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COST VOLUME PROFIT ANALYSIS: - A Case Study on Chodavaram Sugars Ltd. Visakhapatnam

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Abstract:

Cost-volume-profit (CVP) analysis is an important tool that provides the management with useful information for the managerial planning and decision-making. Profit of a business firm is the result of interaction of many factors. It is used to identify the levels of operating activity needed to avoid losses, achieve targeted profits, plan future operations, decide on expansion or contraction plans, monitor organizational performance and analyze operational risk as they choose an appropriate cost structure to help in the decision making process to sustain the firm.

Introduction

Cost-volume-profit (CVP) analysis is the technique used to identify the levels of operating activity needed to avoid losses, achieve targeted profits, plan future operations, decide on expansion or contraction plans, monitor

organizational performance and analyze operational risk as they choose an appropriate cost structure to help in the decision making process to sustain the firm. CVP Analysis helps managers understand the interrelationship between cost, volume, and profit in an

organization by focusing on interactions among the following five elements:

1. Prices of products
2. Volume or level of activity
3. Per unit variable cost
4. Total fixed cost
5. Mix of product sold

To do an effective job in planning and decision-making, the management must have analyses which allow reasonably correct predictions of how profits will be affected by a change in any one of these factors. Also management needs an understanding of how revenues, costs and volumes interact in providing profits.

Need for the study

1. It helps to identify the inter relationship between cost, volume and profit in an organization.
2. It focuses on interactions among the elements like price, level of methods, variable and fixed cost per unit and mix of the products sold.
3. It helps to make important decisions regarding volume of sales required to make desirable profit.
4. It assists in determining various production levels.

Objectives of The Study

- To study the sugar industry and the brief profile of Chodavaram Co-operative sugars ltd.
- To study the theoretical framework of CVP analysis.
- To analyze various approaches of CVP analysis in Chodavaram Co-operative sugars ltd.
- To suggest necessary measures to get the good quality of cost volume analysis in Chodavaram Co-operative sugars ltd

Data Collection Method

Data is defined as based on the true information and arranged in an orderly manner to make sense. The data has been received from two main sources; the primary and the secondary sources. Primary data is first hand data collected directly. Such data can be obtained using questionnaire, observation and interview. Meanwhile, secondary data is originally collected and worked by another research which the present researcher may need for her research work. It is second hand in nature and less reliable. This type of data can be collected using newspapers, textbooks, journals, magazines and even the internet.

Reasons for Data Collection Method Used

1. The methods used, helped the researcher to effectively consider training needs of individual workers and how it affects organizational performance which constitute one of the reasons of using the methods.
2. It was a fast and easy way of collecting data and it is relatively cheap. Information was mostly from reliable sources.
3. To help the researcher in gathering data that could not be easily obtained if observation was made possible. The researcher had access to most of the employees in the different departments and with interview as a method of data collection. Thus, leading to accurate information because observation helps the researcher to see and perceive the behavior of the respondent.
4. Another reason is to serve as a method of advise for future scholars who wish to take on this topic for further research.

CONTRIBUTION

Contribution should be calculated using the accrual basis of accounting, so that all costs related to revenues are recognized in the same period as the revenues. Otherwise, the amount of expense recognized may incorrectly include costs not related to revenues, or not include costs that should be related to revenues. Thus, a detailed knowledge of contribution is useful in the following situations:

- *Pricing.* Special pricing deals should be designed to yield some amount of contribution; otherwise a company is essentially losing money every time it makes a sale.
- *Capital expenditures.* Management can estimate how expenditures for fixed assets alter the amount of

direct costs incurred, and how this impacts profits. For example, expenditure for a robot can reduce direct labor costs, but increases fixed costs.

- *Budgeting.* The management team can use estimates of sales, direct costs, and fixed costs to forecast profit levels in future periods.

A common outcome of contribution analysis is an increased understanding of different units of product in order to support an incremental increase in fixed costs. This knowledge would be used to drive down fixed costs or increase the contribution margin on product sales, thereby fine-tuning profits.

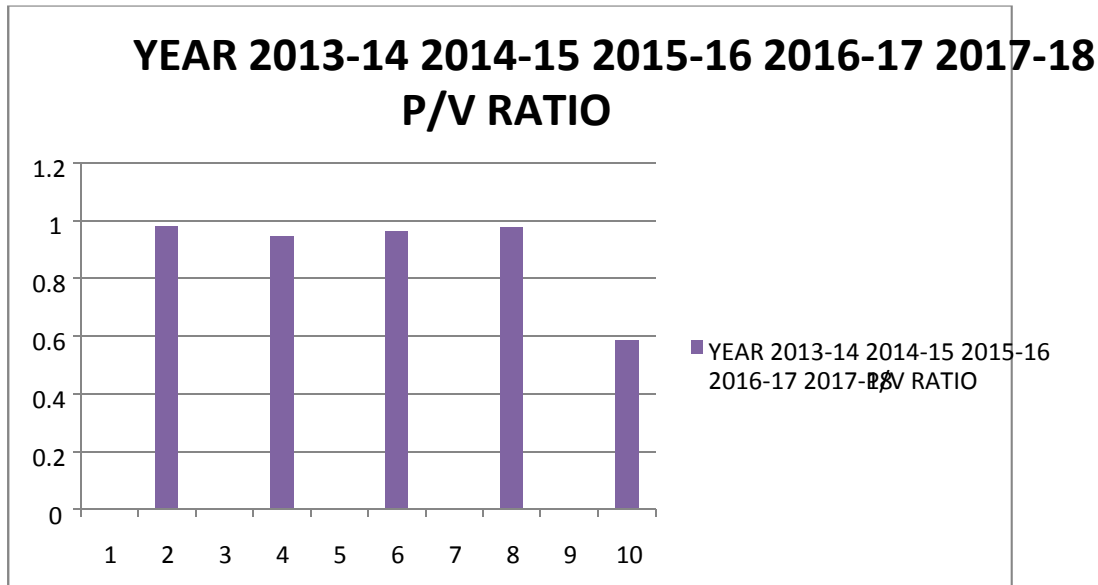
Sales – Marginal cost = Contribution

Year	Sales	Marginal Cost	Contribution
2013-14	1,75,02,09,000	2,81,92,000	1,72,20,17,000
2014-15	93,63,13,500	4,87,73,400	88,75,40,100
2015-16	1,66,54,53,500	5,62,98,000	1,60,91,55,500
2016-17	1,32,36,83,000	2,86,98,000	1,29,49,85,000
2017-18	2,58,62,60,000	1,06,43,28,600	1,52,19,31,400

$$P/V \text{ Ratio} = \text{Contribution}(c) / \text{Sales}(s)$$

YEAR	CONTRIBUTION	SALES	P/V RATIO
2013-14	1,72,20,17,000	1,75,02,09,000	0.983
2014-15	88,75,40,100	93,63,13,500	0.947
2015-16	1,60,91,55,500	1,66,54,53,500	0.966

2016-17	1,29,49,85,000	1,32,36,83,000	0.978
2017-18	1,52,19,31,400	2,58,62,60,000	0.588

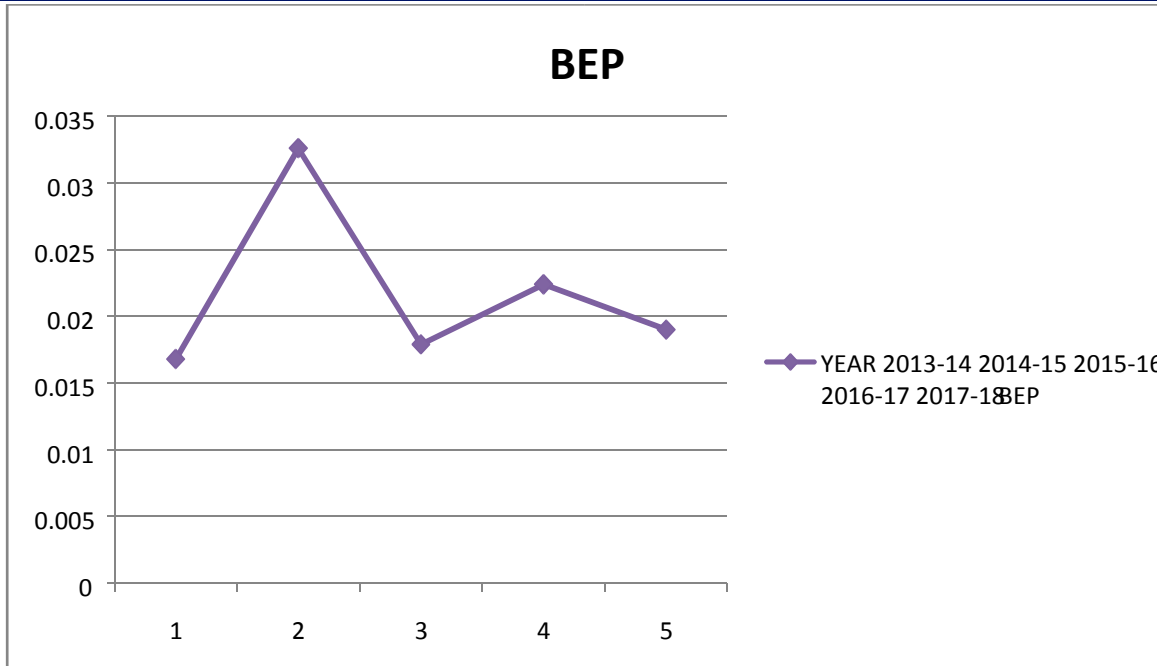


Interpretation:

In the year 2016-17 the PV Ratio is 0.588 which is the least ratio then the other financial years. The highest ratio is in 2012-13 i.e., 0.983 but decreased to 0.947 in the next year. in the year 2016-17-it again raised to 0.978 which is close to the highest figure.

$$\text{Break Even point (BEP)} = \text{Fixed cost} / \text{Contribution}$$

YEAR	FIXED COST	CONTRIBUTION	BEP
2013-14	2,89,63,400	1,72,20,17,000	0.0168
2014-15	2,89,63,400	88,75,40,100	0.0326
2015-16	2,89,63,400	1,60,91,55,500	0.0179
2016-17	2,89,63,400	1,29,49,85,000	0.0224
2017-18	2,89,63,400	1,52,19,31,400	0.0190



Interpretation:

The above analysis of BEP is at 0.0190 which was decreased from the previous financial year i.e. 2015-2016 Company had the highest BEP during the year 2013-2014 i.e. 0.0326 but decreased to 0.0179 in the next year.

3. Margin of Safety (MOS)

The MOS protects the investor from both poor decisions and downturns in the

market. Because fair value is difficult to accurately compute and gives the investor room for investing.

MOS is used in break-even analysis to indicate the amount of sales that are above the break-even point. In other words, the margin of safety indicates the amount by which a company's sales could decrease before the company will become unprofitable.

$$\begin{aligned} \text{Margin Of safety (MOS)} &= \text{Budgeted sales} - \text{Break even sales} \\ \text{Sales at BEP} &= \text{Contribution at BEP} / \text{P/V ratio} \\ &= \text{Fixed cost} / \text{P/V ratio} \end{aligned}$$

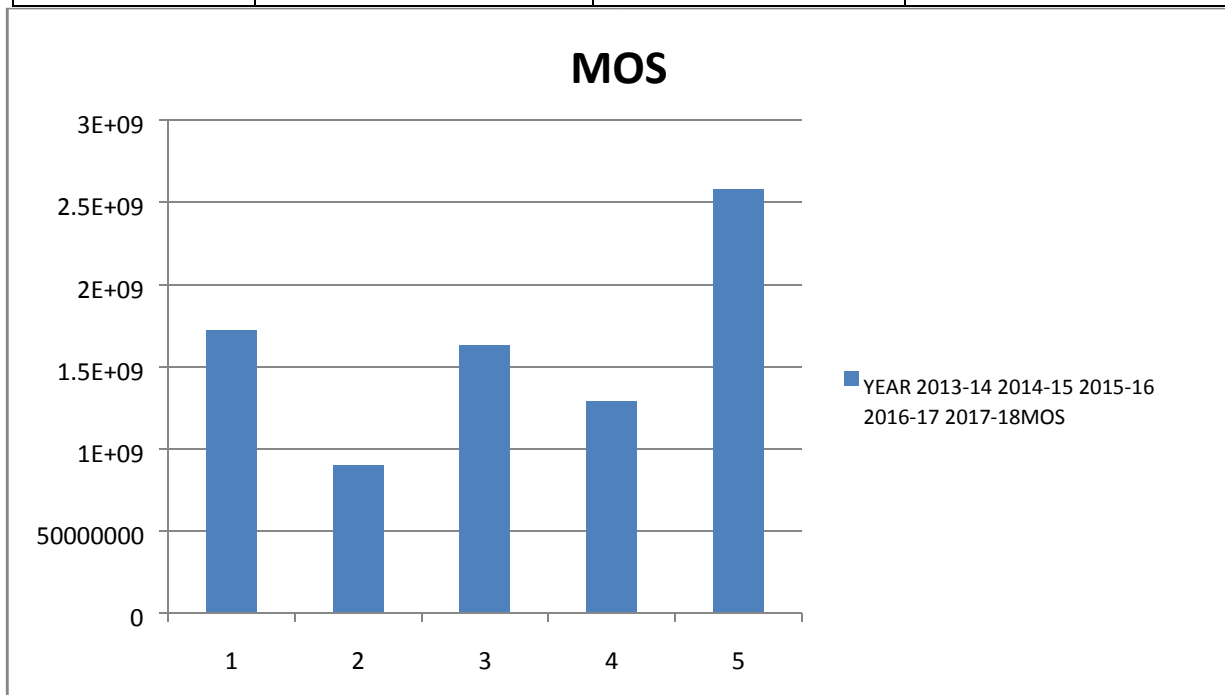
YEAR	FIXED COST	P/V RATIO	SALES AT BEP
2012-2013	28963400	0.983	29464292
2014-15-14	28963400	0.947	30584371
2014-2015	28963400	0.966	29982815
	28963400	0.978	29614928

2017-18	28963400	0.588	4925748
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Calculation of margin of safety:

Margin Of safety (MOS) = Budgeted sales – Break even sales

YEAR	BUDGETED SALES	SALES AT BEP	MOS
2013-14	1,75,02,09,000	29464292	1720744708
2014-15	93,63,13,500	30584371	905729129
2015-16	1,66,54,53,500	29982815	1635470682
2016-17	1,32,36,83,000	29614928	1294068072
2017-18	2,58,62,60,000	4925748	2581334252



Interpretation:

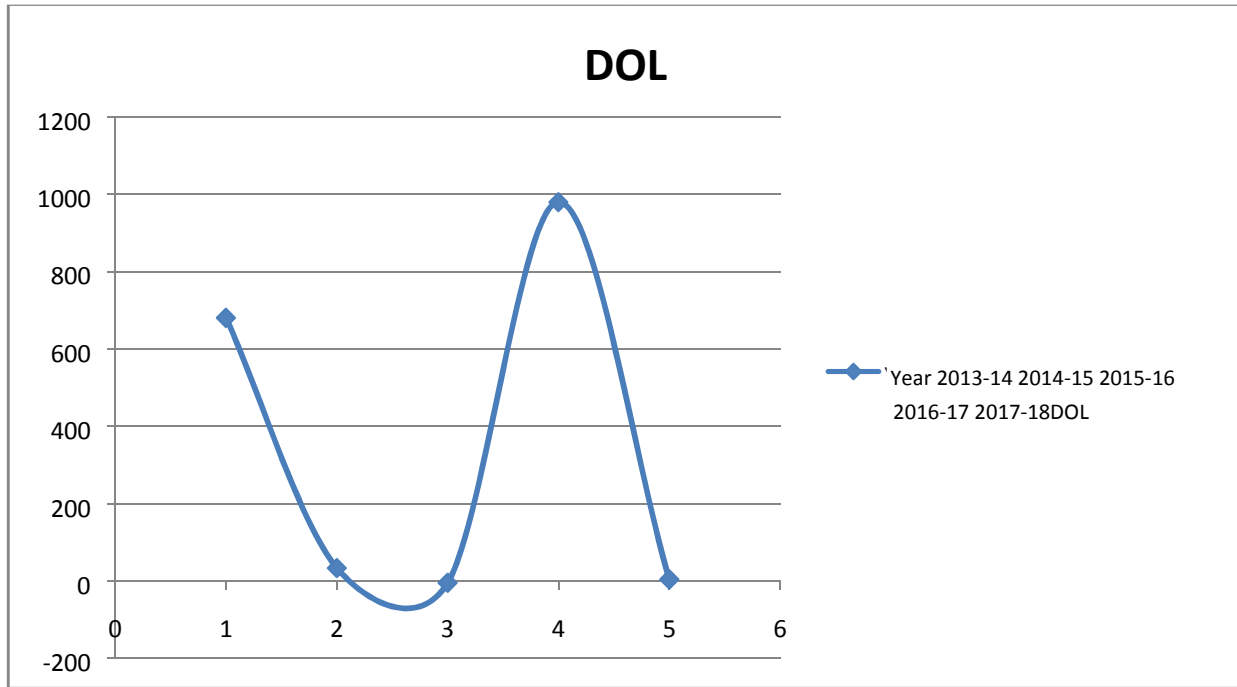
The above analysis of MOS is 2581334252 which is the highest when compared to the previous financial years. In 2013-14, it is 1720744708 but declined to 905729129 in the

next year. Again it was increased to 163547068 in 2014-15-16-15.

Degree of Operating Leverage (DOL) = Contribution/profit

Year	Contribution	Profit	DOL
2013-14	1,72,20,17,000	2529765	680.70
2014-15	88,75,40,100	26228960	33.838
2015-16	1,60,91,55,500	-399426684	-4.02

2016-17	1,29,49,85,000	1321640	979.83
2017-18	1,52,19,31,400	343458250	4.431



Interpretation:

Company’s DOL in the year 2017-18- was 4.43 which was decreased from 979.83 the highest DOL when compared other financial years. The least DOL is in the year 20142015-16-15 i.e. -4.02.

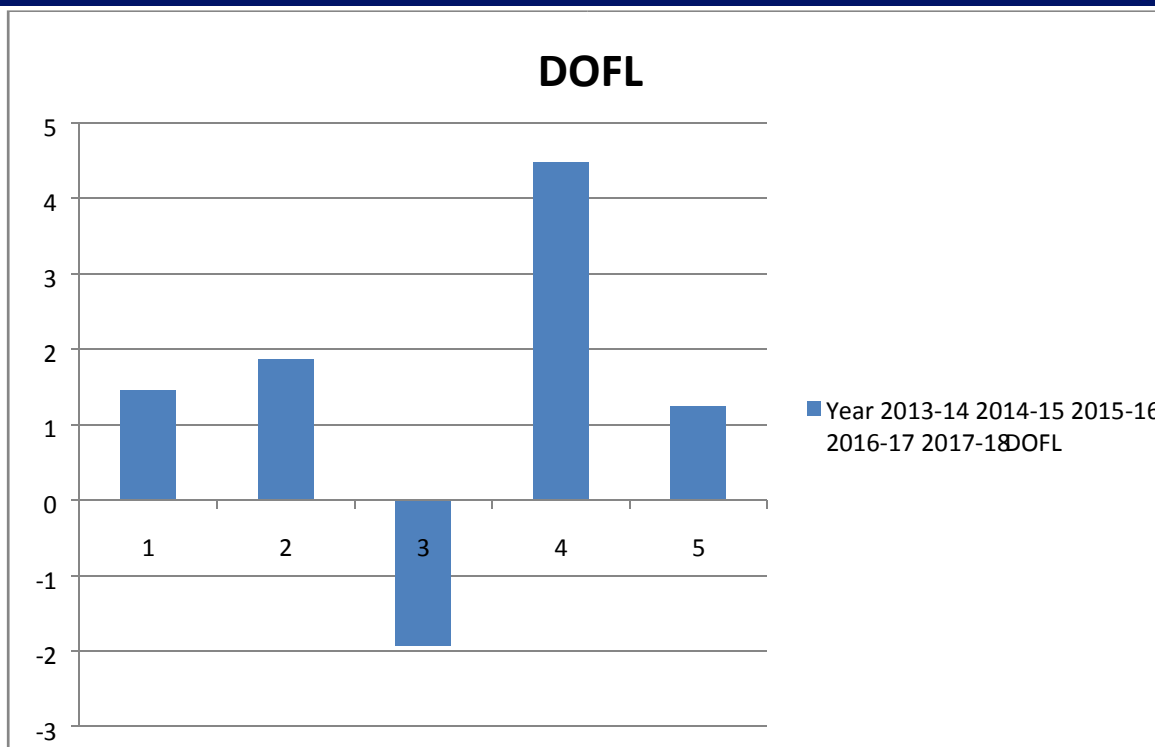
business. The calculation is EBIT, divided by earnings before taxes.

The formula is:

$$\text{Degree of Financial leverage (DFL)} = \frac{\text{EBIT}}{\text{EBT}}$$

The leverage calculates the proportional change in net income that is caused by a change in the capital structure of a

Year	EBIT	Interest	EBT	DOFL
2013-14	76232504	23677860	52554644	1.450
2014-15	73123804	33893365	39230439	1.864
2015-16	-227652177	109860488	-117791689	-1.933
2016-17	204542103	158853842	45688261	4.477
2017-18	498238972	97825333	400413639	1.244



Interpretation:

The DOFL of the company in the year 2017-18- is 1.244 which is the least when compared to other financial years. In the previous year it was 4.477 which have

increased from its preceding year 2015-16. In the year 2015-16 it was negative and to be avoided in order to maximize the return.

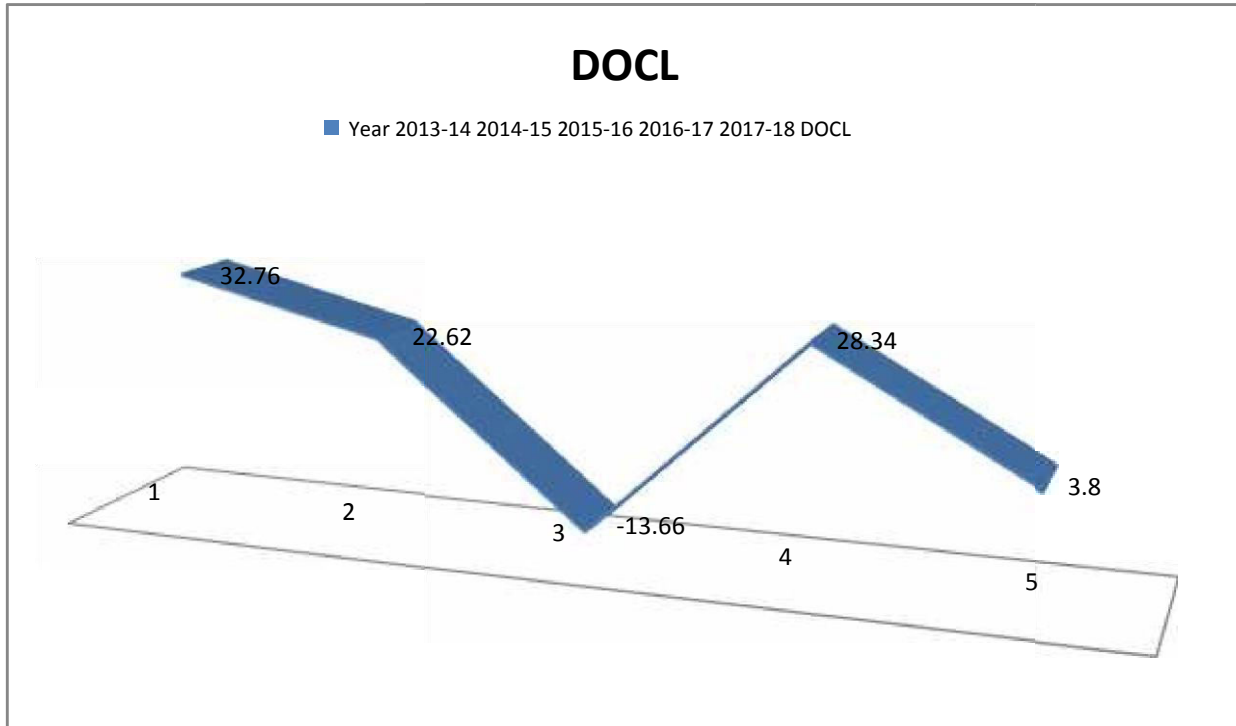
Degree of Combined Leverage:

$$\text{Degree of combined leverage} = \text{Degree of operating leverage} \times \text{Degree of financial leverage}$$

$$= \text{Contribution}(C)/\text{EBIT} * \text{EBIT}/\text{EBT}$$

$$= \text{Contribution}(C)/\text{EBT}$$

Year	Contribution	EBT	DOCL
2013-14	1722017000	52554644	32.76
2014-15	887540100	39230439	22.62
2015-16	1609155500	-117791689	-13.66
2016-17	1294985000	45688261	28.34
2017-18	1521931400	400413639	3.80



Interpretation:

The DOCL of the company in the year 2017-18 is 3.80 which is the least when compared to other financial years. The highest DOCL was in the year 2013-14 i.e. 32.76 but declined to 22.62 in the next financial year and tend to become negative.

Findings

- The PV Ratio of the company has decreased in 2016-17, which says that the effect on price of profit may change in volume of sale has been decreased.
- The company's BEP was fluctuating very highly which means the change of price in the percentage of BEP from one year to another is very high i.e. either may raise or a fall.
- The MOS was increased in the year 2016-17 which means the company's level of sales is above the BEP.
- Company's operating leverage has been decreased from its previous financial years which may increase

the volume of the company's wealth.

- The leverage of the company had become negative in the year 2014-15, which may not be considered profitable.
- There are many fluctuations in all the approaches of CVP analysis.
- Both financial & operating leverages are high in the year 2015-16, which is to be improved.
- The combined leverage of the company in the year 2015-16 was high due to the rise in operating leverage and fall in financial leverage.

Suggestions

- The company has to maintain the leverages as in the particular year low operating leverage & high financial leverage which is considered as ideal situation for maximization of profits with minimum risk.
- Operating & financial leverages are high which is to be avoided as that situation is very risky.

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