WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

MARGINAL COSTING AS AN ESSENTIAL TOOL FOR DECISION MAKING

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ABSTRACT

Investigating the function of marginal costing in managerial decision-making is the goal of this study. One of the main components of Decision Support Systems (DSS) that enhances managerial decision-making in modern commercial settings is the incorporation of Marginal Costing. One approach of cost accounting that stands out is marginal costing, which highlights the extra expense incurred for producing each more unit by dividing costs into variable and fixed components. Cost-volume-profit (CVP) analysis relies heavily on this paradigm, which serves as the foundation for strategic choices about pricing, output levels, and overall firm profitability. Marginal costing's flexibility extends to critical decision points like product pricing, where developing competitive pricing strategies is facilitated by a sophisticated grasp of incremental costs. Furthermore, it makes make-or-buy decisions easier by empowering managers to carefully consider their options between internal production and external procurement, which optimises cost structures. Marginal costing ensures that decisions are in line with overall profitability goals by assessing the financial feasibility of accepting orders with prices that vary from typical selling prices in special order scenarios.

Keywords: Role, Marginal Costing, Decision Support Systems, Managerial Decision-Making etc.

INTRODUCTION :

The implementation of effective cost management techniques is imperative for modern businesses to maintain competitiveness and ensure long-term sustainability. In the context of Ansell Sterile Solutions Private Limited, a company potentially operating within the pharmaceutical or healthcare industry, the adoption of marginal costing as a decision-making tool holds significant promise. Marginal costing, a technique that segregates variable costs from fixed costs, offers invaluable insights into cost structures, pricing strategies, and product mix optimization. By isolating variable costs associated with production, distribution, and other activities, Ansell Sterile Solutions can enhance cost visibility and make informed decisions to maximize profitability. This study aims to investigate the feasibility and efficacy of integrating marginal costing principles within the company's decision-making processes. Through the administration of a structured questionnaire to employees, perceptions and attitudes regarding the implementation of marginal costing will be assessed, providing valuable insights for organizational decision-makers. With a sample size of 110 employees, the study endeavors to contribute to the body of knowledge on cost management practices within the pharmaceutical sector, ultimately guiding Ansell Sterile Solutions towards more efficient resource allocation and strategic decision-making.

Importance of Marginal Costing

Marginal costing, also known as variable costing, is a managerial accounting technique used to analyze the relationship between costs, volume, and profits. Unlike absorption costing, which allocates both variable and fixed manufacturing overheads to units of production, marginal costing only considers variable manufacturing costs (direct materials, direct labour, and variable overhead) as product costs. Fixed manufacturing overheads are treated as period costs and are expensed In the period incurred.

Here's a detailed explanation of marginal costing:

1. Variable Costs: Marginal costing focuses on variable costs, which vary in direct proportion to the level of production or activity. These costs include:

- Direct Materials: The cost of raw materials or components directly attributable to the production of goods.
- Direct Labor: The wages or salaries of labour directly involved in the manufacturing process.
- Variable Overheads: Other manufacturing costs that fluctuate with the level of production, such as utilities or supplies.

2. Fixed Costs: Unlike variable costs, fixed costs remain constant regardless of the level of production. Examples include rent, salaries of permanent staff, insurance premiums, and depreciation of fixed assets. In marginal costing, fixed manufacturing overhead costs are treated as period costs and are not allocated to units of production.

3. Contribution Margin: The contribution margin represents the difference between sales revenue and variable costs. It indicates the amount of revenue available to cover fixed costs and contribute to profits after covering variable costs. Mathematically, it can be expressed as follows:

Contribution Margin = Sales Revenue – Variable Costs

OBJECTIVES OF THE STUDY

Primary Objective:

Implement marginal costing to enhance cost visibility and improve decision-making processes within Ansell Sterile Solutions Private Limited.

Secondary Objectives:

- Identify and categorize variable costs associated with production, distribution, and other activities.
- Align pricing strategies with variable costs to ensure profitability across product lines.
- Optimize the product mix by evaluating the contribution margins of individual products.
- Develop decision-making frameworks tailored to the company's specific needs and challenges.
- Enhance resource allocation efficiency through informed decision-making based on marginal costing analysis.

SCOPE OF THE STUDY

The scope of incorporating marginal costing as an essential tool for decision-making within Ansell Sterile Solutions Private Limited encompasses various facets of its operations. Firstly, the study would delve into analyzing the company's cost structure to identify and categorize variable costs associated with production, distribution, and other relevant activities. This would involve a comprehensive assessment of direct material costs, direct labor expenses, and variable overheads, among other factors. Secondly, the study would extend to examining pricing strategies and their alignment with variable costs to ensure profitability across product lines. It would entail evaluating market dynamics, competitor pricing, and customer preferences to inform strategic pricing decisions. Additionally, the scope would encompass optimizing the product mix by assessing the contribution margins of individual products and their impact on overall profitability.

Advantages of Marginal Costing

- Provides clarity on the relationship between costs, volume, and profits.
- Facilitates decision-making by focusing on relevant costs and contribution margin.
- Helps in pricing decisions by ensuring that prices cover variable costs and contribute to covering fixed costs.
- Supports performance evaluation and control by identifying cost behavior patterns and analyzing variances.

LIMITATIONS OF THE STUDY

- Marginal costing may overlook certain fixed costs, potentially leading to incomplete cost analysis.
- External factors such as changes in market conditions or regulatory requirements may impact the effectiveness of marginal costing.
- The study's findings may be influenced by the accuracy and reliability of the data used for cost analysis.
- Marginal costing may not fully account for long-term implications or strategic considerations in decision-making.
- The implementation of marginal costing may require significant organizational changes and employee training, which could pose logistical challenges.

REVIEW OF LITERATURE

Vahora (2018) stated that, the concept of marginal cost is based on the variable cost and fixed cost of the production. Variable expenses depend on sales and production of the company, when fixed cost is periodic cost. Marginal cost is increase or decrease in cost to produce of a unit after certain production units. Generally, marginal costing depends on the contribution, where contribution is the difference between the sales and the variable cost of the production. The company's contribution is more than its fixed cost as it is more profitable.

Sowmiya, Rathika, and Sathiya (2020) researched marginal cost performance in R3 businesses. The study project is carried out in R3 Enterprises using an analytical research design and data sources (i.e. secondary data collection of about 6 years of the balance sheet). The study's objective is to define the current state of cost mechanism and analysis, to examine how management uses this technique to make product decisions in businesses, to evaluate the marginal costing technique to define its effectiveness and efficiency, and to identify any inherent flaws in its application by R3 businesses.

Akan (2022) stated that, the impact of marginal costing procedures on the performance of the Nigerian manufacturing industry from 2011 to 2020 was investigated. Return on capital employed (ROCE) was used to measure performance, while direct material cost (DMC), direct labour cost (DLC), factory overhead cost (FOC), and administrative overhead cost were used to measure Marginal Costing Practices (AOC).

RESEARCH METHODOLOGY

a. Study area

The study area is Erode.

b. Design of the study

The study adopts a quantitative research design to gather numerical data and analyze relationships between variables. A cross-sectional approach is utilized to collect data at a single point in time.

c. Source of the data

Data collection involves both primary and secondary methods. Data is collected through the administration of a structured questionnaire designed to assess employees' perceptions and attitudes regarding the implementation of marginal costing. The Likert scale is employed to measure respondents' agreement with statements.

Primary data is gathered directly from the target population through the structured questionnaire, while secondary data is obtained from publicly available sources and company records.

Primary data: Primary data is collected directly from the respondents through the questionnaire, capturing their opinions and perspectives.

Secondary data: Secondary data, such as company financial reports and industry publications, may be referenced to provide context and background information for the study.

d. Research approach

A research approach can be viewed as a general plan and process for carrying out the investigation. This study employs a deductive approach. The validity of the underlying assumptions is tested by the deductive method.

e. Research instrument

A Research Instrument is a tool used to collect, measure, and analyse data related to the research interests.

f. Sampling technique

A sampling technique is the name or other identification of the specific process by which the entities of the sample have been selected. This study uses Non-Probability Sampling technique. Convenience sampling method is used. Convenience sampling involves using respondents who are "convenient" to the researcher.

g. Sample unit

Sampling unit is company employees.

h. Sample size

The study based only on the opinion of employees of the company. Total number of samples taken for the study is 110 respondents.

i. Analytical tools and methods

The commonly used statistical tools for analysis of collected data are:

1. Percentage analysis
2. Chi Square test analysis
3. Correlation analysis
4. Anova

DATA ANALYSIS AND INTERPRETATION

CORRELATION

Correlation analysis deals with the association between two or more variables. It does not tell anything about cause-and-effect relationship. Correlation is described or classified in several different ways. Karl Pearson's method is popularly known as Pearson's coefficient of correlation. It is denoted by the symbol 'r'.

Formula for Karl Pearson's coefficient, $r = \frac{\sum XY}{\sqrt{(\sum X^2)(\sum Y^2)}}$

The value of the coefficient of correlation as obtained by the above formula shall always lie between +1 and -1. When r = 1, it means there is perfect positive correlation between variables. When r = -1, it means there is perfect negative correlation between variables. When r = 0, it means no relationship between variables.

The table shows that the relationship between Age and Product mix decisions aim to maximize overall profitability.

Correlations			
		Age	Product mix decisions aim to maximize overall profitability
Age	Pearson Correlation	1	-.039
	Sig. (2-tailed)		.686
	N	110	110
Product mix decisions aim to maximize overall profitability	Pearson Correlation	-.039	1
	Sig. (2-tailed)	.686	
	N	110	110

Correlations				
			Age	Product mix decisions aim to maximize overall profitability
Kendall's tau_b	Age	Correlation Coefficient	1.000	-.002
		Sig. (2-tailed)	.	.980
		N	110	110
	Product mix decisions aim to maximize overall profitability	Correlation Coefficient	-.002	1.000
		Sig. (2-tailed)	.980	.
		N	110	110
Spearman's rho	Age	Correlation Coefficient	1.000	-.008
		Sig. (2-tailed)	.	.932
		N	110	110
	Product mix decisions aim to maximize overall profitability	Correlation Coefficient	-.008	1.000
		Sig. (2-tailed)	.932	.
		N	110	110

Interpretation:

The above table indicates that, co-efficient of correlation between relationship between Age and Product mix decisions is -.039. It is below 1. So, there is positive relationship between Age and Product mix decisions

Result

This is a positive correlation. There are relationships between Age and Product mix decisions aim to maximize overall profitability.

CHI-SQUARE ANALYSIS

Chi –square analysis in statistics to test the goodness of fit to verify the distribution of observed data with assumed theoretical distribution. Therefore, it is a measure to study the divergence of actual and expected frequencies. It makes no assumptions about the population being sampled. The quantity $\chi 2$ (chi- square) describes the magnitude of discrepancy between theory and observation. If $\chi 2$ is zero, it means that the observed and expected frequency completely coincides. The greater the value of $\chi 2$, the greater would be the discrepancy between observed and expected frequencies. The formula for computing Chi – Square ($\chi 2$) is as follows

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

Where, Oi = Observed frequency, Ei = Expected frequency

The calculated value of $\chi 2$ is compared with the table of $\chi 2$ for given degrees of freedom at specified level of significance. If the calculated value of $\chi 2$ is greater than the table value then the difference between theory and observation is considered to be significant. On the other hand, if the calculated value of $\chi 2$ less than the table value then the difference between theory and observation is not considered to be significant. The degrees of freedom are **(n – 1)** where 'n' is number of observed frequencies.

Relationship between Years of Experience and The company accurately tracks direct labour expenses.

Hypothesis testing

Null hypothesis (Ho):
There is no significant relationship between Years of Experience and The company accurately tracks direct labour expenses.

Alternative hypothesis (H1):
There is some significant relationship between Years of Experience and The company accurately tracks direct labour expenses.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Years of Experience * The company accurately tracks direct labour expenses	110	100.0%	0	0.0%	110	100.0%

Years of Experience * The company accurately tracks direct labour expenses Cross tabulation

		The company accurately tracks direct labour expenses					
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Years of Experience	Below 1 year	3	7	3	3	2	18
	1 – 7 years	5	9	5	7	2	28
	8 – 14 years	14	3	7	8	4	36
	15 – 20 years	1	5	2	2	3	13
	Above 20 years	3	4	4	2	2	15
Total		26	28	21	22	13	110

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.177[a]	16	.441
Likelihood Ratio	17.099	16	.379
Linear-by-Linear Association	.156	1	.693
N of Valid Cases	110		

a. 17 cells (68.0%) have expected count less than 5. The minimum expected count is 1.54.

Interpretation

As per the above table, it is inferred that the Pearson Chi-Square value is 16.177[a] and P value is 0.001; it is not significant to 5% (0.05) significant level. The minimum expected count is 0.9.3 Thus null hypothesis is accepted and it is finding that there is no significant relationship between income per month of the respondents and firm supply chain time taken in.

Result

Since the calculated value is less than the table value. So we accept the null hypothesis. There is no relationship between Years of Experience and The company accurately tracks direct labour expenses.

ANOVA

The analysis of variance is a method which separates the variation ascribable to one set of causes from the variation ascribable to other set. The total variation is split up into the following two components:

(a) Variation within the subgroups of samples

(b) Variation between the subgroups of the samples

The technique of analysis of variance is referred to as ANOVA. A table showing the source of variation, the sum of squares, degrees of freedom, mean square (variance) and the formula for the F-ratio is known as ANOVA table.

$$\text{F-statistic} = \frac{\text{Variance between the samples}}{\text{Variance within the samples}}$$

Hypothesis testing

Null Hypothesis (Ho):

There is no significant relationship between Position/Role in the Company and The company fosters a culture of data-driven decision-making.

Alternative Hypothesis (H1):

There is a significant relationship between Position/Role in the Company and The company fosters a culture of data-driven decision-making.

ANOVA

Position/Role in the Company

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.976	4	1.994	1.096	.362
Within Groups	191.015	105	1.819		
Total	198.991	109			

Interpretation

The table clearly shows age of the respondent's and think about the logistics operation of the company relationship with my superiors has a figure on 345.211 values and significance around .366 level than the sum of squares within group between groups values have 7.976 and 191.015 respectively. Hence, the significant value is less than 0.05 for which the significant percentage is above 95%, hence accepting alternative hypothesis. Thus, rejecting null hypothesis i.e., There is significant relationship between age of the respondent's and Think about the logistics operation of the company

Result

From the above analysis, we find that calculated value of the F-value is a positive 1.096 value, so H1 accept. Since the P value 0.000 is less than < 0.05 regarding there is a significant relationship between Position/Role in the Company and The company fosters a culture of data-driven decision-making. The results are significant at 5 % level.

FINDINGS:

1. Majority 42.7% of the respondents age are below 25 years.
2. Majority 32.7% of the respondents experience are 8-14 years.
3. Majority 71.8% of the respondents are male.
4. Majority 25.5% of the respondent position are production/operations.
5. Majority 47.3% of the respondents are agree in direct material costs associated with production.
6. Majority 25.5% of the respondents are agree in accurately tracks direct labour expenses.
7. Majority 23.6% of the respondents are neutral in company systematically records variable overhead costs.
8. Majority 21.8% of the respondents are strongly agree and agree in company distinguishes between variable and fixed costs in its cost analysis.

SUGGESTIONS:

It is very difficult to cost the service product due to intangible nature of the product and difficulty in costing elements such as labour which contribute to the cost significantly. This will also influence the decisions of pricing the product and cost control. The pricing decisions would also be influenced by the policy of the hospital where some services may be priced at cost and some other marked up. Inefficient cost allocations can make the task of hospital administrator difficult.

Marginal costing of product helps in focusing the attention to significant fixed costs in the hospital and can be applied to other services such as inpatient cost where volume of demand is unpredictable. Marginal costing provides insight into unproductive utilisation of resources, which may not be possible with absorption costing. Inherent inefficiencies in allocation of cost where product-mix is varied and labour is used for more than one task as in hospitals is also overcome by use of marginal costing.

CONCLUSION :

This study used a specific case study focusing on precision medicine to show the importance of going beyond an evaluation of the long run cost-effectiveness of an intervention and the limiting assumption of a constant net monetary benefit. Anticipating the pattern of nonlinearity in marginal costs and benefits and its impact on the value of implementation of precision medicine is important to ensure that otherwise cost-effective interventions are not implemented in a way that causes a net health loss to society. The use of value of implementation analysis in the context of precision medicine to evaluate implementation-improving strategies is also likely to produce significantly biased results if varying marginal costs and marginal benefits are not incorporated.

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