

The Cost - Based Pricing: Research in Pharmaceutical Enterprise in Hanoi



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ABSTRACT: The authors investigated and evaluated the factors affecting cost-based pricing in pharmaceutical enterprises in Hanoi. Data were surveyed and collected from 77 pharmaceutical enterprises in Hanoi in 2023 and analyzed using statistical tools. Pharmaceutical enterprises in Hanoi include large-sized enterprises and small and medium-sized enterprises. Survey subjects are mainly business administrators and accountants. The survey results show that there are three factors affecting the cost-based pricing method in pharmaceutical enterprises in Hanoi: (1) the degree of influence in price determination sales; (2) cost information; and (3) market share. Based on the obtained results, the authors present new proposals for applying cost management accounting methods to product pricing in pharmaceutical enterprises in Hanoi. Research also shows that businesses should invest in a cost management accounting system to provide information useful to managers in making product pricing decisions, especially when cost information is an important factor that has the strongest influence on the method of product pricing in pharmaceutical enterprises in Hanoi.

KEYWORDS: Cost-based pricing, pharmaceutical enterprises, Hanoi

1. INTRODUCTION

Vietnam's pharmaceutical industry is considered by experts to be a "fertile" market for domestic and foreign investors, worth up to 10 billion USD in 2020, has doubled compared to 2015. According to research According to IBM research, the scale of our country's pharmaceutical industry in 2026 could reach 16.1 billion USD. The market's revenue is 2% and will reach a compound annual growth milestone after the COVID-19 epidemic period. This is not surprising because the size of the pharmaceutical market in Vietnam will be increasingly expanding, currently the population of our country is about >97 million people, and the average life expectancy is 76 years old. However, Vietnam's pharmaceutical industry is only enough to supply about 40% of drug demand. Most of the domestic market has been dominated by imported pharmaceutical products (about 60%).

Vietnam is classified in the group of countries with emerging pharmaceutical industry (according to the classification of IQVIA Institute). The population is entering the aging phase, which means that the demand for health care is increasing. Besides, the level of willingness to pay for medical services tends to increase. Because per capita income and education level are improved while the living environment is increasingly at high risk of pollution, which increases the number of diseases... are the main factors leading to the development of the population. pharmaceutical industry. According to statistics of the Drug Administration of Vietnam, the industry will grow by double digits in the next 5 years and reach 7.7 billion USD in 2021 and 16.1 billion USD in 2026 (according to IBM), at a rate compound growth up to 11%. It can be seen that the pharmaceutical industry is showing positive signs for post-pandemic recovery and is a potential market for investors.

Therefore, determining a reasonable selling price to improve business efficiency is one of the most important issues of corporate governance. When making pricing decisions, managers rely on different sources of information for different pricing strategies, but cost information cannot be ignored. Therefore, a management accounting system to be able to control cost and selling price information in the changing business environment is essential to maintaining and developing the business. In developed countries, modern cost management accounting systems have been developed and are used to provide useful information for managers in product pricing.

Studies have shown that most businesses in the world tend to use cost-based pricing methods in determining product prices. However, in Vietnam, pharmaceutical enterprises in Hanoi still focus on financial accounting to get cost information for the pricing of their products. This accounting system cannot provide administrators with relevant, timely, and reliable cost information

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for decision making on product pricing. Therefore, pharmaceutical enterprises in Hanoi will be less able to stand in an increasingly competitive business environment. This paper studies and evaluates the factors affecting the cost-based pricing method in pharmaceutical enterprises in Hanoi.

2. LITERATURE REVIEW

Guiding et al. (2005) collected data from a survey of 280 companies in the UK and Australia to investigate cost-based pricing and learn about the factors that influence cost-based pricing. Research has pointed out three factors that can influence that: business size, level of competition, and business lines. The study concludes that the level of competition and industry have an influence on the cost-based pricing approach. Firm size has no effect on this valuation method.

Research by Huda Al-Hussari (2006) surveyed 1000 businesses in the food processing and other industries in the UK. Research has pointed out seven factors that affect the cost-based pricing method: the business strategy of the business, business size, market share of the business, competition level, level of product response according to customer requirements, degree of influence in determining the selling price, and cost information.

Research by Peter Lane and Chris Durden (2013) investigates the factors influencing cost-based pricing in UK tourism organisations. The results of the study indicate that the size of the firm affects the cost-based pricing method.

Vu Thi Kim Anh et al. (2018) evaluate the factors affecting the cost-based pricing method for animal feed manufacturers in Vietnam. Data was surveyed and collected from 199 feed manufacturers in Vietnam in 2017 and analyzed using statistical tools. The survey results show that there are five factors affecting the cost-based pricing method in animal feed processing enterprises in Vietnam: (1) Enterprise size, (2) influence in determining selling price, (3) differentiation strategy, (4) cost information, and (5) market share. In which, the cost information factor has the strongest influence and the market share has the weakest influence on the cost-based pricing method in animal feed processing enterprises in Vietnam.

Through the review of studies on the factors affecting the cost-based pricing method, the authors found that there is no research focused on studying the factors affecting the cost-based pricing method in the pharmaceutical industry in Vietnam in general and in Hanoi in particular. Therefore, the authors found a gap in their research. The authors identified the following factors: (1) business strategy; (2) market share; (3) cost information; and (4) the degree of influence in determining the selling price.

Therefore, the authors put forward the following hypotheses:

H1: Business strategy is positively related to cost-based pricing

H2: Market share is positively related to cost-based pricing.

H3: Cost information is positively related to cost-based pricing.

H4: The level of influence in determining the selling price has a positive relationship with the cost-based pricing method.

3. RESEARCH METHOD

Research data and samples

The research samples were carried out at pharmaceutical enterprises in Hanoi in 2023. According to statistics on the pharmaceutical industry, there are currently about 327 pharmaceutical companies located in Hanoi. The survey sample was stratified randomly.

With 13 observed variables in the study, the minimum sample size in factor analysis and regression analysis is from 5 to 10 times the observed variable (Hair et al., 1998). Thus, the minimum number of samples in this study is $13 * 5 = 65$ survey units. At the end of the survey period of 2 months in March and April 2023. Out of 122 pharmaceutical enterprises that responded to the survey, the research team received feedback from 81 of them. In which case, the number of valid votes is 77 survey votes. Therefore, the authors used the number of survey samples in this study to be $n = 77$ survey units, so the minimum sample size requirement was met.

Research Methods

The authors used quantitative research methods: the questionnaire was sent to the respondents at the enterprises in the sample via the internet from the Google Driver tool, by post, or by telephone interview. The level of the questions is measured using a 5-point Likert scale. All variables in the questionnaire have been developed from suggestions in the research literature and have been used previously. The scales of this study are inherited from Huda (2006), Peter Lane, Chris Durden (2013), Guiding et al. (2005). The details of the scale are shown in Table 1:

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Table 1: Explanatory table and coding of the scale

No	Factor	Code	No. Variables
1	Business strategy	STRA	3
2	Market share	SHA	2
3	Cost information	COST	4
4	The degree of influence in determining the selling price	ISP	2
5	Cost-based pricing method	PRICE	2

Analytical methods

After receiving the survey form back, the answer sheets are processed before updating to the data analysis software SPSS 22 and performing the following 4 steps:

- Check the reliability of the scale (Cronbach's Alpha)
- Exploratory Factor Analysis (EFA)
- Check the correlation coefficient
- Using multivariable linear regression model

4. RESULTS

Evaluate the reliability of the scale

All measurement factors are evaluated for reliability through Cronbach's alpha coefficient. We have the following Cronbach's alpha results:

Table 2. Reliability Statistics

Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Scale Mean if Item Deleted
Cronbach's Alpha = .819				
COST1	11.78	3.043	.657	.766
COST2	11.73	3.043	.586	.799
COST3	11.74	2.905	.674	.757
COST4	11.62	3.001	.651	.768
Cronbach's Alpha = 700				
STRA1	6.60	.612	.497	.631
STRA2	6.61	.662	.425	.715
STRA3	6.51	.490	.639	.437
Cronbach's Alpha = 686				
SHA1	3.60	.402	.526	.
SHA2	3.71	.312	.526	.
Cronbach's Alpha = .649				
ISP1	3.57	.432	.481	.
ISP2	3.62	.475	.481	.
Cronbach's Alpha = 770				
PRICE1	3.58	.272	.626	.
PRICE2	3.55	.251	.626	.

Thus, all Cronbach's alpha coefficients of 4 independent and dependent variables have Cronbach's alpha > 0.6. The correlation coefficients of the total variables of the observed variables all meet the requirements > 0.3, ensuring that the given scales can be trusted in a statistically significant way.

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Exploratory factor analysis

After analyzing the Cronbach's alpha confidence coefficient, the scales were next evaluated by exploratory factor analysis (EFA). (Table 3)

Table 3. Rotated Component Matrix^a

	Component			
	1	2	3	4
COST3	.882			
COST1	.804			
COST2	.710			
COST4	.696			
STRA3		.833		
STRA2		.806		
STRA1		.642		
SHA2			.906	
SHA1			.805	
ISP2				.894
ISP1				.746

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

From 11 variables observed factors affecting the cost-based pricing method are included in the factor analysis. The observed variables all satisfy the requirements of factor analysis and are divided into four groups. Thus, all the scales selected for the variables in the model meet the requirements and can be used in the next analysis.

Correlation analysis

The results of the correlation coefficient analysis indicate that there is not enough evidence to confirm the relationship between the business strategy factor and the cost-based pricing method. Because the observed significance level of this factor is greater than 0.05

From the results of the correlation analysis, the author has removed the observed variables that have no statistical relationship and kept the observed variables: cost information, market share, influence level in determining selling price, and method of cost-based pricing for inclusion in the regression analysis

Table 4. Correlations

	PRICE	COST	STRA	SHA	ISP
Pearson Correlation	1	.380**	.152	.341**	.394**
PRICE Sig. (2-tailed)		.001	.187	.002	.000
N	77	77	77	77	77
Pearson Correlation	.380**	1	-.302**	-.203	.403**
COST Sig. (2-tailed)	.001		.008	.077	.000
N	77	77	77	77	77
Pearson Correlation	.152	-.302**	1	.029	-.221
STRA Sig. (2-tailed)	.187	.008		.805	.054
N	77	77	77	77	77
Pearson Correlation	.341**	-.203	.029	1	-.040
SHA Sig. (2-tailed)	.002	.077	.805		.730
N	77	77	77	77	77
Pearson Correlation	.394**	.403**	-.221	-.040	1
ISP Sig. (2-tailed)	.000	.000	.054	.730	
N	77	77	77	77	77

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** . Correlation is significant at the 0.01 level (2-tailed).

Multivariate regression analysis

Table 5. ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.240	3	2.080	15.283	.000 ^b
	Residual	9.935	73	.136		
	Total	16.175	76			

a. Dependent Variable: PRICE

b. Predictors: (Constant), ISP, SHA, COST

The ANOVA table gives us the results of the F test to evaluate the hypothesis of fit of the regression model. The F-test sig value is $0.000 < 0.05$, so the regression model is suitable.

Table 6.

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	COST	.803	1.246
	SHA	.957	1.045
	ISP	.836	1.197

In this study, the sig regression coefficients of the independent variables are all less than or equal to 0.05, so these independent variables are all significant to explain the dependent variable, none of them are removed. VIF coefficient is less than 2 so no multicollinearity occurs so no variable is excluded from the model.

Table 7.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.277	.491		.564	.575
	COST	.295	.084	.358	3.500	.001
	SHA	.375	.083	.424	4.520	.000
	ISP	.212	.080	.267	2.659	.010

After many times of processing the regression model by different methods, the author chooses the Enter method (putting all variables into the regression equation) for the best regression model results as follows:

$$\text{PRICE} = 0.358 * \text{COST} + 0.424 * \text{SHA} + 0.267 * \text{ISP}$$

Through the results of linear regression analysis, we see that cost information factors (.358, $p = 0.001$), market share (.424, $p = 0.00$), and influence level in determining selling price (.267, $p = 0.010$) have a positive and statistically significant relationship with the cost-based pricing method.

Therefore, the following hypotheses are accepted:

H2: Market share is positively related to cost-based pricing.

H3: Cost information is positively related to cost-based pricing.

H4: The level of influence in determining the selling price has a positive relationship with the cost-based pricing method.

There is not enough evidence to prove the factors: business strategy affect cost-based pricing in pharmaceutical enterprises in Hanoi. Therefore, hypothesis H1 is not accepted.

The results of regression model analysis show that the adjusted R2 coefficient is 0.386, showing that the independent variables

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have the ability to explain 38.6% for the dependent variable.

5. DISCUSSION AND CONCLUSION

Vietnam's healthcare market will be worth \$16.2 billion in 2020, accounting for 6.0% of GDP. Total health spending increased from USD 16.1 billion in 2017 to over USD 20 billion in 2021, projected to reach USD 23.3 billion in 2025 and USD 33.8 billion in 2030, at a CAGR of 7.6% (2020–2030). Spending on pharmaceuticals will also increase to more than \$6.6 billion in 2021. These figures show that the pharmaceutical industry has many growth opportunities in the future. However, in the context of many changes in the world, the pharmaceutical industry in Vietnam in general and in Hanoi in particular is facing many great challenges. Product price is one of the factors contributing to helping pharmaceutical enterprises stand firm in the market. Through this study, the authors have identified the factors affecting the cost-based pricing method in pharmaceutical enterprises in Hanoi, which are cost information, market share, and the level of influence in determining the selling price. Based on the research results, the authors make recommendations on the application of management accounting methods to product pricing in pharmaceutical enterprises in Hanoi.

Firstly, the research results show that cost information is an important factor in product pricing methods in pharmaceutical enterprises in Hanoi. Therefore, pharmaceutical enterprises in Hanoi need to pay attention to methods of determining and calculating costs. If only stopping at the cost system in financial accounting will not be enough information for managers to make business decisions. Enterprises need to invest in building a cost system in management accounting, especially using modern management accounting techniques.

Secondly, in terms of general cost allocation, enterprises should allocate overheads using a reasonable allocation basis, with the selected allocation base and the incurred overheads having a causal relationship. In addition, businesses can also use the ABC method to determine the overall cost of a product as the basis for pricing the product at full cost.

Third, research has shown that the determination of the product price depends on the market share and the degree of influence on the determination of the selling price, so it depends on the position of the business in the market to use appropriate information. For businesses with high positions, they often use the cost-plus method to determine the selling price of their products. For small businesses with low market share positions, pricing decisions should also be based on variable and total cost. However, these businesses, besides cost information, need to pay attention to other information such as competitors' prices, market share of the business, product features... to set prices.

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