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Factors Influencing the Intention to Apply Cost-Volume-Profit Analysis in Labor Export Enterprises: Research of the Technology Acceptance Model (TAM)

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Abstract

Cost-volume-profit analysis (CVP) is an analysis of costs, analysis of production and consumption volume, and analysis of selling prices affecting the profitability of enterprises. CVP analysis provides appropriate and timely information to help manager make effective business decisions. CVP analysis-a technique of management accounting that provides sufficient information including financial and non-financial information. Therefore, CVP analysis becomes an indispensable management tool and always exists in providing information for business decision making at all times. However, managers often only focus on

financial accounting in the enterprise without paying or paying little attention to applying management accounting, mainly applying CVP analysis. This article is based on the technology acceptance model, implemented at Labor Export Enterprises in Vietnam with 116 surveyed questionnaires to assess core values. Factors affecting the intention to apply CVP analysis of managers. The results showed that factors affecting the intention of applying CVP analysis of enterprises include perceived usefulness, perceived ease of use of CVP analysis and social impact. This article brings important contributions to academics and practical solutions.

Keywords: Cost-Volume-Profit Analysis (CVP), Manager, Intention of Applying

1. Introduction

Cost-volume-profit (CVP) analysis has been studied from many different perspectives through each period of development, with changes in cost indicators including variable cost and fix cost, and prices changing affected profits. Research by Ismail & Louderback, (1979) ^[8], Liao (1975) shew the development of a stochastic, simulation and probabilistic CVP relationship analysis model. According to James A. Yunker and Penelope J. Yunker (1982) ^[10], CVP analysis is considered a tool to provide information for business decision making, with a focus on the future. Profits are affected by 5 factors: selling price, sales output, supply output, variable costs per product unit and fixed costs, so the future value of the 5 factors This factor will determine the future value of profits. Tallian (2018) in his thesis researching CVP analysis, the author believes that there are five main indicators that affect the change in profitability of a business, which are: selling price, overall sales, volume, variable costs and fixed costs. The author studies and analyzes CVP in manufacturing enterprises according to break-even point and evaluates the magnitude of business leverage. Studies by Hilliard and Leitch (1975) ^[7]; Jaedicke and Robichek (1964) ^[9]; Morrison and Kaczka, (1969) improved by using different variables such as: sales volume, product price and cost as random variables. Researchs around the world focus on the criteria or content of CVP analysis in businesses. Research in Vietnam often only studies separately each criterion of cost, selling price or profit. In this study, the author clarifies the usefulness of CVP analysis and factors influencing the application of this analysis in Labor export enterprises in Vietnam, using quantitative analysis according to the Technology Acceptance Model (TAM). Labor export enterprises play an important role in economic growth and are considered the backbone of economic integration.

2. Theoretical Basis and Research Model

Previous studies have used many different theoretical foundations and models to study factors influencing human behavior. The initial trend focused on assessing the intention to accept applied information in the fields of psychology and sociology, the later trend looked at the fields of industry, information technology and management. Research of factors affecting the application of CVP analysis is in accordance with later trend. The commonly used model is the technology acceptance model TAM. This model was developed from the model of reasoned action and behavior intention by David (1989) ^[4] to clarify the factors influencing the acceptance of new technology, explaining the behavior of user through evaluating the impact of

information on user in terms of trust, attitude, usefulness and intention. The TAM model posits that perceived usefulness and ease of use affect intention and thereby affect usage behavior. The TAM model was chosen for this study because of its wide applicability in previous studies. Variables were streamlined but still ensuring to explain the intention to use information.

Mô hình nghiên cứu nhân tố được tác giả đề xuất theo Hình 1 với các giả thuyết sau:

The factor research model was proposed as Figure 1 with the following hypotheses:

Hypothesis 1 (H1): Perceived usefulness of CVP analysis will have positive influence on the intention to use CVP analysis.

Hypothesis 2 (H2): Perceived ease of use of CVP analysis will have positive influence on the intention to use CVP analysis.

Hypothesis 3 (H3): Social influence supporting the application of CVP analysis will have positive influence on the intention to use CVP analysis.

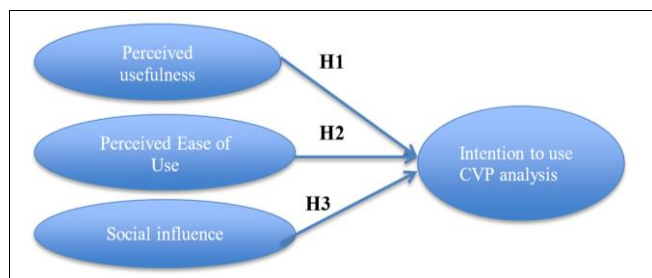


Fig 1: Proposed research model

Specific metrics:

- Perceived usefulness: measured by 5 scales:
 - IL1: Collect information quickly and promptly
 - IL2: Increase work efficiency
 - IL3: Calculate cost savings and determine a reasonable selling price
 - IL4: Necessary and suitable for the business
 - IL5: Useful in providing information for decision making.
- Perceived of ease of use: measured by 4 scales:
 - VD 1: Learning CVP analysis is not difficult
 - VD 2: CVP analysis objects is easy and clear to understand
 - VD 3: Easily perform CVP analysis
 - VD 4: Easily apply CVP analysis
- Social influence: measured by 3 scales:
 - AH1: Management request for information provision
 - AH2: Closed businesses used to provide information
 - AH3: Recommended by experienced managers.
- Intention to apply CVP analysis: measured by 4 scales:
 - YD1: Plan to analyze CVP regularly
 - YD2: Plan to apply CVP analysis to provide information
 - YD3: CVP analysis is useful so we will apply it
 - YD4: CVP analysis is easy to use so I will apply it.

3. Research Methods

The article uses quantitative analysis research method to evaluate the current state of intention to apply CVP analysis in making business decisions of managers in labor export enterprises. This article conducts an investigation and survey using a live questionnaire for manager of labor export enterprises. The questionnaire is divided into 5 main parts: Perceived usefulness; Perceived ease of use; Social

influence; Intention to apply CVP analysis; Respondent information. The questionnaire is built on a 5-point Likert scale from level 1 - Strongly disagree to level 5 - Strongly agree. The implementation stages are as follows:

Step 1: Test survey sent to 10 managers of 10 labor export enterprises to check the validity and understandability of the questions, editing according to comments received to complete the survey.

Step 2: Send the official survey to administrators of labor export enterprises by hard copy or Google Drive.

Step 3: Collect and clean data: The total sent ballots is 140, the number of valid received ballots is 116. This sample number is larger than the minimum sample size (the number of observed variables is 16 so the minimum sample size is 80 survey units), satisfying the research conditions. Then data is checked and cleaned.

Step 4: Analyze data on SPSS 20 software.

4. Research Results

Description of the Research Sample

Out of a total of 140 survey questionnaires sent to Administrators including Directors and Deputy Directors of 70 businesses, the author received 116 questionnaires, of which the rate of female administrators responding accounted for 78.5%; male managers accounted for 22.5%. The age from 30 to 40 years old was accounted for the highest rate of 76.6%, followed by the age from 40 to 50 years old accounting for 18.8%. Experience of 5 years or more accounts for the highest proportion of 51.7%, experience of 1-5 years accounts for 38.3%, experience of less than 1 year is insignificant at only 9.2%. The common age of managers in the labor export enterprises surveyed is from 35 to 50 years old, accounting for 76.6%, with the rest evenly distributed among the ages under 35 and from 35-50 years old. The qualifications of administrators are mainly university graduates (accounting for 75.6%), college graduates are only 16.8% and post-graduate degrees are 7.6%. Business administration majors account for a high proportion of 58.5%, the remaining economics majors account for 29.6% and other majors account for 11.9%.

KMO and Barlett's Test

The author uses 16 observed variables to measure 3 factors that influence the intention to apply CVP analysis of managers in labor export enterprises. KMO and Barlett's test results are as below:

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Samping Adequacy		.756
Bartlett's Test of Sphericity	Approx. Chi-Square	735.318
	Df	138
	Sig.	.000

Hệ số KMO = 0,756 > 0, 05 chứng tỏ nghiên cứu có đủ biến quan sát để cấu thành một nhân tố. Mức ý nghĩa Sig = 0,000 < 0, 05 cho thấy kiểm định Balett có ý nghĩa thống kê và các biến quan sát đều có mối tương quan với nhau.

KMO coefficient = 0.756 > 0.05 proves that the study has enough observed variables to constitute a factor. Significance level Sig = 0.000 < 0.05 shows that the Balett test is statistically significant and the observed variables are correlated with each other.

Exploratory Factor Analysis

The research hypothesis is that these three factors are considered to have a proportional relationship with the administrator's intention to apply CVP analysis. The results of exploratory factor analysis with 3 groups of factors (usefulness, ease of use and influence from others) were initially expected to be different. The variable "Experienced administrators recommend applying CVP analysis" has Factor loading = 0.402 < 0.5, so it should not be used further. After removing this observed variable, the results of the second factor analysis are shown in Table 2.

Table 2: Results of factor analysis (Rotated Component Matrix^a)

	Component		
	1	2	3
Easy to use CVP analysis	.862		
Easy to apply CVP analysis	.772		
Not difficult to learn CVP analysis	.733		
CVP analysis objects is clear and easy to understand	.685		
Applying CVP analysis is necessary		.802	
Applying CVP analysis gets the saving cost and make reasonable price		.680	
Applying CVP analysis collects information quickly and promptly		.648	
Applying CVP analysis increases working efficiency		.520	
Applying CVP analysis is a useful method to provide finance information		.595	
Closed businesses apply CVP analysis			.789
Applying CVP analysis is required by managers			.620

Thus, the group of factors affecting the intention to apply CVP analysis includes: Perceived usefulness including 05 observed variables; The perceived ease of use factor includes 4 variables; The environmental influencing factor has 02 variables. However, to be able to confirm with certainty whether these observed variables are sufficiently linked, the article conducts an analysis to evaluate the reliability of the variables.

The Reliability of Scale Assessing

The author uses testing using Cronbac's Alpha coefficient and total variable correlation coefficient to evaluate the internal consistency of each factor.

Evaluate the reliability of the perceived usefulness factor

The "Perceived usefulness" factor of CVP analysis is measured by 5 scales from IL1 to IL5. Analysis results show that Cronbach's Alpha coefficients are all greater than 0.70, and correlation coefficients are all greater than 0.3 (Nunnally & Burnstein, 1994). According to Kline (1998), we can confirm that these observed variables are reliable enough to become independent variables in regression analysis, and are used for subsequent EFA exploratory factor analysis. Table 3 shows that the adjusted Cronbach's alpha coefficient of correlation of 5 observed variables is greater than 0.3, proving that these variables are internally consistent and have enough reliability in terms of cohesion for evaluating the factors influencing the application of CVP analysis.

Table 3: Reliability Statistics table of the perceived usefulness factors group

	Sacle Mean if Item Deleted	Sacle Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IL1	70.83	23.842	.468	.745
IL2	70.51	23.833	.408	.743
IL3	70.75	23.152	.532	.738
IL4	70.48	23.868	.387	.749
IL5	70.78	24.150	.410	.748

Evaluate the reliability of the perceived ease of use factor

The factor "Perceived ease of use" is measured by 4 factors from VD1 to VD4. The test results show that Cronbach's Alpha coefficients are all greater than 0.70, and the total variable correlation coefficients are all greater than 0.3, proving that these observed variables are reliable enough to become independent variables in regression analysis.

Table 4: Reliability Statistics table of the perceived ease of use factor group

	Sacle Mean if Item Deleted	Sacle Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VD1	70.89	23.819	.448	.745
VD2	70.81	23.743	.413	.747
VD3	71.02	24.556	.431	.749
VD4	70.95	25.535	.302	.757

Evaluate the Reliability of Social Influence Factor

The "Social Influence" factor is measured by 3 factors from AH1 to AH3. The test results show that Cronbach's Alpha coefficients are all greater than 0.70, and the total variable correlation coefficients are all greater than 0.3, proving that these observed variables are reliable enough to become independent variables in the regression analysis.

Table 5: Reliability Statistics table of the social influence factor group

	Sacle Mean if Item Deleted	Sacle Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
AH1	70.82	23.619	.482	.743
AH2	71.15	23.019	.368	.752

Analysis Comparison Group

Comparing the application of CVP analysis by gender: the author compares the intention to apply CVP analysis according to male and female to understand the difference in use of these two subjects. Comparison results by gender show that there is a difference between male and female managers in the intention to apply CVP analysis to provide information in business decision making (Sig. = 0.039 < 0.05).

Comparing the application of CVP analysis according to experience: the author compares the intention of applying CVP analysis of accountants according to experience. In Levene statistics, Sig. = 0.743 > 0.05 proves that there is no difference in experience in the intention to apply CVP analysis in decision making.

Comparing the application of CVP analysis according to age: the author compares the intention to apply CVP analysis according to age. The comparison results show that there is no difference in age in administrators' intention to apply CVP analysis to provide information in business decision making (Sig. = 0.077 > 0.05).

Comparing the application of CVP analysis according to education: Comparison results according to educational level indicate that there is no difference between educational levels in the intention to apply CVP analysis to provide information in business decision making of managers (Sig. = 0.127 > 0.05)

Comparing the application of CVP analysis by major: the author compares the intention to apply CVP analysis by major to understand the difference in this variable. Levene statistical results have Sig. = 0.265 > 0.05 proves that the variance between the choices of qualitative variables is not different. However, the results in the Anova analysis were statistically significant (Sig.=0.001<0.05). This shows that there is a statistically significant difference in the intention to apply CVP analysis of managers trained in different majors. According to the results of the statistical description table in the Anova one way analysis, managers trained in the Business Administration major intend to apply CVP analysis to their work in order to use information for the decision-making process, higher than managers trained in economics and other majors.

Multivariate Regression Analysis

According to the model, the intention to apply cost-volume-profit analysis of managers in labor export enterprises in Vietnam is affected by three factors: perceived usefulness, perceived ease of use and social impact. In order to evaluate the influence of these three groups of factors on the application of CVP analysis by administrators according to the stated hypotheses, the author performed multivariate regression analysis.

Table 6: Model of multivariate regression analysis

Model	R	R Square	Adjusted R Square	Standardized error of estimate
1	.789 ^a	.623	.613	1.27977

a. Predictors: (Constant), Social influence, Perceived ease of use, Perceived usefulness

Table 6 shows the model of factors "social influence", "perceived ease of use", "perceived usefulness" affecting the intention to apply CVP analysis. R square = 0.623 shows that the model can explain 62.3% of the total impact of factors on the intention to apply CVP analysis of managers in using useful information promptly in making business decisions.

Table 7: Results of multivariate regression analysis –Coefficients

		Unstandardized Coefficients		Standardized Coefficients	T
		B	Std error	Beta	
1	(Constant)	-4.852	1.598		-3.089
	AH	.305	.081	.228	3.715
	IL	.479	.065	.447	7.274
	VD	.556	.092	.380	6.038

		Sig.	Collinearity statistics	
			Tolerance	VIF
1	(Constant)	.002		
	AH	.000	.868	1.156
	IL	.000	.865	1.164
	VD	.000	.832	1.217

The results of multivariate regression analysis show that the model is statistically significant (Sig.=0<0.05), in which, assessing the impact of 3 groups of factors are perceived usefulness, perceived ease of use and social influence on the application of CVP analysis by managers in using timely useful financial and non-financial information in making business decisions. The model has a high level of explanation for the impact of factors. The relationship between variables is expressed through the following equation:

$$YD = -4.852 + 0.556*IL + 0.479*VD + 0.305*AH$$

5. Conclusion

The regression results supported the hypotheses: Perceived usefulness, Perceived ease of use and Social influence all have a positive and statistically significant relationship with the intention to apply CVP analysis of managers in using financial and non-financial information in the business decision-making process timely and usefully at labor export enterprises in Vietnam. Perceived usefulness has the highest impact on the intention to apply CVP analysis with a coefficient of 0.556, Perceived ease of use affects the intention to apply CVP analysis with a coefficient of 0.479, and Social Influence has an impact with the lowest coefficient of 0.305. This means that each positive change in perceived usefulness will increase the intention to apply CVP analysis of managers by 0.556 times, and perceived ease of use will increase the intention to apply CVP analysis increased by 0.479 times. The social impact of people who has influence on managers' decision only increases applying intention by 0.305 times.

The analysis results show that the proposed model is suitable for the data. Regarding gender, research shows that there is not basis for differences between men and women in the application of CVP analysis. On the contrary, based on major, managers with different training majors has intention to apply CVP analysis for business decision making at different levels. Managers trained in business administration have a higher intention to apply CVP analysis in using the information provided for the business decision-making process than the managers trained in economics and other majors.

Research has shown the impact of factors influencing the intention to apply cost-volume-profit analysis in the business decision-making process of managers, based on the technology acceptance model, inheriting the scale of Davis *et al* (1989) [4], Venkatesh *et al* (2003) [12]. In practical terms, this is considered as a testament to the effectiveness of CVP analysis in providing information for managers timely usefully, serving business decision making in enterprises. To be more effective in applying CVP analysis, businesses need to focus on increasing awareness of the usefulness and ease of use of analysis, and actively use CVP analysis in accountance and management.

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