (5) QOC will not accept any work yielding an estimated contribution to sales ratio less than 28%.

The directors of QOC are considering switching to an activity-based costing system and recently appointed a management consultants firm to undertake an in-depth review of existing operations. As result of that review, the consultants concluded that estimated relevant cost drivers for material and labour related overhead costs attributable to 'O-1' and 'O-2' are as follows:

	O-1	O-2	Other Products
Direct Material Related Overheads: (The volume of raw materials held to facilitate production of each product is the cost driver.)			
Material Ratio <i>per product unit</i>	5	8	5
Direct Labour related overheads: (The number of labour operations performed is the cost driver.)			
Labour Operations <i>per product unit</i>	7	6	5

**Required**

- (i) Give a financial ANALYSIS of the decision strategy which QOC may implement about the manufacture of each product using the unit cost information available.
- (ii) DISCUSS whether activity-based management should be adopted in companies like QOC.

**Non- Financial Performance Measures**

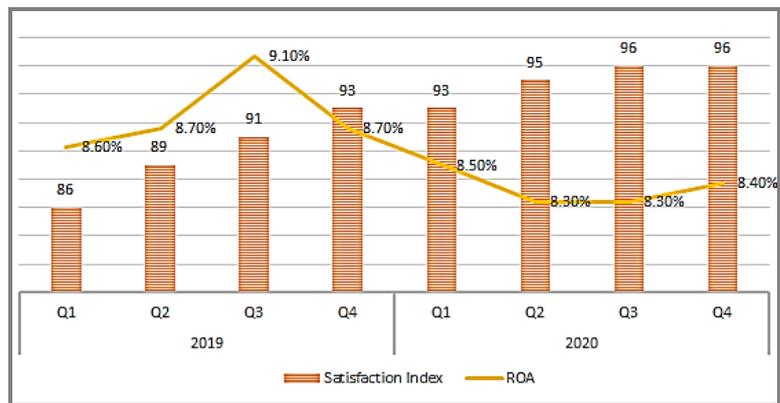
9. Kristin LLP sells wide range of household products. The firm has recently received few negative feedbacks about the product and customer services. CEO is not happy with this. As per the opinion of CEO –

*“Nowadays when social media play such an important role in making decisions, its crucial to keep an eye on the quality of customer service you provide. If you don’t care about customers’ satisfaction, don’t expect them to care about your services or products. When customer share their story, they’re not just sharing their problems. They are actually teaching you how to make your product, service, and business better.”*

There has been considerable discussion at the corporate level as to improve ‘Customer Satisfaction’. Convinced with this logic, firm has invested heavily in customer satisfaction and adopted the following plan of action–

- providing helpline 24/7 in order to develop personal relationship with customer;
- redesign its online platform in order to make it more customer friendly;
- rewarding loyal customers by giving them experience, they would not forget for life; and
- ease the return and refund policy, offering no questions- asked guarantee is a smart move over competitors.

The CEO was initially delighted to see that their efforts pay off in the form of higher customer satisfaction score index, however he is anxious to see the corresponding financial results.



**Required**

Does the seeming lack of improvement in financial performance with customer satisfaction, Kristen LLP should stop investing a superior customer experience? DISCUSS.

**Performance Measurement in Not for Profit Sector**

10. Olderhelp India is a leading charity working with and for the disadvantaged elderly for over 5 decades. Olderhelp advocates for their needs for universal pension, quality healthcare, action against elder abuse and many more. Olderhelp collects donations and funds and utilises them for the welfare of elders. The governing body of Olderhelp has setup four performance objectives for the three months to 30 Sep 2022:

- to achieve a level of donation of ₹30,00,000
- to keep advertisement cost not more than 3% of donation
- to keep welfare cost more than 85% of donation
- to achieve 90% of respite care requested from the community

Actual results were as follows:

	July	Aug	Sep
Donation (₹)	7,00,000	13,00,000	11,00,000
Advertisement Costs (₹)	17,500	52,000	33,000
Elder's welfare cost (₹)	5,74,000	10,92,000	979,000
Respite care requests (days)	1,120	1,140	1,200
Respite care provided (days)	896	1,003	1,104

The aim is to serve elder needs in a holistic manner, enabling them to live active, dignified and healthier lives.

**Requirement**

PREPARE a statement to assist the manager in evaluation performance against objectives and COMMENT on the performance.

**Balanced Scorecard**

11. "Hard Rock Coconut" is an exclusive resort located in a famous Island of Pacific Ocean that vows to isolate its guests from the hustle and bustle of everyday life. Its leading principle is "all contemporary amenity wrapped in old-world charisma". Each of the resort's 18 villas has a separate theme like Castle, Majestic, Ambassador, Royal Chateau, Coconut, Lemon, Balinese etc and guests often ask for a specific villa when they make reservations. Villas are Ideal for families or friends travelling together and these villas feature luxurious accommodation spanning two floors. Since it is located within a 300-acre estate on white sand beach, the resort offers its guests a wide variety of outdoor activities such as horseback riding, hiking, diving, snorkelling, sailing, golf and so on. Guests could also while away the day relaxing in the pool and availing themselves of the resort's world-famous spa "Hard Coco Spa". The dining room, which only has three tables for the public, is acceptable proud of its 4-star rating.

**Required**

DEVELOP a Balanced Scorecard for “Hard Rock Coconut”.

Note- It is sufficient to give two measures in each of the four perspectives.

**Competitive Advantage**

12. The following are the income statements of two firms in the same industry.

	Firm WG (₹)	Firm WD (₹)
Revenues	22,00,000	44,00,000
Less: Variable costs	9,90,000	26,40,000
Contribution margin	12,10,000	17,60,000
Less: Fixed costs	7,70,000	13,20,000
Profit before taxes	4,40,000	4,40,000

**Required**

IDENTIFY the strategy (cost leadership vs. differentiation) followed by two firms. JUSTIFY your classification.

**Customer Profitability Analysis**

13. JA Ltd. manufactures weighing machines of standard size and sells its products to two industrial customers namely MT Ltd. and KG Ltd. and to a dealer MG Bros. having shops in different cities. The maximum retail price per unit of weighing machine is ₹11,000 and per unit average cost of production is ₹5,500 (40% is general fixed overhead cost).

The Finance Officer has been asked to undertake a customer profitability analysis and calculate and compare the profit margin per customer (before deducting general fixed overhead) to know about the real customer profitability.

Following are the additional overhead information:

Delivery Costs	₹200 per Kilometer
Emergency Delivery Cost (in addition to Delivery Cost)	₹21,000 per Delivery
Order Processing Cost	₹6,000 per Order
Specific Discount and Sales Commission	As per Negotiation
Product Advertisement Cost	Actual Cost

The following data are available for each customer:

Particulars	MT Ltd.	KG Ltd.	MG Bros.
Sales (in units)	2,000	1,000	800
Total Delivery Kilometer Travelled	1,000	800	900

No. of Emergency Delivery	2	1	0
No. of Orders Processed	4	2	8
Specific Discount (Percentage of Sales Revenue)	25%	20%	15%
Sales Commission (Percentage of Sales Revenue)	15%	10%	5%
Advertisement Costs (₹)	8,75,000	6,15,000	4,30,000

**Required**

IDENTIFY most profitable customer (basis on **calculations**).

**Pareto Analysis**

14. The following information is given about the type of defects during a production period and the frequencies of their occurrence in a spectacle manufacturing company:

Defect	No. of items
End Frame not equidistant from the centre	10
Non-uniform grinding of lenses	60
Power mismatches	20
Scratches on the surface	110
Spots / Stains on lenses	5
Rough edges of lenses	70
Frame colours-shade differences	25

**Required**

CONSTRUCT a frequency table so that a Pareto Chart can be constructed for the defect type. IDENTIFY areas on which the company should maintain focus?

**Pricing Decision**

15. The research and development wing of Electronics Ltd. has developed a new kind of energy efficient inverter motor with 5-star rating from Bureau of Standards of Energy for use in industrial generator. The initial trials noted that it would take 10 hours for the first motor, which is subject to learning curve of 80%. The cost of material per motor would be ₹2,500, labour charges ₹175 per hour and overheads amount to 125% of labour cost. The first order received is for delivery of eight motors.

**Required**

CALCULATE price the company should quote to have a profit margin of 20% on sales.

### SUGGESTED ANSWERS/HINTS

1. In consideration to Michael Porter's theory about creating a superior performance and competitive advantage, a firm's overall competitive advantage derives from the difference between the *value it offers to customer* and its *cost of creating that customer value*. In order to survive and prosper in industry, firm must meet two criteria– they *must supply what customers want* to buy and they *must survive competition*.

To attain superior performance and attain competitive advantage, firm must have *distinctive competencies*. Distinctive competencies can take any of the following two forms:

**Relative low-Cost advantage**– under which customers gain when a firm's total costs undercut those of its average competitor.

**An offering or differentiation advantage**– If customer perceive a product or service as superior, they become more willing to pay a premium price relative to the price they will have to pay for competing offerings.

#### **Low Cost Advantage (Cost Leadership)**

BA can enjoy relative cost advantage if its total costs are lower than those of its competitors. This relative cost advantage enables a business to do one of the following:

- Charge a lower price than its competitors for its services to gain market share and still maintain current profitability; or
- Match with the price of competing services and increase its profitability.

Cost reductions in BA can be achieved through yield management with variable pricing depending on capacity utilization with careful monitoring; application of computer and communication technology in cost effective way i.e. selling seats via the internet rather than through travel agents; trimming overhead costs by using lower cost out-of-town airports, no printed tickets, seat allocations, or free meals and drinks; efficient operations i.e. fast turnaround times for aircraft to improve utilization; and no exceptions policies to reduce the cost of handling exceptions (e.g. no flexibility for passengers who arrive late). Cost economies can also be realized from large scale operations. However, it is important to note that as soon as more firms strive to become the cost leader, rivalry become so fierce that the consequences for the profitability in the industry are disastrous.

#### **Differentiation Advantage**

It occurs when customers perceive that a business services offering is of higher quality, involves fewer risks and/or outperform services offered by competitors. In other words, customers perceive the service offered by a business to be superior. For example, differentiation may include a firm's ability to deliver services, and other factors that

provide unique customer value. BA is a multinational passenger airline. It can adopt a differentiation approach by offering passengers a higher-quality experience than many of its rivals. This allows it to charge a premium for its flights compared to many other airlines.

A differentiation advantage can be achieved by offering enhanced features such as prime landing slots can be obtained at major airports around the world; using superior and advance technology; well-maintained, clean, and comfortable aircraft; training in customer care and the recruitment of high-quality staff; providing complementary services such as in-flight entertainment, high-quality food, and drink. Customer value can also be increased by *subjective features* such as brand image, advertising based on quality of service provided. However, differentiator cannot ignore its cost position. If costs are too high the premium price are nullified.

On successfully differentiated its offering, management of BA may exploit the advantage in one of two ways viz., either increase price until it just offsets the cost of improvement in customer benefits, thus *maintaining* current market share; or price below the “full premium” level to *build* market share.

**Alternatively**, BA may focus on geographical region and short point to point flights to reduce costs. Michael Porter enlightens focus as attaining low cost or product differentiation for a *particular* buyer group, segment of product line, or geographic market rather than for the industry as a whole. The focuser can attain competitive advantage within a niche, because large firms are either not attracted to niche or have ignored the potential. The narrow focus in itself though is not adequate for a competitive advantage. The firms need to optimize the strategy on two variants: cost focus and differentiation focus. One risk of a ‘focus strategy’ is that broadly targeted competitors devastate the segment once it becomes economically attractive.

**In addition**, the currency depreciation is hitting Airlines harder and international overhead costs have risen, the BA should attempt to increase the number of internal domestic flights. Moreover, ATF cost can also be lowered by investment in fuel saving modern Airbuses, however, the reduction in operating costs may outweigh the capital equipment costs.

To gain competitive advantage BA may also assess Value Shop Model. Value Shop generates value by organizing resources (e.g. people, knowledge, and skills) and deploying them to solve specific problems, for example, delivering airline services to the passengers or delivering a solution to the business problem. Shops are organized around making executing decisions- identifying and assessing problems or opportunities, developing alternative solutions or approaches, choosing one, executing it and evaluating results.

In this way, the above discussed strategies may be more appropriate for helping BA in achieving superior performance and competitive advantage over its competitors.

### Concept in Practice

Southwest Airlines (SA) targeted on a geographic region and short point-to-point flights to reduce costs. Even though it offered no-frills service (no-frills or no frills service is one for which the non-essential features like food, entertainment, printing of boarding pass etc. have been removed to keep the price low) and was based in secondary airports, SA improved quality relative to the *limited set of competing alternatives* by offering direct flights rather than connecting flights requiring changing planes at large hub airports. The SA also offered better on-time performance and friendly amenities.

## 2. Issue

Moon Limited manufactures copper rods and is considering commencing a new plant for manufacturing of cable wire. A financial evaluation has been carried out and the project appears to be financially viable. The project has a positive NPV of ₹200 crores and an IRR of 17.5%. Though the project is financial viable, there are certain concerns relating to the project.

### Non-Financial and Ethical Consideration in Decision Making

Capital Budgeting or Investments decisions are generally made based on the various financial evaluation like Net Present Value, Internal Rate of Return, Payback Period etc. The financial considerations in capital budgeting decisions are important because the end objective of every for-profit business is maximisation of shareholder's wealth. However, an important aspect of capital budgeting is that investment decisions cannot be purely based on financial analysis; there are other soft non-financial aspects of the investment appraisal that need to be thoroughly looked into. Some of the non-financial considerations that a company factors for capital budgeting or investment decisions are listed below:

#### *Environmental Factors*

Environmental factors like pollution, deforestation, impact on climate and weather, greenhouse effects etc. must be considered by companies while selecting a project for implementation. Any project which adversely affects the environment is not taken positively by common public and environmentalists. A lot of projects have been stalled or delayed due to the protests by pro-environment groups leading to cost and time overrun. The government through ministry of environment could impose penalties on projects which are violating environmental norms or green norms.

#### *Staff Motivation*

Staff motivation and satisfaction is another important factor which companies might consider while choosing projects. If, for example, a company decides to implement automation in its plants for operations which would result in redundancy in labour, the overall staff motivation would come down. Staff and workers would resort to strikes and lockouts to protest against such decisions. The company should adopt a participative approach while taking such decisions considering the impact it would have on the labours.

### *Government Regulations*

The companies must comply with relevant government regulations while implementing projects. Some projects might be profitable and yield excellent returns. However, if the profits and cashflows are generated by violating government regulations, it could be harmful in the longer run for the company and its brand. The companies must ensure that all relevant laws and regulations are complied with.

### *Availability of Resources*

The evaluation of any project must also consider availability of key resources like raw material, manpower, logistics infrastructure, electricity etc. If there is any constraint on any of the key resources at a future date, a financially viable and excellent project could well turn into a failed project. It is thus important that the requirements and availability of key resources are analysed in advance.

### *Availability of Project Site*

Site selection involves measuring the needs of a new project against the merits of potential locations. This indicates the practice of new facility location, keeping in mind project requirements. A wrong or unsuitable project location may mar the very benefits of a financially lucrative investment proposal.

### *Corporate Social Responsibility*

Corporate social responsibility refers to "the ethical principle that an organisation should be responsible for how its behaviour might affect society and the environment". The companies do not function in silos but are a part of the larger society and environment. They have a responsibility towards the society and environment to use the various resources judiciously and ensure a sustainable development. Companies are expected to uplift the well being of the society at large and to not harm the environment through operations. The aspects of corporate social responsibility must also be considered while deciding the project to be implemented.

### *Ethics*

Ethics are a set of guiding moral principles for individuals and corporates. Every company has a duty of care to various stakeholders (shareholders, employees, suppliers, customers etc.). A company is expected to act in a fair and transparent manner and be honest in all its dealings with stakeholders.

### **Issues in the Financial Study**

As discussed earlier, the project is financial viable with a very good NPV and IRR. The amount required to build the plant is also available with the company. Financially, the project must be accepted. However, there are certain non-financial issues which must be addressed before a decision to build the plant is taken.

*Payment to Labour and Ethics*

As explained earlier, every company has a duty of care to all its stakeholders and the stakeholders must be treated fairly. Labours are a key stakeholder for the construction and running of the plant. The company has chosen to pay 15% lower wage to immigrant workers and not contribute anything towards their retirement benefits.

The company is paying a higher wage to the labours than required by law and hence there is nothing illegal in such payments. However, the company must not discriminate between workers who are doing same nature of work just because the workers are immigrants. The reputation of the company might be affected because of the lower wages paid to immigrants. There is a possibility that these labours go on protests and strikes or decide not to work for the company.

The company has also decided not to contribute to retirement funds for these workers. This could have a legal implication as well. The financial impact of paying wages at par with other workers and contributing to the retirement fund for immigrant workers is not known. However, the company should reconsider this decision and pay all the workers the same level of wages. The company should also contribute to the retirement fund of employees.

*Availability of land and bribery*

The existing plant does not have sufficient space to build a new plant and hence the company is planning to acquire additional land which falls under the forest reserve area where no commercial activity is allowed. The company is in liaison with government officials to get the land acquisition approved. The company would also be paying bribes indirectly to the government officials to get the land allotment approved.

The payment of bribes to government officials, whether directly or indirectly would be unethical. The company could face litigation for acquiring land by unfair means and in future, there is a possibility of such allotments being cancelled. The company's reputation would also be dented if news of bribery is published by the media. The company also has a responsibility towards the environment and must contribute towards a sustainable development. The society at large would not take acquisition of forest land by unfair means positively. This impact the overall goodwill and brand image of the company.

The company must evaluate if land at other sites can be acquired for construction of the plant. Such acquisition would be at a higher cost but would be beneficial to the company in the longer run.

*Chemical waste and technology*

The proposed plant is likely to emit chemically harmful waste which would pollute the environment. The technology available with the company can treat such waste partially. The company has to incur an additional cost of ₹100 crores to build a new treatment plant. This means that the NPV of the project would be reduced by ₹100 crores and IRR would also be lesser if the new treatment plant is built.

As discussed earlier, the company must operate in a socially responsible manner and consider implication of its action on the environment. The pollution caused by plants affects the surrounding environment and might lead to protests by local residents. Sometimes such protests are backed by NGOs as well. The commissioning of environmentally sensitive projects is difficult at times and can cause project delays as well.

The company should consider acquiring a new chemical waste treatment plant to ensure that there is no discharge of harmful waste from the company's plant. Though, there is an additional cost involved in building a new plant, it is important that the society at large perceives that the company is operating in a socially responsible manner. The company operates in a society and is an integral part of it and hence, it has certain responsibilities towards the society as well.

### Conclusion

The ultimate objective of a company is to maximise shareholder's wealth. The company must, however, operate in a socially responsible manner in achieving the objective of wealth maximisation. The company has a duty of care to other stakeholders like employees, society at large etc. In some cases, there may be conflict between different stakeholder's objectives. For instance, a new waste treatment plant would be good for the environment and society at large but would be adverse for shareholders as an additional cost of ₹100 crores would be incurred. The company must definitely consider non-financial factors along with financial factors while deciding on whether to build a new plant or not.

### 3. (a) (i)

	units
Components worked on in the process	6,005
<i>Less: Planned defective units (7.5% of 6,005)</i>	450
<i>Less: Replacements to customers (1% of 5,555)</i>	55
Components invoiced to customers	5,500

Therefore actual results agree with planned results.

### (ii)

Planned component cost = (5 units × ₹20 for materials A) + (4 units × ₹10 for material B) + ₹25 variable cost = ₹165

Comparing with the data in the table:

Materials = ₹840,700/6,005 units = ₹140

Variable overhead = ₹150,125/6,005 units = ₹25

(b) Internal failure costs = ₹74,250 (450 units × ₹165)

External failure costs = ₹9,075 (55 units × ₹165)

### (c)

	2022 (units)	2023 (units)
Components invoiced to customers	6,500	6,500
Planned replacement (1%)	65	65
Unplanned replacement (Total-Planned)	185 (250-65)	-25 (40-65)
Components delivered to customers [A]	6,750	6,540
Components worked on in the process [B]	7,500	7,000
Total Process defects [C = B-A]	750	460
Planned process defects (7.5% of worked on In the process) [D]	562	525
Unplanned defects (balancing figure) [C-D]	188	- 65

(d)

	2022 (₹)	2023 (₹)
Internal failure costs	123,750 (750 units × ₹ 165)	75,900 (460 units × ₹ 165)
External failure costs	41,250 {(65+185) units × ₹ 165}	6,600 {(65-25) units × ₹ 165}
Appraisal costs	10,000	25,000
Prevention costs	5,000	8,000

(e) The following points should be part of Analysis:

- The information presented in (c) indicates that free replacements to customers were 185 greater than planned in the year 2022 but 25 less than planned in the year 2023. In contrast, in process defects were 188 more than planned (approximately 33%) in the year 2022 and 65 less than plan (approximately 12%) in the year 2023.

Cost	2021 (₹)	2022 (₹)	Change w.r.t previous period (₹)	2023 (₹)	Change w.r.t previous period (₹)
Internal Failure Costs	74,250	123,750	49,500	75,900	(-)47,850
External Failure Costs	9,075	41,250	32,175	6,600	(-)34,650
Total	83,325	165,000	81,675	82,500	(-)82,500

- Both Internal failure and External failure costs have increased substantially in the year 2022 but decreased significantly in the year 2023.

3. The additional failure cost w.r.t the year 2021 was ₹ 81,675 in the year 2022 and cost savings w.r.t. year 2022 were ₹ 82,500 in the year 2023.
  4. It seems that expenditure on inspection of ₹15,000 and expenditure on extra planned maintenance of ₹3,000 in the year 2023 has yielded major results. This should be thoroughly analysed and be adopted as a successful tool to reduce failure cost. Reduced failures will also improve the brand equity and customer satisfaction of the product.
4. Analysis of the operating data of the “made to order” at the business store revealed the following:

***Production Performance:***

- (i) Modifications to orders: This company has to bear the cost of modification / replacement of the garment incurred on account of error in its order taking or manufacturing process. Therefore, orders needing such modification should be kept at the minimum. Such instances were higher than 10% in the first three months. With experience, either in the order taking process or manufacturing process, these errors have reduced substantially in the later months. The managers of the order taking and manufacturing departments need to understand and constantly keep track of these errors in order to keep them at a bare minimum. Management may want to set a benchmark, financially in terms of the cost of modification and non-financially in terms of the acceptable threshold for such instances. Monthly tracking of this metric will help detection of errors earlier.
- (ii) Production downtime: Production downtime normally occurs either due to break down of machinery or plant maintenance. It is unproductive time, reducing the machine's capacity. It must be kept minimum. Downtime hours have been steadily increasing in the past 3 months, the overall monthly average being 91.67 hours. The production manager has to analyze and take corrective action at the earliest. Urgency of the issue can be compounded by the fact that sales orders under the “make to order” model have been increasing steadily over the last few months. In the latest month, 38% of the overall sales was from this model. Therefore, the production capacity should be utilized optimally to ensure ability to meet delivery deadlines.
- (iii) Labor Idle time: Labor Idle time due to unavailability of material is another unproductive waste of resource. The procurement department can address unavailability of material. On an average 20.5 hours of labor time is idle due to unavailability of the appropriate material. Appropriate steps with suppliers can lead to agreements to ensure seamless supply of material when required. This will enable the company to meet delivery deadlines given to customers.

**Delivery Cycle Performance:**

- (i) On-time delivery: The orders need to be delivered to the store within 3 working days of placing order. The customer picks up the order from the store. Speed of delivery is critical to the company. Any delay beyond this timeline, the customer benefits by a 5% reduced price on the order as compensation for delay. Prompt delivery is also the company’s selling point to attract customers, who would otherwise patronize its rivals. On an average 5% of the orders are not delivered within time. Therefore, average delivery success rate is only 95%. The management has to take steps that this is kept to the minimum in order not to stem loss of revenue as also to build brand loyalty with the customer base.

**Customer Satisfaction:**

- (i) Repeat orders by customers: Prompt, quality delivery of the customized order would ensure that customers return in future with further orders. Statistics shows that repeat orders have steadily increased, which is a very positive signal to the management. Initially, only 4% of the customers under this model placed repeat orders. This increased substantially. Now almost 63% of the customers who purchase under this model come back with more orders!
- (ii) Sales mix: Popularity among customers for customized services is further validated by the steady increase in the ratio of such sales to the overall sales of the company from the factory outlet. Now, this model generates an average of 28% of the total sales from the outlet, with a likely projection of having a higher share in the overall sales mix. Therefore, the “make to order” model can be termed a success.

**Workings**

Metric	Month						Monthly Average
	1	2	3	4	5	6	
<b>Production performance</b>							
Orders needing modification on account of errors in order taking or manufacturing process (% of sales orders made under "made to order" model)	15%	12%	10%	8%	5%	4%	9%
Production downtime (hours)	44	88	22	141	132	123	91.67
Labor idle time due to unavailability of material (hours)	25	22	17	13	24	22	20.50
<b>Delivery cycle time</b>							
Orders delivered beyond the 3 working days timeline (% of sales orders made under "made to order" model)	5%	4%	3%	6%	7%	5%	5%
<b>Customer satisfaction</b>							

Repeat orders by customers availing this facility (% of customers giving repeat order / total customers availing "made to order" facility)	4%	21%	33%	54%	60%	63%	39.17%
Ratio of "made to order" to total sales from the factory outlet (Ratio of sales value)	16%	22%	25%	32%	34%	38%	28%

5. In case of X, there is a **cost gap of Rs. 78.22**. Where a gap exists between the *current estimated cost levels* and the *target cost*, it is essential that this gap be closed. Cost gap can be removed by **reducing the cost over all the Value Chain** through the development of the spirit co-operation and understanding among all members of organizations associated with the product from suppliers, producers, customers, agents and service providers.

In Xs Value Chain, three primary activities are:-

#### **Inbound logistics**

These are activities concerned with receiving, storing and distributing the inputs (raw material) to the production process. The *relationship with supplier* is a key component in this process. Currently, X procures materials from multiple suppliers and stores these materials in its store. **Shifting to a just-in-time (JIT) system technique** in procurement of materials could possibly save substantial storage costs provided the JIT supplier must agree to take the responsibility for the good quality of materials supplied. This will also become a source of savings because downgraded items will be removed. However, X might have to pay additional payout to a supplier for JIT purchasing to work.

#### **Outbound logistics**

These activities involve collecting, storing and distributing the products to the customers. At X, scheduled transportation of toys to retail outlets is outbound logistics activity. Potentially, the scheduled transportation of toys to retail outlets every week is not an efficient way. Such deliveries do not consider whether toy is required at retail outlets or not, hence X may possibly deliver toys to retail outlets those do not need toys and suffer unnecessary transportation costs.

X should plan to **implement EDI system** that will help it to improve warehousing and logistics by automatically tracking inbound shipments as well as outbound products. Adopting EDI, X can not only improve processes but also streamline inventory management across many channels. However, it will require setup time and a learning curve to implement the same.

#### **Marketing and sales**

Marketing and sales provide the means by which the customers are made aware of the product. At X, the sales of toys via its retail outlets and website are marketing and sales activities.

X is planning to sell 'Ty-Z' via retailers. If X sales 'Ty-Z' through its website rather than through retail outlet, significant cost could easily be avoided. Simultaneously, X will be able to expose itself to **attract international customers** to buy 'Ty-Z' as product is based on character from a famous international animated film.

**Overall**, X may create a *cost advantage* by **reconfiguring** the Value Chain. Reconfiguration means structural changes such a new production process, new distribution channels or a different sales approach as discussed above.

**Workings**

**Statement Showing Computation of Cost GAP**

	₹
Sales Price	1,750.00
Less: Royalty @10%	175.00
Less: Profit @26%	455.00
<b>Target Cost 'Ty-Z'</b>	<b>1,120.00</b>
Material C	150.50
Material D	122.50
Labour (0.40 hours at ₹1,050 per hour)	420.00
Other Material (0.70 kg × ₹280 per kg) / 0.95	206.32
Production Overheads Cost	132.30
Distribution and Sales Cost	166.60
<b>Estimated Cost 'Ty-Z'</b>	<b>1,198.22</b>
<b>Cost Gap</b>	<b>78.22</b>

6. (i) **Statement Showing Machine Hours**

Product	Maximum Demand	Machine Hours/ Unit	Total Machine Hours
CZ	2,000 units	1.6	3,200
CD	1,600 units	0.8	1,280
Total machine hours required to meet maximum demand			4,480
Machine hours available			4,000
Shortage of machine hours			480

'Machine hours' is the bottleneck activity.

**Statement of Ranking**

Particulars	CZ	CD
Selling Price <i>per unit</i>	₹16,000	₹4,000
Less: Material Costs <i>per unit</i>	₹7,000	₹1,200
Throughput <i>per unit</i>	₹9,000	₹2,800
Machine Hour Required <i>per unit</i>	1.6	0.8
Throughput Return <i>per hour</i>	₹9,000/1.6 = ₹5,625	₹2,800/0.8 = ₹3,500
Throughput Accounting (TA) Ratio (throughput return per hour/ cost per factory hour)	5,625/3,565 =1.58	3,500/3,565 =0.98
Ranking	I	II

Cost per factory hour = ₹1,42,60,000/ 4,000 hrs. = ₹3,565

**Optimum Production Plan**

Product	No of units	Machine hr. per unit	Total Machine hrs.	T/P per hr. ₹	Total T/P ₹
CZ (online orders)	400	1.6	640	5,625	36,00,000
CD (online orders)	1,200	0.8	960	3,500	33,60,000
CZ	2,400/1.6 =1,500	1.6	2,400 (b/f)	5,625	1,35,00,000
Total					2,04,60,000
Less: Total Factory Costs					1,42,60,000
Profit					62,00,000

- (ii) Had there been no online booking first product CZ should be produced = 2,000 units using 3,200 machine hours (2,000 × 1.6). Because of online booking already accepted for 1,200 units of product CD, unfulfilled demand of product CZ = 2,000 - 1,900 = 100 units.

Machine Hrs. Required for 100 units of CZ (100 × 1.6)	160 hrs.
Throughput Lost for Product CZ (160 hrs. × 5,625)	₹9,00,000
Throughput Return Earned for Product CD (160 hrs. × 3,500)	₹5,60,000
Throughput lost	₹3,40,000

**(iii) Recommendation****Option-1**

Throughput accounting ratio is the throughput return earned in an hour divided by the factory cost (labour and overheads) incurred by the factory in one hour. Factory cost is generally fixed in nature. *A ratio above 1 signifies that the throughput return is greater than the factory cost and therefore the product is profitable.* Product CZ has a throughput accounting ratio of 1.58 while Product CD has a throughput accounting ratio of 0.98, this indicates that hourly return from Product can cover the hourly factory cost, it is profitable. Product CD does not yield enough hourly return to cover the hourly factory cost, it is not profitable. Therefore, CIMC should consider ways of **improving throughput accounting ratio of Product CD (i.e. above 1.0)**. TA ratio could be improved by:

- Increasing the selling price of the Product CD but the demand may fall.
- Reducing the material cost per unit as well as operating costs. However, there may be quality issues.
- Improving efficiency e.g. increase number of units that are made in each bottleneck hour.
- Raising up bottleneck so that more hours are available of bottleneck resource.

**Option-2**

CIMC has to **prioritize production of Product CZ** since it is more profitable than Product CD. As per the throughput accounting ratio, Product CD does not yield sufficient return per hour to cover the hourly overhead cost therefore, gets second priority over Product CZ.

Since machine hours are the bottleneck, if production for entire 4,000 hours is focused on Product CZ, return yielded would be sufficient to cover the factory overheads. However, Product CZ has a maximum demand of 2,000 units, that requires 3,200 machine hours (2,000 units × 1.6 hours per unit of production). Remaining 800 machine hours can be devoted to Product CD, during which 1,000 units can be produced (800 machine hours / 0.8 hours per unit). Maximum demand for Product CD is 1,600 units. Therefore, the balance demand of 600 units of Product CD will remain unsatisfied.

However, to meet unsatisfied demand of Product CD, CIMC may consider the **option of sub-contracting either a part of whole of the production of Product CD**. This way it can meet the entire demand for Product CD for 1,600 units. If it subcontracts the entire production of Product CD, it can also scale down its in-house capacity. Sub-contracting decision requires suitable cost benefit analysis.

Moreover, the risk associated with outsourcing like unsatisfactory quality and service or failure of supplier cannot be ignored.

**Overall**, to enhance profitability or avoid any type of loss of profit, CIMC may consider the options recommended above with a *long term perspective*.

(iv) Pricing of a product is sometimes customized keeping taste, preference, and perceived value of a customer into consideration. Price customization is done in the following ways:

- *Based on product line*: When products are customized as per the customer's requirements, pricing can be adapted based on the customer's specifications. Standard products can have a base price, to which the company can top-up charges to any additional customization.
- *Based on customer's past behavior*: Customers with good payment record have established their credit-worthiness. To sustain business, they may be extended additional discounts as compared to other customers.
- *Based on demographics*: Different pricing strategies may be adopted based on age or social status. For example, railway fare discounts for senior citizens or concessional price tickets for military personnel.
- *Based on time differential*: Different price for different time periods. If a customer extends a long-term contract, an additional discount may be extended since business is contracted for a longer period of time. Example, discounted price for data usage provided by a broadband service provider if subscription paid for six months or more.

Apart from the above accounting principles, other macro economic and legal factors should also be given importance while chalking out a pricing strategy.

(v) The life-cycle of a product has 4 stages namely Introductory stage, Growth stage, Maturity stage and Decline stage.

**Product CZ** is given to be in the maturity stage. This third stage of product life cycle is characterized by an established market for the product. After rapid growth in sale volume in the previous stages, growth of sales for the product will saturate. Competition would be high due to large number of rivals in the market, this may lead to decreasing market share. Unit selling price may remain constant since the market is well established. Occasional offers may be used to tempt customers, otherwise this stage will mark consolidation of the market.

**Product CD** is in the introduction stage, the first stage of product life cycle. Penetration pricing is adopted to charge a low price in the initial stage for penetrating the market as quickly as possible. For a new product this low price strategy will popularize the

product. Once the market is established, the price may be increased. Penetration pricing will be suitable when:

- (i) Demand for the product is elastic, more demand when prices are low.
- (ii) Large scale production of the product yields economies of scale.
- (iii) Threat of competition requires prices to be set low. It serves as an entry barrier to prospective competitors as well.

However, if Product CD is a highly innovative product, it may adopt Skimming price policy. The product with unique features will differentiate it from other products leading to a revolutionary impact on market and customer behavior. Customers may not mind paying a premium for the unique product offering. Focus may be on promoting the product to gain market share. Skimming price policy may work when:

- (i) There seem to be no competitors providing similar products.
- (ii) Demand is inelastic.

Over time, competitors can reverse engineer and offer similar products. Therefore, the price may be lowered in the long run to retain market share.

7. Primary goal of investor –owned firms is shareholder wealth maximisation, which translates to stock price maximisation. Management Consultant’s plan is looking good for the WXY as there is a positive impact on the profitability (₹30 lacs) of the company. Also, WXY operates in a competitive environment so for its survival, it has to work on plans like above.

There is second side of coin that cannot also be ignored i.e. **business ethics**. It is easily possible to manage drawing of excess water, but it is not an ethical practice as the company has *responsibilities towards* use of natural resources like water and protecting the environment.

Besides, a whistle-blower complaint to the water authorities can land the company into trouble in terms of penalties, *a financial impact* and also such penalties are disallowed for income tax purposes. It is possible that such a violation may be reported in the media causing *disrepute to the name* of the company. It can also make *investors* in the share market stay away from the company as it has ethical governance issues. The company will face challenges in obtaining other *government approvals* when it will plan expansion as this violation may have to be reported on the applications seeking approvals.

### Overall

May be WXY would able to earn profit due to this plan in *short run* but it will tarnish the image of the WXY which would hurt profitability in *long run*. Therefore, before taking any decision on this plan, WXY should analyse both qualitative and qualitative factors.

**8. (i) Analysis**

The product costs per unit along with the respective contribution per unit may be calculated either by employing an ABC approach or alternatively by using the existing basis for the allocation of variable overhead cost.

The current scenario of product costing suggests that 'O-2' should be produced as per the request of WIK because the contribution to sales ratio is 31.29%. However, the current scenario of product costing also suggests that QOC should not undertake production of 'O-1' at a selling price of ₹740 per unit since the estimated contribution to sales ratio is 15.88% is lower than the desired contribution to sales ratio of 28%.

Activity based costing approach ensures greater accuracy by using multiple cost drivers and determines areas generating the greatest profit or loss. Table [(d)] shows how much the contribution to sales (%) for each product changes when the overhead allocation method changes to ABC. As shown in Table, contribution to sales ratio on 'O-1' increased to 31.87% from 15.88% while contribution to sales ratio on 'O-2' reduced from 31.87% to - 29.23%.

Thus, QOC should opt to produce 'O-1' for WIK as contribution to sales ratio is 31.87 which is higher than the desired one.

- (ii) The term Activity based management (ABM) is used to describe the cost management application of ABC. The use of ABC as a costing tool to manage costs at activity level is known as Activity Based Cost Management (ABM). ABM is a discipline that focuses on the efficient and effective management of activities as the route to continuously improving the value received by customers and to improve strategic and operational decisions in an organisation. Kaplan and Cooper divide ABM into Operational and Strategic.

*Operational ABM* covers the actions that increase efficiency, lower cost (i.e. reduce the cost driver rate of activities) and lead to higher revenue through better resources utilisation- in short, the action required to do things right. In other words, it is all about '*doing things right*', using ABC information to improve efficiency. It also helps in identifying and improving value added activities and removing non-value added activities as to reduce cost without distorting product value.

*Strategic ABM* is about '*doing the right things*'. It uses ABC information to determine which products is to be manufactured and which activities is to be used. QOC can also use this for customer profitability analysis, identifying that which customers are the most profitable and focusing on them more.

A risk with ABM is that some activities have an implicit value are not reflected in a financial value added to any product. For example, a good and pleasant working

environment can attract and retain the best human resources, but might not be identified as value added activities in operational ABM.

ABM provides managers an understanding of costs and helps teams to make certain decisions that benefit the whole organizations and not just their own activities.

Therefore, some companies like QOC may adopt ABM to improve their operations and obtain useful activity information.

**Workings**

**(a) Direct Material Cost per unit**

	O-1	O-2
Total Costs (₹)	22,50,000	750,000
Production units	10,000	20,000
Cost per unit (₹)	225.00	37.50

**(b) Direct Labour Cost per unit**

	O-1	O-2
Total Costs (₹)	15,00,000	5,00,000
Production units	10,000	20,000
Cost per unit (₹)	150.00	25.00

**(c) Variable Overheads**

Material Related

Overhead Cost = 30% × ₹120,00,000 = ₹36,00,000

Total Volume Factor

Particulars	Units	Required per unit	Total Volume
O-1	10,000	5	50,000
O-2	20,000	8	1,60,000
Other	80,000	5	4,00,000
Total Volume Factor			6,10,000

Overhead per unit of volume = ₹36,00,000 / 6,10,000 = ₹5.90.

Therefore, Overhead Cost per product unit will be as follows:

O-1	5	₹5.90	29.50
O-2	8	₹5.90	47.20

Labour Related

Overhead Cost = 70% × ₹120,00,000 = ₹84,00,000

Total Operations Factor

Particulars	Units	Required per unit	Total Volume
O-1	10,000	7	70,000
O-2	20,000	6	1,20,000
Other	80,000	5	4,00,000
Total Operations Factor			5,90,000

Overhead per operation = ₹84,00,000 / 5,90,000 = ₹14.24.

Therefore, Overhead Cost per product unit will be as follows:

O-1	7	₹14.24	99.68
O-2	6	₹14.24	85.44

(d) **Product Information** (by unit) is as follows:

Particulars	O-1		O-2	
	Current Scenario	ABC Basis	Current Scenario	ABC Basis
Selling Price ... (A)	740.00	740.00	151.00	151.00
Direct Material Cost	225.00	225.00	37.50	37.50
Direct Labour Cost	150.00	150.00	25.00	25.00
Variable Overhead Cost:				
Material Related	90.00	29.50	15.00	47.20
Labour Related	157.50	99.68	26.25	85.44
Total Variable Cost ... (B)	622.50	504.18	103.75	195.14
Contribution ... (A) - (B)	117.50	235.82	47.25	(44.14)
Contribution to Sales (%)	15.88	31.87	31.29	(29.23)



Total Variable Overheads are 120L. Out of which 30% i.e. 36L relates to material and 70% i.e. 84L relates to Labour. Now allocate variable overheads into product units using % of total direct material cost and total direct labour cost.

VO Material Related      40% of Material Cost  
 ₹{36L / (22.5L + 7.5L + 60L)}

VO Labour Related	105% of Labour Cost ₹{84L/ (15L + 5L + 60L)} O-1 & O-2
VO Material Related	₹90 = 40% of ₹225; ₹15 = 40% of ₹37.5
VO Labour Related	₹157.5 = 105% of ₹150; ₹26.25 = 105% of ₹25

9. In this case we can see that there are two considerable sides of the question one is customer satisfaction and another one is profitability. By adopting the proposed plans firm manage to get higher customer satisfaction score card and it is expected that with high customer satisfaction, the firm’s financial result will improve i.e. increase ROA. However, increasing the customer satisfaction is costly. Plans which are used to increase customer satisfaction will increase the cost of the firm. This additional cost will weaken the firm’s ROA by lowing profit and increasing the asset base. The optimum level of customer satisfaction is where the incremental benefits are equal to incremental costs of increasing satisfaction.

While observing the pattern of data, the customer satisfaction has increased from 86 points to 91 points in first three quarters of 2019. At this level, the additional benefits seem to more significant than the additional cost. However, in subsequent quarters, additional cost has increased more rapidly than the additional benefits. Therefore, there is decrease in ROA as we move forward on the index. However, toward the end of 2020, we see a marginal increase in ROA. This is due to the **lead-lag relation** between satisfaction and ROA. Increased satisfaction might take some more time, some more quarters to result in higher ROA and the relation might not be linear. However, toward the end of 2020, the customer satisfaction score stabilizes at current levels (93-96 points).

Overall, Kristin should not stop investing in superior customer experience, the lack of apparent pattern in customer satisfaction and profitability could stem from several causes as discussed above. Instead, firm should take decision considering current satisfaction levels, the cost to increased satisfaction, and perception of the increased benefit. Moreover, the firm should also consider the current sales, otherwise it might lose its share to competitor if they do nothing!

10. **Statement Showing Performance**

	July	Aug	Sep
Advertisement cost as a percentage of donation	2.5%	4%	3%
Target percentage of Advertisement cost of donation	3%	3%	3%
Welfare cost as a percentage of donation	82%	84%	89%

Target percentage of welfare cost as a percentage of donation	85%	85%	85%
Respite care provided	80%	87.98%	92%
Target percentage of respite care	90%	90%	90%

### Comment

Total donation received ₹31,00,000 (=₹7,00,000+₹13,00,000+₹11,00,000) have exceeded the target ₹30,00,000. Though there is no fix trend of receiving fund while it is noticeable that there were special fundraising activities in Aug which generated highest receipt.

Advertisement costs have been within the target of 3% in July and Sep but exceeded the target in Aug, more information is needed to establish why this occurred.

For the month of July and Aug the welfare cost are less than the target, while for the month of September Olderhelp have exceeded the target of expenditure of cost.

The improvement in the respite care provided by Olderhelp has been steady and for the month of september the target has exceeded.

11. The following is a possible **Balanced Scorecard** for “**Hard Rock Coconut**”

<b>Financial Perspective</b>	Economic Value Added
	Revenue <i>per villa</i>
<b>Customer Perspective</b>	% Repeat customers
	Number of customer complaints
<b>Internal Business</b>	Service rating of spa
	Staff hours <i>per guest</i>
	% Cost spent for maintenance
	Travel guide rank for restaurant
<b>Innovation and Learning</b>	Employee retention
	Number of new services offered

12. Higher contribution margin ratio exhibited by firm WG indicates that firm WG is following a **differentiation strategy** while firm WD appears to be more focused on cost leadership. This is also substantiated by higher fixed costs i.e. R&D, innovation etc. for each sale ₹ in firm WG.

Innovation allows a firm to command premium prices and earn more contribution per sales ₹. However, innovation is expensive.

	Firm WG	Firm WD
Contribution margin/ Sales	0.55	0.40
Fixed costs/ Sales	0.35	0.30
Profit margin/ Sales	0.20	0.10

13.

**Customer Profitability Statement**

Particulars	MT Ltd.	KG Ltd.	MG Bros.
Sales (units)	2,000	1,000	800
	(₹)	(₹)	(₹)
Sales Revenue ... (A)	2,20,00,000	1,10,00,000	88,00,000
Less: Average Variable Cost ... (B) (₹5,500 × 60% = 3,300 p.u.)	66,00,000	33,00,000	26,40,000
Contribution [70% of Sales] ... (A) - (B)	1,54,00,000	77,00,000	61,60,000
Less: Additional Overheads			
Delivery Cost (No. of K.M. × ₹200)	2,00,000	1,60,000	1,80,000
Emergency Delivery Cost (No. of Emergency Delivery × ₹21,000)	42,000	21,000	----
Order Processing Cost (No. of Orders × ₹6,000)	24,000	12,000	48,000
Specific Discount	55,00,000	22,00,000	13,20,000
Sales Commission	33,00,000	11,00,000	4,40,000
Advertisement Cost	8,75,000	6,15,000	4,30,000
Profit per customer*	54,59,000	35,92,000	37,42,000
Profit Margin per customer* (%)	24.81%	32.65%	42.52%
Rank	III	II	I

\* Before Deducting General Fixed Overhead Cost

The Contribution Margin is 70% for each Customer but when the other Overheads Costs per customer is included in the above Profitability Statement the Profitability of the three Customers become different. **MG Bros.** is the most Profitable Customer.

## 14. Statement Showing "Pareto Analysis of Defects"

Defect Type	No. of Items	% of Total Items	Cumulative Total
Scratches on the surface	110	36.67%	36.67%
Rough edges of lenses	70	23.33%	60.00%
Non-uniform grinding of lenses	60	20.00%	80.00%
Frame colours-shade differences	25	8.33%	88.33%
Power mismatches	20	6.67%	95.00%
End frame not equidistant from the centre	10	3.33%	98.33%
Spots/ Strain on lenses	5	1.67%	100.00%
	300	100.00%	

The company should focus on eliminating *scratches on the surface*, *rough edges of lenses* and *grinding of lenses* related defects which constitute 80% portion, according to Pareto Theory.

## 15. Calculation of labour hours required

No. of units	Cumulative Average Time per unit (hrs.)	Total Hours
1	10	10
2	8	16
4	6.4	25.6
8	5.12	40.96

## Calculation of price to be quoted for 8 motors

	₹
Material Cost (8 × ₹2,500)	20,000
Labour Cost (40.96 × ₹175)	7,168
Overheads (7168 × 125%)	8,960
<b>Total Cost</b>	<b>36,128</b>
Add: Profit 20% on sales i.e., 25% on cost	9,032
<b>Price to be quoted</b>	<b>45,160</b>