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A Study on the Impact of Management Accounting Application on the Management Efficiency of Public Hospitals in Thanh Hoa Province, Vietnam

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ABSTRACT

Based on the actual situation of Public Hospitals in Thanh Hoa Province and the role of Management Accountants in performing the management function of managers, the authors conduct a study on the relationship between accounting application management to management efficiency in Public Hospitals in Thanh Hoa Province to find out the relationship between the application of management accounting to the operation management of the hospital, thereby making necessary recommendations for the application of Management Accounting. Management accounting in hospitals is reasonable and appropriate, bringing a positive impact on management in Public Hospitals in the current context of Financial Autonomy.

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INTRODUCTION

In Thanh Hoa province, there are 54 hospitals, 31 health centers and 559 commune health stations, of which there are 38 Public Hospitals, including 12 provincial hospitals and 26 district hospitals. The number of Public Hospitals is large and most have switched to a new autonomous financial management mechanism, the degree of the autonomy depends on the size of the hospital, which focuses on autonomy in the following contents: Autonomy in performing tasks such as autonomy in planning, autonomy in organizing task performance; autonomy in the organization of the management apparatus; autonomy in human resources; autonomy in finance. This has put Public Hospitals in general and Public Hospitals in Thanh Hoa province in particular in an urgent need to change in management and operating thinking. The hospital's operation is to ensure the implementation of the hospital's commitments, roadmap and autonomy plan ensure the quality of medical examination and treatment services according to the current criteria and standards of the Ministry of Health. Meanwhile, based on the previous operation status of Public Hospitals in Thanh Hoa province, they have had good medical examination and treatment foundations, they have potential in terms of financial resources. They also have potential human resources due to the policies to attract medical staff of the

government. When switching to autonomy, the hospitals face many difficulties because they have to be responsible for most of the hospital's operations. They also need good financial resources to ensure income for their staff and perform the required medical examination and treatment tasks. Therefore, it's necessary to have a system to provide information, help the managers and leaders in the process of organizing, managing, operating, inspecting and controlling hospital activities in order to compete with the growing private hospitals and gradually occupy advantages in providing medical examination and treatment services to people in Thanh Hoa province. A large number of Public Hospitals with well-trained medical staff have been meeting the medical examination and treatment requirements of citizens in Thanh Hoa Province and surrounding areas. Table 1.1 shows Statistics on the number and size of Public Hospitals in Thanh Hoa Province.

Table 1.1: Statistics on the number and size of Public Hospitals in Thanh Hoa Province

STT	Hospital	Number of hospitals	Average number of staff/hospital (person/hospital)	Average bed size/hospital (bed/hospital)
1	Provincial General Hospital	2	876	1.010
2	Provincial specialized hospital	10	265	210
3	District Hospital	26	230	326

(Source: Thanh Hoa Department of Health)

To implement Decree No. 16/2015/ND-CP dated February 14, 2015 of the Government on regulations on autonomy mechanism of public non-business units in the field of economic and other non-business services, Public Hospitals have switched to an autonomous financial management mechanism with a degree of autonomy depending on the size of the hospital, on the basis of the number of beds and the medical examination and treatment capacity of each hospital. Along with the implementation of the autonomy mechanism, the budget allocated to Public Hospitals tends to decrease over the years, the structure of the hospital's revenue has changed markedly. Table 1.2 shows that the revenue of Public Hospitals in Thanh Hoa province tends to decrease from 2019 to 2021 (in 2020 it decreased by 8.3% compared to 2019 and in 2021 it decreased by 4.1 compared to the previous year 2020 due to the impact of the covid 19 epidemic).

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Table 1.2: Revenue structure of Public Hospitals in Thanh Hoa province (in million VND)

Items	2019		Year 2020		Year 2021		Year 2020/2019		Year 2021/2020	
	amount of money	proportion	amount of money	proportion	amount of money	proportion	Amount of money	proportion	Amount of money	proportion
State budget grant on quota	197,604	8, 4	166,294	7, 8	133,943	6.5	(31,310)	(15 , 8)	(32,351)	(19, 5)
Health insurance collection	2,077.815	8 9	1,889,031	88.2	1.819,866	88.6	(188,784)	(9, 1)	(69,165)	(3, 7)
Other earnings	60,492	2, 6	86,484	4	100,314	4, 9	25,992	4 3	13,830	1 6
Total	**2,335, 911**	**100%**	**2.141, 809**	**100%**	**2.054. 123**	**100%**	**(194.102)**	**(8.3)**	**(87,686)**	**(4, 1)**

(Source: the author processes data from Thanh Hoa Department of Health)

Management accounting effectively supports management tools at organizations, but the most popular in companies, private economic organizations with the goal of profit maximization. In recent years, management accounting has also been interested by many researchers in Revenue generating public service delivery units, especially public non-business organizations with revenue in order to effectively manage the operations, to avoid waste of resources, especially in the context that the government is gradually transferring them to the autonomy mechanism. That requires a change in the financial management mechanism, which has put these units in front of the challenge. It is step by step implementing autonomy both in the professional field and also in the financial field. The units need to change management thinking, be more proactive and creative in the way the organization operates, thereby adapting and meeting the requirements of innovation to get future development and Public Hospitals are no exception to that trend.

Management accounting has an important role in all management functions, that is, in the process of planning and decision-making, organizing and controlling the activities, and measuring the performance of divisions, thereby promoting the departments to achieve their goals as well as promptly overcome the challenges in the operation process.

Management accounting has an important role in improving the quality of management activities of managers at Public Hospitals in Thanh Hoa province. In his research, the author Nguyen Phong Nguyen et al. (2016) believe that the use of cost systems in effective management accounting will affect the quality of effective management of Public Hospitals in Vietnam. Hammad et al. (2010) also suggested that the study and design of appropriate management accounting systems have an important role in improving management performance of Egyptian Hospitals.

Based on the actual situation of Public Hospitals in Thanh Hoa Province and the role of Management Accountants in performing the management function of managers, the authors conduct a study on the relationship between accounting application management to management efficiency in Public Hospitals in Thanh Hoa Province to find out the relationship between the application of management accounting to the operation management of the hospital, thereby making necessary recommendations for the application of Management Accounting. Management accounting in hospitals is reasonable and appropriate, bringing a positive impact on management in Public Hospitals in the current context of Financial Autonomy.

RESEARCH METHOD AND RESEARCH MODEL

Survey Process

In order to conduct research on the effect of applying management accounting on the management efficiency of Public Hospitals in Thanh Hoa province, the author has conducted through 2 steps: qualitative research and quantitative research. The authors have conducted a survey of 38 hospitals with their senior and intermediate managers such as hospital leaders, heads and deputy heads of some departments (About 10 to 15 people each unit). After collecting and removing invalid votes, the number of valid votes included in the study was 378 votes.

Research model and hypothesis

In the process of carrying out the research, the author has conducted to find out the factors that affect the application of management accounting, thereby affecting the management efficiency of the Public Hospitals. Most of the studies suggest that applying Management Accounting has a positive influence on the effectiveness of hospital administration from the planning and operating stages of Public Hospitals. Gillian Vesty (2004) suggested that competitive environments and information technology have a positive influence on the application of Management Accounting in hospitals. Research by Salah A. Hammad et al (2010) suggested that Strategy, Technology, Organizational Structure, External environment and hospital size affect the application of Management Accounting. Nguyen Phong Nguyen et al. (2016) argued that leadership support, technical efficiency, decentralization, and environmental awareness are unlikely to affect the hospital's level of cost utilization, from which to affect the hospital performance. From the above studies, the author builds a research model applying management accounting to hospital management efficiency in which the factors affecting the application of management accounting in hospitals include: hospital leadership, technical facilities, organizational structure of the hospital, the external environment and the size of the hospital operation. From the above studies, the author proposes the following research model (**Figure 1.1**).

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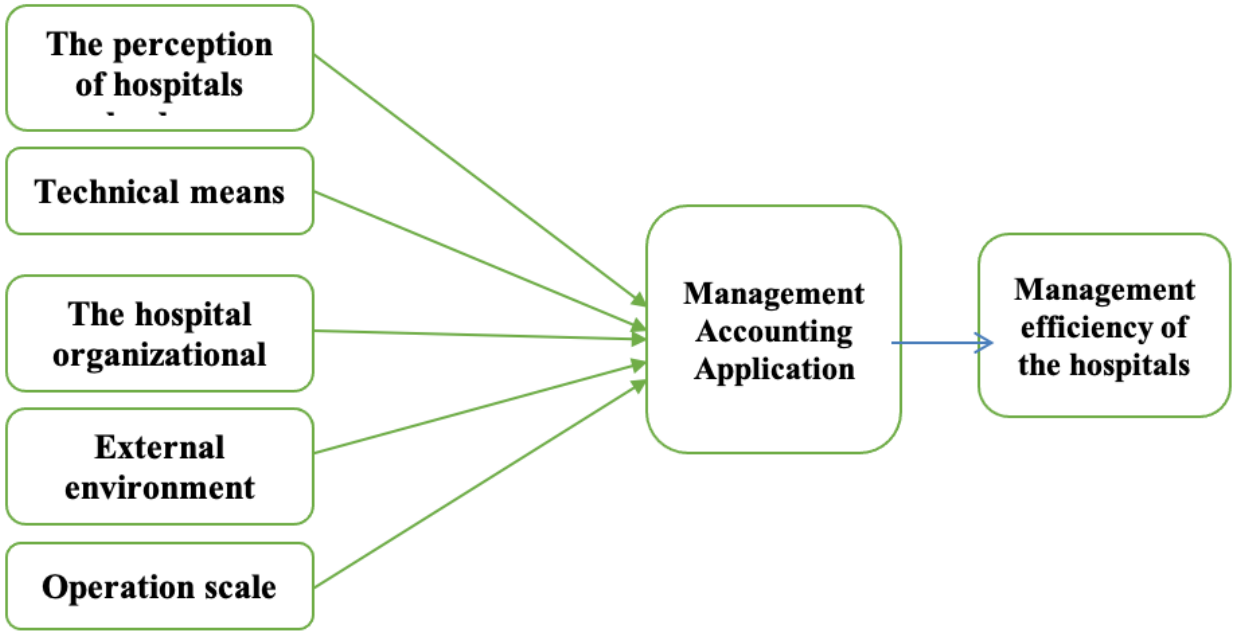

Figure 1.1: Research model
(Source: Author)

- **The hospital organizational structure** is the way to organize the hospital apparatus and decentralize hospital management. Salah A. Hammad et al (2010) when studying the design of management accounting systems in Greek hospitals showed that there is a positive relationship between organizational structure and the level of use of management accounting systems in Greek hospitals. Nguyen Phong Nguyen et al. (2016) also show that there is a relationship between the decentralization of authority in the hospital and the effective use of costs, thereby affecting the operation of the disease.

- **The perception of hospital leaders:** is the awareness of hospital leaders about the role of Management Accounting, the support of hospital leaders in applying management accounting as a tool in hospital management. Le Chau Xuan Mai (2017) studies on factors affecting the use of management accounting systems in Public Hospitals under the Department of Health of Ho Chi Minh City, emphasizing the role of leadership in caring, organizing the implementation of the management accounting system affecting the use of the management accounting system at Public Hospitals under the Department of Health of Ho Chi Minh City. Nguyen Phong Nguyen et al (2016) have shown evidence of the impact of the leader's support factor such as the extent to which leaders recognize the importance of the cost system and the extent to which they participate in the implementation of the cost system thereby influencing hospital governance.

- **The hospital operation scale:** Refers to the number of beds and the response level of the hospital on the basis of the number of patients coming to the hospital. The size of the hospital also refers to the specificity of the operation of the hospital, whether it is a specialty or a general hospital, and the rating of the hospital. The size of the hospital greatly affects the organizational structure, the decentralization of hospital management, thereby affecting the organization of hospital management accounting, Salah A. Hammad et al . (2010), Le Chau Xuan Mai (2010), Le Chau Xuan Mai (20102017) argues that hospital size affects hospital operating costs, thereby

affecting hospital cost management, therefore hospital size affects the application of Management Accounting at hospitals.

- **The external environment:** Includes external factors that have an impact on hospital operations such as competition between hospitals, state management mechanisms, changes in the labor market, etc. In the research of Salah A. Hammad et al. (2010) proposed a theoretical framework to examine the relationship between external factors, the Management Accounting System (MAS) and the performance of management in the health sector. Hospitals operating in markets with strong competition or significant penetration from care management organizations facing greater external pressure to control costs should require cost information that must be broad and detailed (Hill, 2000, Kettelhut, 1992).

- Technical means: Refers to the ability of the information system to be functionally necessary; that is, its design results in useful information output. Hyvonen (2007) has shown the Strategy, performance measurement techniques and information technology of the company and their relationship with the performance of the organization. Nguyen Phong Nguyen (2016) believes that technology helps doctors choose appropriate treatment regimens to reduce risks during treatment and reduce treatment costs. This leads to greater specialization and high industry competition Hammad et al (2010).

ANALYSIS RESULT

Testing the reliability of the scales by Cronbach's alpha

The results of the reliability analysis show that all scales have the reliability coefficient Cronbach'sAlpha > 0.6. At the same time, the remaining observed variables all have total correlation > 0.3. Thus, the scales are reliable and all 28 variables are kept for inclusion in exploratory factor analysis (EFA) to test the scale.

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Table 3.1: Reliability analysis for the scales

Variable name	Content	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Leadership Awareness		**Cronbach's Alpha: .811**	
NT1	Habits of using management accounting information at work	0.568	0.791
NT2	Level of understanding of financial accounting information	0.606	0.775
NT3	Willingness to accept the cost of using management accounting	0.647	0.755
NT4	Commitment to use and facilitate the use of international accounting information system	0.700	0.729
Effective technical means		**Cronbach's Alpha:** .779	
KT1	Full range of technical means	0.620	0.707
KT2	Technical means easy to access and use	0.551	0.744
KT3	Technical means used frequently	0.574	0.730
KT4	Technical means can process information efficiently and in a timely manner	0.595	0.721
Organizational structure in the hospital		**Cronbach's Alpha: .794**	
PC1	Reasonable hospital management decentralization	0.597	0.763
PC2	The organizational apparatus in a scientific hospital is appropriate	0.706	0.644
PC3	Employees have the right to participate and comment on hospital policies	0.610	0.747
External environment		**Cronbach's Alpha:** .808	
MT1	The degree of hospital adaptation to changing medical care needs	0.455	0.819
MT2	Legal obligations	0.638	0.758
MT3	The level of competition among hospitals	0.615	0.765
MT4	Competition for human resources	0.655	0.754
MT5	The change of state management mechanism for Public Hospitals	0.636	0.758
Scales		**Cronbach's Alpha:** .753	
QM1	The number of beds and patients affected by the management	0.473	0.735
QM2	The diversity of departments/faculties affects management accounting work	0.572	0.685
QM3	Number of staff, hospital staff	0.579	0.678
QM4	Hospital classification affects management accounting work	0.577	0.679
Effective management of the hospital		**Cronbach's Alpha:** .739	
HQ1	Management accounting system helps leaders make decisions	0.576	0.654
HQ2	Management accounting system helps leaders in the process of operating hospital operations	0.663	0.605
HQ3	Management accounting system helps leaders in the process of checking, evaluating and handling activities	0.552	0.668
HQ4	Management accounting system helps administrators in the process of improving and improving the quality of hospital service activities	0.362	0.779
Applying Management Accounting		**Cronbach's Alpha:** .797	
VD1	Applying management accounting in hospital planning	0.550	0.774
VD2	Applying management accounting in hospital implementation	0.590	0.757
VD3	Applying management accounting for cost control	0.706	0.695
VD4	Applying management accounting for decision making	0.597	0.752

Exploratory Factor Analysis (EFA)

All the scales used for the evaluation have high reliability and the values of those measurement months are shown in Table 2 and KMO & Bartlett's Test results in Table 3.2 below:

Table 3.2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.886
Bartlett's Test of Sphericity		3937,955
	DF	378
	Sig.	.000

Table 3.3: Discovery Factor Matrix

	Factor						
	1	2	3	4	5	6	7
MT5	.751						
MT4	.743						
MT3	.711						
MT2	.646						
MT1	.558						
NT4		.888					
NT1		.703					
NT2		.588					
NT3		.580					
VD3			.847				
VD2			.708				
VD4			.596				
VD1			.569				
HQ4			.514				
HQ2				.872			
HQ1				.678			
HQ3				.586			
QM3					.737		
QM4					.732		
QM2					.628		
QM1					.545		
KT1						.731	
KT4						.700	
KT2						.616	
KT3						.592	
PC1							.920
PC3							.675
PC2							.591

(Source: Author's data processing)

Exploratory factor analysis - EFA using exploitation method - Principal axis Factoring with Promax rotation, the results obtained KMO coefficient = 0.886 > 0.5, Bartlett's Test statistic is 3937,955 with significance level 0.000<0.05. This proves the data analysis is completely fit. All factor loading coefficients (Factor loading) are greater than 0.5, explanatory variance is greater than 50%, observed variables are grouped exactly as the original scale.

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Confirmatory factor analysis (CFA)

From the results of EFA, we see that there are 7 main concepts in the research model. To measure the fit of the model, we use the Chi-square command (CMIN), Chi-square adjusted for degrees of freedom (CMIN/df), CFI index, GFI, TLI and RMSEA index. The model is considered fit to the data when the model receives the GFI, TLI, CFI values ≥ 0.9 (Bentler & Bonelt, 1980), CMIN/df ≤3 (Carmines & McIver, 1981), RMSEA ≤ 0.08 (Steiger, 1990). The results of CFA results show that the research model is suitable (Figure 3.1). The results of the P-values of the observed variables representing the factors all have the value sig = 0.00, so the observed variables are confirmed to have good representation for the CFA model factor. The correlation coefficient of each pair of concepts differs from 1 at 95% confidence level (P-Value = 0.000), so the concepts achieve discriminant value.

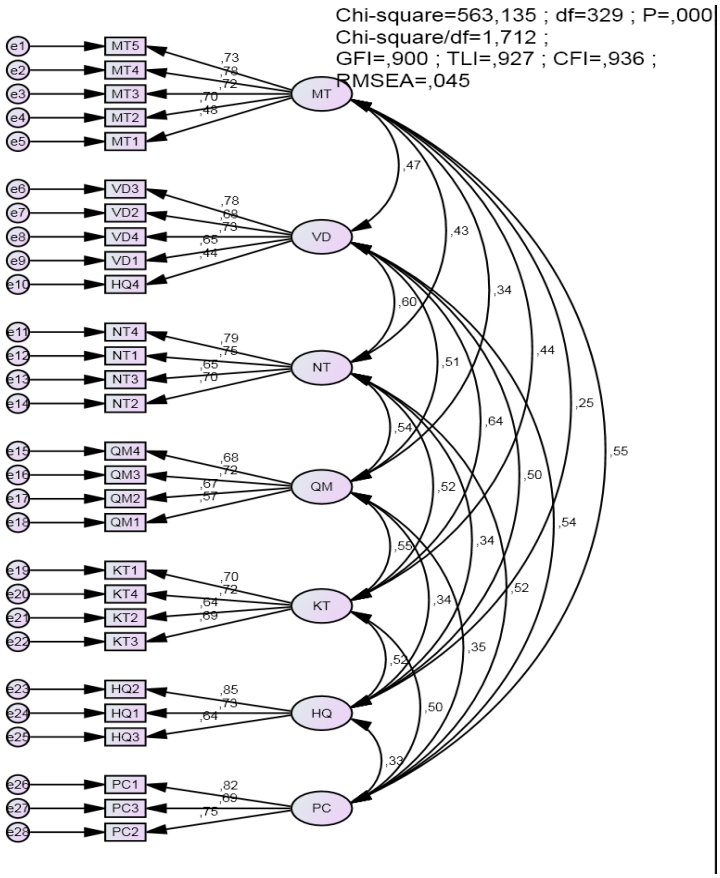

Figure 3.1: CFA analysis results for the critical model

Results of the analysis showed that: Correlation coefficients were less than 1, covariance testing and correlation between pairs of variables were statistically significant (p < 0.05 value. This implies that the factors in the model can be distinguished.

Structural Equation Modeling (SEM)

The study uses the SEM to assess the relevance of the research model and test the relationships in the initial model. The results of the SEM analysis of the model with df = 344, Chi-square = 949.919 with p-value = 0.000 <0.05, Chi-square/df = 2,761 <3, CFI = 0.823, TLI=0,819; RMSEA = 0.7<0.8 should confirm that the pattern consistent with market data (Figure 3.2).

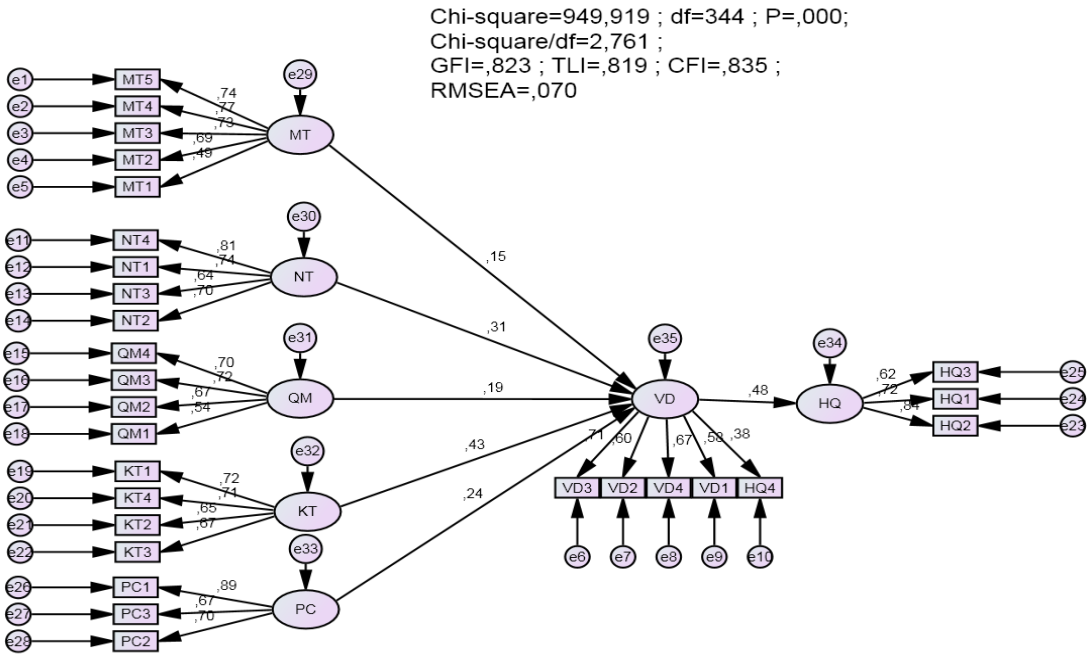

Figure 3.2: Standardized Structural Equation Modeling (SEM)
(Source: The author's data analysis)

The results in the form of data on the regression coefficient of the model show that all factors have a positive impact on the application of management accounting; at the same time, the application of management accounting also has a positive effect on management efficiency in Public Hospitals, specifically the level of influence of each factor is shown in (Table 3.4).

Table 3.4: SEM regression model coefficients and hypothesis testing

SEM . regression			**Conclusion**
Factor	**Estimate**	**P-value**	
KT → VD	0,132	0,012	Accepted
NT→ VD	0,283	***	Accepted
MT → VD	0,189	0,003	Accepted
QM → VD	0,424	***	Accepted
PC→ VD	0,193	***	Accepted
VD → HQ	0,517	***	Accepted

The Standardized Estimate value of the SEM (Table 3.4) shows that the QM factor: The size of the hospital's operation is the factor that has the same and strongest impact on the example: Applying management accounting in Public Hospitals, followed by NT factor: perception of hospital administrators, PC factor: Decentralization of public hospital management; Environmental factors: External environment and economy: Technical means and good

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application of management accounting have a positive influence to increase the operational efficiency of Public Hospitals in Thanh Hoa province.

CONCLUSIONS AND RECOMMENDATIONS

Through the statistical results from the research model, it can be seen that the good application of management accounting has a positive effect on the operational efficiency of the hospital, while the application of management accounting is affected with other factors. Factors such as hospital size, management decentralization in the hospital, awareness of administrators, external environment, technical means, so to apply management accounting really brings high efficiency, thereby contributing to the effectiveness of management accounting. To improve the operational efficiency of Public Hospitals, the following solutions should be implemented:

Firstly, arrange the organizational structure and arrangement of the hospital in the departments and departments suitable to the size of the hospital and the characteristics of the hospital's medical examination and treatment tasks for the management and control of costs in the hospital. The hospital is done in the best way. Implement the appropriate assignment and decentralization of authority in the hospital to ensure convenience for professional management at the hospital as well as control and responsibility for the use of hospital resources.

Second, the administrators themselves at Public Hospitals must have the habit of using management accounting information in management and administration activities. The hospitals should spend investment resources to build an appropriate management accounting system to provide useful information to management levels in the hospital as well as pay attention to training accounting staff in professional skills for implementation of management accounting in the hospital.

Third, the hospitals should invest in equipment for the collection, processing and provision of management accounting information, including hardware and software systems suitable to the characteristics of each hospital, thereby creating conditions for information processing. At the same time, implementing management accounting information between departments in the hospital helps middle and high-level managers to have decision-making information in the fastest and most accurate way.

Fourth, the government should issue an operating mechanism for Public Hospitals in a unified and public manner to ensure favorable conditions for hospitals to operate, create conditions for Public Hospitals to attract high-quality medical workers to compete with Public Hospitals that are increasingly invested in innovation in equipment; promulgate regulations and guiding mechanisms on the implementation of management accounting work at non-business units, thereby serving as a basis for specific units such as Public Hospitals to apply.

In conclusion, through studying the factors affecting the application of management accounting in Public Hospitals, thereby affecting the management efficiency of the hospital, it can be seen that the good application of management accounting brings benefits and effects. Actively involved in hospital management. Through the application of international accounting, it provides useful and necessary information for the management and administration of the hospital, thereby contributing to the development and enhancement of Public Hospitals in Thanh Hoa province in the context of present autonomy. Through the article, the authors have

also made some recommendations for the most effective application of management accounting in Public Hospitals, thereby improving the quality of patient management. Public Institutes in Thanh Hoa Province.

Reference

1. Bentler, PM, & Bonett, DG (1980), Significance tests and goodness of fit in the analysis of covariance structures. Psychological bulletin, 88(3), 588.

2. Carmines, EG, & McIver, JP (1981), Analyzing models with unobserved variables: Analysis of covariance structures. Social measurement: Current issues, 65-115

4 . Hair, JF, Black, WC, Babin, BJ, Anderson, RE, & Tatham, RL (1998), Multivariate data analysis (Vol. 5, No. 3, pp. 207-219), Upper Saddle River, NJ: Prentice Hall.

5 . Stair, Ralph M. & Reynolds, George W. (2010), Principles of Information Systems, 9th Edition. Boston-USA: Course Technology.

6. Hyvonen (2007), Strategy, performance measurement techniques and information technology of the firm and their links to organizational performance, Management Accounting Research.

7. Gillian Vesty (2004) A case study of balanced scorecards in Public Hospitals, Master thesis, Victoria University of Technology.

8. Hammad, SA, Jusoh, R. and Yen Nee Oon, E. (2010) , The determinants of hospital cost: A cost-volume-profit analysis of health services in the Occupied Territories: Palestine , International journal of Pharmacy Practice, 18(3): 167-73.

9. Le Chau Xuan Mai (2017), Factors affecting the use of management accounting systems to improve management efficiency at Public Hospitals under the Department of Health of Ho Chi Minh City, Master thesis, University of Economics Chi Minh.

10. Nguyen PhongNguyen et al. (2016), Factor affecting the use of costing systems toward managerial performance in Vietnamese Public Hospitals, Journal of Economic Development, 23(2) 77-99.

URL: http://dx.doi.org/10.14738/abr.1011.13439