DETERMINANTS INFLUENCING INTENTION TO APPLY MULTI-DIMENSIONAL PROFITABILITY ANALYSIS AT COMMERCIAL BANKS' STRATEGY

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Abstract

Multi-dimensional profit analysis (MPA) in management accounting allows banks to analyze their profit from different perspectives, the results of which provide useful information for banks to make decisions (KPMG, 2019). A comprehensive and multi-dimensional view of profits based on products, distribution channels, customers, geography, and bank staff through effective cost allocation models is increasingly important in the world. However, the intention to apply MPA applications depends on various factors, which have not been discussed well in the Vietnamese banking context. The aims of this study include finding out the factors that influence the intention to apply MPA in Vietnamese commercial banks and proposing recommendations to encourage Vietnamese commercial banks to implement. This study combines both qualitative and quantitative research methods, based on interviews of 300 managers of commercial banks to investigate the statistical significance of the determinants affecting intention to apply MPA. The results reveal some most influencing factors, ranging from the human factor to the perception of the leadership of the bank, as well as the guiding factor of the regulator. From the findings, several suggestions are proposed for the intention to apply MPA in the context of Vietnamese commercial banks.

Keywords: Multi-Dimensional Profit Analysis, Commercial Banking, Finance, Management Accounting

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1. INTRODUCTION

Banks today offer a wide range of products and services to diverse groups of customers through a variety of sales channels. Each of these aspects should be considered when analyzing profit, which is why nowadays, banks employ multi-dimensional profit analysis (MPA) as one of the methods to provide meaningful information for the decision-making process (KPMG, 2019). In order to have

a clear understanding of the real costs and benefits of each business segment of the bank, MPA has been employed to provide clear and consistent analyzes in each analysis dimension. This analysis provides insights into the drivers of business growth so that bank leaders can make informed transparent and effective decisions. The importance of MPA is the allocation method, and the priority of use is activity-based costing (ABC). The ABC method is understood as a system of measuring, gathering, and allocating the costs of resources to activities based on the level of use of resources, and then the costs of activities are allocated to the activities based on their usage (Siguenza-Guzman et al., 2013; Horngren et al., 2003). Many studies since the late 20th century have shown that ABC is the superior method for allocating overhead costs, especially in service delivery areas (Jaafar et al., 2017). The outstanding advantage of the ABC method is to closely recognize the relationship between activities, costs, and products (Benelifa & Nasfi Salem, 2023).

A multi-dimensional profit analysis application has been developed to overcome the disadvantages of previous methods (Burns et al., 2013). This application not only provides insights into the factors that create value for the bank, but also provides comprehensive and detailed profit analysis by product, customer, and sales channels. This analysis will assist management in making strategic decisions such as providing appropriate services, competitive pricing strategies for profitable customer segments, discontinuing inefficient products, and opening new delivery channels or new markets.

In the world, the application of MPA at commercial banks in developed countries such as the US, UK, and Singapore is quite familiar, originating from the increasing requirements for financial information to serve management and operations, the tendency to use customer-centricity, the need for a multi-dimensional view of the current state of operational efficiency. However, in developing countries, the application of MPA is not yet popular, nearly ten among 60 credit institutions in Vietnam have developed and applied MPA since 2012 until now. Despite contributing to the planning and key performance indicator (KPI) target assignment, MPA at commercial banks in Vietnam still faces problems from the allocation methodology being too complicated and cumbersome; consensus among participating parties has not been reached; the application of MPA results is still limited in the head office only.

Thus, the research questions are as follows:

RQ1: Why does a trending issue like management accounting using MPA receive little attention in implementation and application?

RQ2: What are the factors that limit the development of MPA?

That is why this article will explore the factors that affect MPA, from which there are appropriate policy implications. The application of MPA has been influenced by various factors that have not been well defined. Therefore, this study explores the factors affecting the intention to apply multi-dimensional profit analysis of Vietnamese commercial banks. It is essential in the context of integration and improvement of competitiveness of banks in the current context.

This research contributes to the literature review of multi-dimensional profit analysis as well as the determinants affecting MPA in an emerging country such as Vietnam.

The rest of the paper is structured as follows. Section 2 reviews the relevant literature and provides hypotheses development. Section 3 analyses the methodology that has been used to conduct empirical research on the intention to apply MPA. Section 4 presents the results and discuss the findings. Section 5 concludes the paper with relevant recommendations.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Background theories

2.1.1. Contingency theory

Hofstede (1967) was initially utilized contingency theory in the examination of management accounting. The accounting literature has shown a growing interest in the relationship between contingency theory, organizational control, and accounting structure since the 1970s. Contingency theory views management accounting as an integral part of the organizational framework, guaranteeing the endurance of firms amidst fluctuations in the commercial landscape. The implementation of management accounting is contingent upon the specific characteristics of each industry and sphere of production and business. It is imperative that it aligns with the organizational structure, enterprise size, production technology level, and strategic position of the company.

2.1.2. Psychology theory

The primary goal of psychology theory is to explain and predict individual behavior, rather than organizational and social behavior. It also emphasizes subjective phenomena over objective ones (Birnberg et al., 2006). Psychological theory can be applied in contingency-based management accounting research to comprehend and elucidate the functioning and consequences of management accounting procedures. This is achieved by examining how these methods impact individuals' cognitive states and behaviors. In order to accomplish this, research can utilize a range of psychological theories derived from cognitive, motivational, and social psychology (Birnberg et al., 2006).

2.1.3. Management accounting and multi-dimensional profit analysis

The focus of management accounting is the cost allocation method in banking. Cinquini and Mitchell (2005) argued that the ABC technique introduced an accurate way of allocating costs, providing important benefits, such as retaining customers and increasing customer satisfaction. In order to examine the relationship between the implementation of activity-based costing (ABC) and activity-based management (ABM) systems, and profit maximization in Palestinian banks, Durgham (2016) recommends the priority of the implementation of ABC and ABM in all Palestinian institutions. ABC will help service companies

identify and allocate overhead costs and quantify labor costs associated with each activity (Witherite & Kim, 2006). For commercial banks in particular, the potential benefits of implementing ABC are huge, including extracting reasonable costs of transactions, identifying specific costs for customers, and measuring customer and product profitability. The result of these benefits is improved decision-making and helps organizations achieve their strategic goals (Nguyen et al., 2020).

Chow (2016) discussed in a research report the case of Luxembourg's Raiffeisen Bank and argued that ABC is the correct allocation method because it allows determining based on the activities of a company. The only inconvenience of this model is that it is very expensive, complicated, and time-consuming because it requires a lot of resources, calculations, and updates. The more processes and departments a company owns, the more complex the calculations become. Therefore, once the process has been established, to facilitate the maintenance of this methodology, it is necessary to continuously (monthly) update the data so that the entire process does not need to be repeated every year.

Regarding MPA multidimensional profit analysis in commercial banks, MPA provides different perspectives when analyzing an organization's profits (KPMG, 2019). Measurement results are shown by profit reports in many dimensions (customers, products, organizational units, employees). According to Gutterman (2023) and Eze et al. (2023), it is notable for taking multi-dimensional perspectives toward organizational performance because value comes in many forms and different types of organizations and stakeholders have their own different concepts of what outcomes are valuable. Exploiting, using, and analyzing this reporting system with multi-dimensional perspectives will support the bank's management and operations process, changing the way of management and operations compared to the present. If successfully implemented, MPA will be a step forward in the bank's financial management, a prerequisite for implementing necessary tactical plans by customer, product, and region. Durgham (2016) acknowledged that the best technique for allocating overhead costs is activity-based costing. There are a lot of possible advantages to ABC implementation, especially for commercial banks. These include next: 1) accurately pricing transactions, 2) being able to link particular expenses to bank clients, and 3) calculating the profitability of both customers and goods. The capacity to enhance decision-making and support businesses in achieving their strategic goals is the ultimate outcome of these advantages. Management accounting in general and MPA in particular's determinants consequently are the issues to assess if the banks have enough conditions to apply in their situations. Nguyen et al (2019) clarified the criteria encompassed are 1) production and business attributes; 2) competitiveness; 3) business strategy; 4) chief executive officer's (CEO's) awareness management and 5) quality of human resources. The research was carried out on 238 small and medium-sized firms (SMEs) in Hanoi. The findings indicate that the degree of awareness among CEOs regarding management accounting had the most significant influence on the ability of enterprises to implement management accounting

practices, whilst the element of competition level had the least impact. The study also investigates the influence of firm size as a mediating factor on the link between production and business process features, a management accounting application, age, and professional qualifications.

Alrawashedh (2023) utilized a descriptive research approach and gathered primary data to obtain information on the study's aims. The study's findings corroborated the idea that budgeting, financial ratio analysis, and activity-based costing are the predominant management accounting strategies employed in these firms.

Nevertheless, the research conducted on management accounting and multi-dimensional profit analysis in commercial banks has been limited so far. Hence, this study on multi-dimensional profit analysis in commercial banks aims to organize existing theories and establish a foundation for the advancement of management accounting in commercial banks. It is also dedicated to identifying the factors that impact the implementation of multi-dimensional profit analysis in commercial banks and providing recommendations for banks.

2.2. Hypotheses development

2.2.1. Bank's policies, regulations and guidelines

Ojua (2016) conducted a study in the UK to examine the current use of strategic management accounting in Nigerian industrial organizations. The research has demonstrated that the implementation of modern management accounting is significantly influenced by internal elements within organizations, such as managers' viewpoints, accounting expertise, and financial resources. The implementation of management accounting is influenced by various external elements, especially the regulatory environment.

Currently, the policies and legal laws regarding management accounting in Vietnam, including laws, decrees, circulars, and recommendations, are inadequate. Circular No. 53/2006/TT-BTC is the sole regulation that outlines the fundamental principles of management accounting and key aspects of management accounting, such as cost and cost management accounting. It briefly introduces the method of analyzing the correlation between cost, revenue, and profit, and selecting relevant information for making short-term and long-term decisions, as well as estimating production and business budget.

It can be seen that the regulations in Vietnam, so far are considering management accounting only as internal accounting, with the main goal being to provide information on controlling corporate activities for those who need information within the enterprise. In addition, some guidelines are at a very general level, which explains the variability in the application. For example, the contents of responsibility accounting related to identifying and defining responsibility centers, and reporting and evaluating responsibility centers are very general and lack detailed instructions. Therefore, the absence of detailed guidelines on management accounting and MPA from the state management agencies as well as from the bank will surely affect the MPA operation process at commercial banks. Therefore, we design these hypotheses as below:

H1: Policies and regulations have an impact on the organization of MPA activities at commercial banks.

H2: Bank guidance has an impact on the organization of MPA activities at commercial banks.

2.2.2. Perception of the bank's board of directors

Raising the awareness of managers and accountants about the role of management accounting, improving the qualifications and knowledge of accountants, and increasing the trust of managers in management accounting information are needed to increase the level of management accounting application in Vietnamese enterprises (Nguyen & Le, 2020; Vu et al., 2022). Kosaiyakanont (2011) conducted a study in the North of Thailand and found that the greater the awareness of business owners about the importance and usefulness of management accounting, the higher the management accounting needs. In fact, in some banks, many leaders of the units did not care, did not closely direct the implementation, and did not/have not had the need to exploit the management accounting report from the MPA for administration. Some branches did not set up MPA implementation teams, did not have an MPA focal point/department according to general regulations, hardly/did not implement these works/or only implemented in response form, resulting in low efficiency of MPA projects. Therefore, changing the minds of managers is a prerequisite to creating a consensus of the board of directors in the implementation and application of MPA (Nguyen et al., 2020). From there, a hypothesis is proposed as below:

H3: Perception of the leadership affects MPA application of commercial banks.

2.2.3. Data

Commercial banks in Vietnam nowadays provide a wide range of digital services to customers thanks to the development of technology. Technology and data are considered indispensable resources for banks in order to survive the competition with Fintechs (Basdeki et al., 2022). As the most important organizations that provide financial services to most entities in the economy, the banking industry cannot stand aside from the trend of technology and big data applications. The MPA system of commercial banks will aggregate the bank's data in many dimensions and from many different sources, and with the huge scale of the number of customers, products, and the volume of data to be processed. Lacking this resource, banks would have difficulties in MPA application. In particular, input data is the most important factor that determines how effectively MPA is implemented. Therefore, a fourth hypothesis is designed as below:

H4: Bank data has an impact on the organization of MPA activities at commercial banks.

2.2.4. Human resources

The successful execution of any extensive undertaking necessitates a proficient group, and the deployment of MPA is no different. The success of the MPA project hinges on the quality of its human resources, making it a crucial factor in its implementation. Emphasizing the importance of skilled personnel in technology is crucial to fulfilling the requirements of data processing and administration, as well as effectively operating and utilize the MPA system (Kouhy et al., 2009). Armitage and Webb (2013) conducted a study in Canada on the implementation of management accounting. They discovered that the efficacy of management accounting in these organizations is contingent upon the accountants' qualifications, as well as the managers' expertise and experience. Typically, an MPA solution provider does not assume every job within the implementation team, but it can spearhead the endeavor, ensure timely completion, and undertake complex engineering tasks that demand specialized expertise. Therefore, we suggest a fifth hypothesis as follows:

H5: Bank personnel have an impact on the organization of MPA activities at commercial banks.

2.2.5. Financial resources

Running a management as well as MPA project is very costly to the bank and it needs a sufficient amount of financial resources. Some of the main reasons why MPA projects require large financial resources can be mentioned as follows: 1) *Enterprise size and number of users*: MPA implementation costs will vary based on the size of the organization. As the organization gets bigger and the user base becomes larger, the more complex issues the deployer will solve to ensure a smooth system (Astuty et al., 2022; Fernandez et al., 2023); 2) *Type of enterprise solution to choose*: Choosing MPA software according to business characteristics will have a higher cost than packaged MPA solution. Because the industry-intensive MPA is a solution that is ordered by businesses to write on demand; 3) *Consulting, surveying, and implementation costs*: When implementing MPA, firms will have to spend a lot of money on additional resources such as costs: consulting, surveying, planning, training people use or software development costs. In addition, after the MPA project ends, businesses also need to pay fees for system maintenance or software upgrades to ensure that they deploy the system effectively and operate flexibly. Therefore, we design a hypothesis as below:

H6: Financial resources have an impact on the organization of MPA activities at commercial banks.

2.2.6. Implementation approach

The effectiveness of MPA implementation relies significantly on the bank's approach to ensuring the staff's comprehension and recognition of the advantages of MPA. The approach can be proxied by the organizational DNA (the corporate culture, the communication). The bank should disseminate messaging across its whole personnel to foster a collective mindset shift and encourage mutual support in implementing MPA. Azudin and Mansor (2018) contribute the finding through the regression which shows that only operational technology has a positive impact on management accounting. The other two variables (i.e., organizational DNA and business potential) do not significantly influence management accounting. The seventh hypothesis is formulated in the following manner:

H7: The implementation approach of the multi-dimensional profit analysis method and system has an impact on the organization of MPA activities at commercial banks.

3. RESEARCH METHODOLOGY

3.1. Research model

The study employed a quantitative phenomenon analysis method. Using a phenomenological approach, we understand the subjective interpretations of the underlying object of the analysis by investigating the nature of their experience and identifying specific interpretations underlying the given phenomenon (Casmir, 1983; McDermott et al., 2002). During the analysis, we used SPSS 20 software with a copyright license to run the model. Quantitative research is carried out to evaluate the reliability and validity of the scale, to test the research model and research hypotheses.

Based on the literature review and hypotheses design above, we propose a research model in Figure 1.

Figure 1. Research model proposed
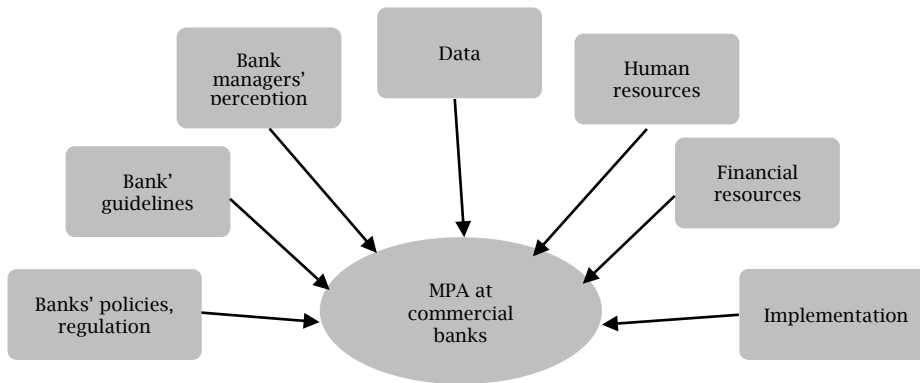
From the proposed hypotheses, we propose the following multiple regression equation:

$$MPA = \alpha + \beta_1 PR + \beta_2 BG + \beta_3 BM + \beta_4 DT + \beta_5 HR + \beta_6 FR + \beta_7 IM + \varepsilon \quad (1)$$

In which, the dependent variable is *MPA* representing intention to apply management accounting and MPA activities at the bank, while the independent variables are different determinants that can influence MPA, including policies and regulations (*PR*), bank guidelines (*BG*), bank management perceptions (*BM*), bank data (*DT*), bank personnel (*HR*), financial resources (*FR*), implementation approach of MPA (*IM*). To test the above-mentioned hypotheses, we asked participants to provide information about:

Dependent variables. Regarding the intention to apply MPA in your bank:

Table 1. Dependent variable measurements

Dependent variable codes	Items
MPA1	I am satisfied with MPA's method at my bank
MPA2	I believe that the MPA system being implemented at my bank makes an important contribution to management and operations
MPA3	In the near future, my bank will definitely continue to use MPA.

Independent variables. Independent variables are measured by asking questions ranked under different categories.

Table 2. Independent variable measurements (Part 1)

Independent variable codes	Items
Policy and regulation	
PR1	Clear policies and legal regulations on management accounting.
PR2	Policies and legal regulations on management accounting are less complicated.
PR3	Applying policies and legal regulations does not encounter many difficulties.
Bank guidance factor	
BG1	Commercial banks have clear policies and instructions on applying for MPA.
BG2	Commercial bank has a department specializing in supporting the MPA implementation process.
BG3	Commercial banks' instructions and regulations are easy to apply.
Perception factor of bank leadership	
BM1	Bank management is aware of the importance of MPA.
BM2	The bank's leadership is interested in consulting and evaluating the effectiveness of the MPA project.
BM3	The bank's leadership closely directs the implementation of the MPA project.
BM4	The bank's leadership needs to exploit management accounting reports from MPA to serve management and operations.
Bank data	
DT1	Commercial banks have a variety of data formatted to suit the usage goals of many different departments.
DT2	Data from commercial banks is unified and standardized with input information from the branch level.
DT3	Data from commercial banks is obtained from legitimate sources and managed in appropriate ways to ensure reliability.
DT4	Commercial banks establish an effective data management system.

Table 2. Independent variable measurements (Part 2)

Independent variable codes	Items
Bank's human resources	
HR1	Personnel are fully equipped with knowledge when participating in the MPA project.
HR2	Personnel are fully equipped with skills when participating in the MPA project.
HR3	Team members influence each other and coordinate together.
HR4	Team members are assigned appropriate tasks.
HR5	Personnel with experience in implementing MPA projects.
Financial resources	
FR1	Commercial banks' financial resources are met promptly.
FR2	Commercial banks' financial resources are fully met.
FR3	Commercial banks have strong financial resources.
Implementing the MPA analysis method and system	
IM1	It is necessary to deploy multidimensional profit analysis methods and systems at commercial banks.
IM2	The implementation of multidimensional profit analysis methods and systems at commercial banks needs to be done soon.
IM3	The implementation of multidimensional profit analysis methods and systems at commercial banks needs to be carefully prepared.
IM4	The successful implementation of multi-dimensional profit analysis methods and systems at commercial banks actively supports business and operational activities.
IM5	Implementing multi-dimensional profit analysis methods and systems enhances the bank's competitiveness now and in the future.

3.2. Data

Data for this research were collected using an online survey method, questionnaires sent via email, and using Google Forms. We have collected surveys from 29 commercial banks in Vietnam, with different bank sizes and forms of bank ownership. The survey subjects include leaders and employees in different positions of the banks but closely related to MPA.

Data was collected in two phases, namely:

Phase 1. The preliminary survey (pilot) was conducted from January to February 2023. During this period, we submitted questionnaires to experts in in-depth research in the banking sector (five experts) and managers of state-owned commercial banks in Vietnam (15 managers). The main purpose of the pilot study is to ask respondents how well they understand the questions, and at the same time ask for their opinions on the content of the questionnaire and other comments to revise and improve the questionnaire in order to improve the quality of the questionnaire

Phase 2. After pilot testing, we made necessary adjustments and modifications to ensure the meaning of the question. At the official research stage, we employed Google Forms and Mail tools to send survey questions to managers and staff of 29 Vietnamese commercial banks. By the end of 2022, there were 31 joint-stock commercial banks and one state-owned commercial bank in Vietnam (except for banks that were acquired for 0 Vietnamese dong [VND]). The study approached almost all banks to ensure a representative sample.

According to the actual investigation conditions, in order to be able to perform well in collecting data, we selected a non-probability sample in a convenient fashion (sampling units are selected at a certain place and at a certain time). For sample size: According to the study of Hair et al. (1998) for exploratory factor analysis (EFA), the sample size must be at least five times the total number of observed variables in the scales (an observation variable that needs to be measured, there are five observations corresponding to five respondents). The questionnaire of this study includes 30 observed variables used in factor analysis. Therefore, the minimum sample size to be achieved is 150 observations. Hence, the study conducted a survey of 330 officials and leaders of 29 Vietnamese commercial banks.

4. RESULTS AND DISCUSSION

At the end of the survey, out of a total of 330 votes distributed, the number of valid votes i.e., the number of votes with full answers in the questionnaire was 300 votes. The number of votes included in the analysis was 300 votes. The study ensured the permissible sampling conditions, reaching the rate of 90.9%.

4.1. Descriptive analysis

Some general information about the sample size is presented in Table 3, below.

Table 3. Descriptive statistics of the sample size

No.	Criteria	Classification	Frequency	Rate (%)
1	Gender	Male	73	20.9
		Female	277	79.1
		Total	**350**	**100**
2	Age	< 35 years old	45	12.6
		35–45 years old	130	37.3
		> 45 years old	175	50.1
		Total	**350**	**100**
3	Education	Undergraduate	0	0
		Graduated	160	45.7
		Uppergraduate	190	54.3
		Total	**350**	**100**
4	Working years	≤ 5 years	29	8.4
		5–10 years	149	42.6
		> 10 years	172	49
		Total	**350**	**100**

Source: Authors' elaboration.

Data from Table 3 show that the participants of this study were female-dominant, highly educated, and experienced. Females account for 79.1% of the sample, the remaining 20.9% are male. *Regarding age*: 1) 45 people under 35 years old account for 12.6%; 2) from 35 to 45 years old, there are 130 people, accounting for 37.3%; and 3) over 45 years old, there are 175 people, accounting for 50.1%. This shows that most commercial banks' staff related to this area in the survey are over 45 years old and have a lot of experience in their work. *In terms of education level:* the results show that there is no staff with a bachelor's degree, most of them had a university degree and a graduate degree, specifically 45.7% university degree, and post-

graduate degree accounted for 54.3%. This shows that most of the bank's staff have high professional qualifications and capacity. *About the number of years of service*: 1) accounting for 49% of those with more than ten years of service, 2) 42.6% of those with between five and ten years of service, and 3) the remaining 8.4% of those working less than five years. Thus, most managers and bank staff have many years of work and experience in the banking and finance sector. This ensures that the decisions they make will be appropriate and sound.

4.2. Reliability of the scale

According to the summary results in the Appendix, all variables have a total correlation > 0.3, only two variables related to bank guidelines (*BG*) and financial resources (*FR*) have Cronbach's alpha at > 0.6, and all other variables have Cronbach's alpha > 0.7. The two groups of variables *BG* and *FR* have only three variables, moreover, the Cronbach's alpha coefficient after eliminating any variable is reduced

and the Cronbach's alpha coefficient at > 0.6 can still be used for new research. This indicates that all variables are used for the subsequent EFA analysis.

The results of EFA analysis on 27 scales representing seven independent factors have Kaiser-Meyer-Olkin (KMO) = 0.734 and Barlett's test has a significance level sig = 0.000 < 0.05, from which, it can be confirmed that the data used is suitable for use in research. In which, 24/27 factors have eigenvalue > 1, and the coefficient of total variance extracted is 64.586% > 50%, indicating that 24 scales can be kept and the model can explain 64.586% of the level of variation.

4.3. Result of factor analysis

The factor rotation matrix (Table 4) shows that the retained scales all have factor loading values > 0.45. The scales were extracted into seven groups corresponding to the seven groups of factors of initial selection. Scales that should be eliminated include *BM3*, *IM2*, *IM5*.

Table 4. Factor rotation matrix

	1	*2*	*3*	*4*	*5*	*6*	*7*
HR2	0.834						
HR1	0.785						
HR5	0.751						
HR4	0.714						
HR3	0.619						
DT1		0.868					
DT2		0.781					
DT4		0.757					
DT3		0.696					
PR2			0.865				
PR3			0.828				
PR1			0.766				
BM2				0.838			
BM1				0.795			
BM4				0.634			
FR2					0.741		
FR3					0.734		
FR1					0.730		
BG3						0.849	
BG2						0.726	
BG1						0.712	
IM4							0.730
IM3							0.710
IM1							0.650

Source: Authors' elaboration.

To analyze the correlation between the independent and dependent variables, we use the Pearson test. The analysis results show that the correlation between variables HR, PR, BM, and BG with dependent variables has Sig. value <0.05, so the possibility that these variables have a linear relationship with the dependent variable while the influence of the other three variables (FR, DT, IM) is not clear.

Besides, the Pearson correlation coefficient matrix also helps to predict early whether there is

multicollinearity between the independent variables or not. If the Pearson correlation coefficient > 0.5, we have grounds to suspect multicollinearity. Table 5 reveals that the correlation coefficients between the independent variables are quite low, so it can be concluded that there is no double multicollinearity between the independent variables. However, this is not the most accurate conclusion, we will clarify this issue in the next step of model analysis.

Table 5. Correlation coefficient matrix

	MPA	*HR*	*FR*	*DT*	*IM*	*PR*	*BM*	*BG*
MPA	1							
HR	0.545**	1						
FR	0.026	0.022	1					
DT	-0.083	-0.007	0.068	1				
IM	-0.101	0.031	-0.061	0.416	1			
PR	0.450**	0.384	0.140	-0.059	0.004	1		
BM	0.500**	0.311	-0.122	-0.127	0.011	0.227	1	
BG	0.337**	0.216	-0.035	-0.038	0.040	0.031	0.213	1

Source: Authors' elaboration.

4.4. Regression results

Table 6 summarizes the results of the regression model of factors affecting the MPA performance of Vietnamese banks. Regression results with the model's F-statistic = 28.371, corresponding to the significance level are very small indicating that the model fits the data set or that the independent variables have a linear relationship with the dependent variable and the model can be used. The model has adjusted coefficients R^2 and R^2 of 0.501 and 0.519, respectively, greater than 50%, showing that the model explains about 50% of the change of the dependent variable. Besides, the Durbin-Watson index (DW) = 2.062 in the range [1; 3] shows that there is no first-order chain correlation between the residuals, and the collected data is good.

Table 6. Regression results

Model	Unstandardized coefficients		Standardized coefficients	t-value	Sig.	VIF	Findings
	Beta	Std. error					
HR	0.283	0.053	0.312	5.358	0.000	1.295	Accept
FR	0.012	0.037	0.018	0.339	0.735	1.060	Reject
DT	0.045	0.069	0.037	0.643	0.521	1.251	Reject
IM	-0.174	0.072	-0.138	-2.426	0.016	1.230	Accept
PR	0.215	0.048	0.254	4.472	0.000	1.234	Accept
BM	0.296	0.053	0.310	5.537	0.000	1.199	Accept
BG	0.193	0.051	0.204	3.824	0.000	1.085	Accept
Adjusted R^2	0.501						
R^2	0.519						
Durbin-Watson statistics	2.062						
F-statistics	28.371						
Significance level of F-test	0.000						

Source: Authors' elaboration.

Regression results also show that there are four variables that are statistically significant at 1% (Sig. value ≤ 0.01) including human resources (*HR*), policies and regulations of the company legislation (*PR*), perceptions of leadership (*BM*), and bank guidelines (*BG*). The regression results reveal that human resources, policy, and regulations, perceptions of leadership, and bank guidelines impact positively the intention to adopt MPA. There is only one dimension that has a statistically negative impact is the Implementation approach factor with a confidence interval of 95%. Moreover, the model also explains the 51,9% variance of intention to apply MPA in commercial banks of Vietnam.

H1: The presence of policies and regulations has a significant favorable effect on the intention to implement MPA actions at commercial banks (t = 4.472, p < 0.01), and *H2*: Bank guidance has an impact on the organization of MPA activities at commercial banks (t = 3.824, p < 0.01). The findings are congruent with and corroborate the prior study conducted by Ojua (2016). This suggests that the commercial bank will seek to apply MPA if it receives support from legislation and policies as well as the internal guidance of banks.

H3: The perception of leadership has a significant impact on the application of MPA in commercial banks (t = 5.537, p < 0.01). This finding supports the intention to apply MPA and is consistent with previous studies by Nguyen and Le (2020) and Kosaiyakanont (2011). These studies highlight the importance of awareness and knowledge regarding the significance and usefulness of management accounting applications.

H5: Bank personnel have a positive impact on the organization of MPA activities at commercial banks (t = 5.358, p < 0.01) and is consistent with Armitage and Webb (2013) and Kouhy et al. (2009).

H7: The unique element that negatively affects the organization of MPA operations at commercial banks is the implementation approach of MPA (t = 2.426, p < 0.05). This finding contradicts the findings of Azudin and Mansor (2018), who argue that elements of organizational DNA, such as culture, communication, and spirit, do not influence the intention to utilize management accounting.

Regarding the testing of the assumptions of the regression model, the scatterplot shows that the residuals are distributed around zero, so the assumption of linear relationship is not violated.

Figure 2. Scatterplot

Dependent variable: GP
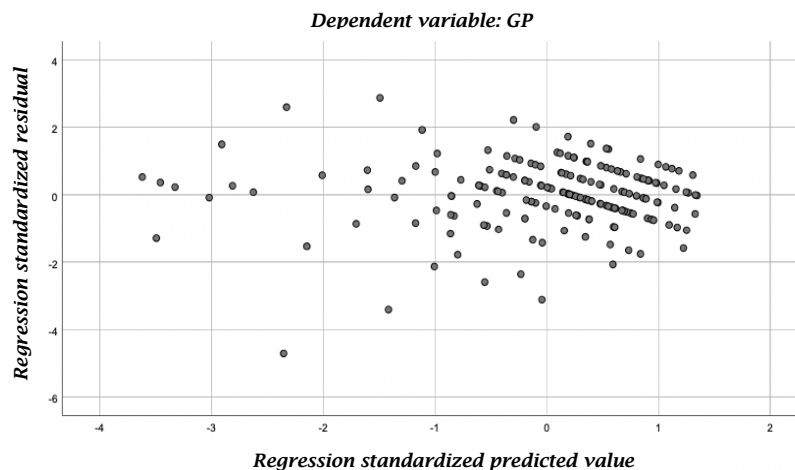
5. CONCLUSION

The perceptions of bank management regarding the application and operation of MPA have the most significant influence among all variables. The success of MPA depends on the direction provided by leaders and their resolute implementation of the project, as it requires substantial resources in terms of time, funding, capital investment, technology, and system-wide participation for model transformation. It is worth noting that the guidance from the regulatory agency and the bank itself also plays a crucial role in determining the success or failure of MPA.

Based on the findings, some policy implications are given as follows.

Initially, the leaders and staff of the bank should recognize the significance of implementing multi-dimensional profit analysis. The implementation of multi-dimensional profit analysis has enabled the bank to effectively examine and utilize its earnings through various methods. This, in turn, assists managers in making informed economic decisions and ultimately enhances the operational efficiency of commercial banks. Changing the mindset of managers is crucial as it plays a vital role in fostering leadership consensus. To change perceptions, it is vital to enhance communication for stakeholders to comprehend the needs, policies, procedures, data, and results that need to be executed persistently and methodically.

Second, urgent issuance of guiding papers for the adoption of management accounting in firms is important, as Circular No. 53/2006/TT-BTC, which was released 18 years ago, needs to be replaced. This is a crucial legislative framework that directs commercial banks in developing and operating a comprehensive profit analysis application. Regrettably, it is significantly outdated.

Third, enhance the managerial proficiency and operational capabilities of the leadership team and staff members of Vietnam's commercial banks. To accomplish this, commercial banks must hire candidates who possess the requisite professional competence as well as professional expertise.

Fourth, the implementation method currently has drawbacks to the success of MPA in Vietnamese commercial banks. The complexity and arduousness of implementing MPA in banks, along with the absence of consensus or comprehension regarding its advantages, account for the underlying reason. Officials perceive an increase in workload, intensified plans, and more demanding and intricate KPIs. Therefore, the banks should select the appropriate and rational approaches.

This study has certain drawbacks. The research model may be deficient in certain crucial areas, such as the preparedness of the bank personnel, the scale of the bank, and the technological aspects. Subsequent research should expand upon this undertaking by incorporating more current data regarding the implementation of MPAs in Vietnam through a more thorough and detailed case study.

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APPENDIX

Table A.1. Reliability of variables and attributes

	Scale average if variable type	*Scale variance if variable type*	*Total variable correlation*	*Cronbach's alpha if variable type*
Policy and regulation (*PR*) (Cronbach's alpha = 0.821)				
PR1	11.85	4.464	0.655	0.774
PR2	11.72	4.347	0.696	0.735
PR3	11.78	3.889	0.682	0.751
Bank guidance factor (*BG*) (Cronbach's alpha = 0.683)				
BG1	11.70	3.646	0.457	0.641
BG2	11.70	3.835	0.440	0.659
BG3	11.67	3.323	0.600	0.452
Perception of factor of bank leadership (*BM*) (Cronbach's alpha = 0.747)				
BM1	16.55	7.589	0.553	0.683
BM2	16.55	7.631	0.604	0.660
BM3	17.28	6.915	0.516	0.709
BM4	16.84	7.476	0.512	0.706
Bank data (*DT*) (Cronbach's alpha = 0.802)				
DT1	16.27	4.584	0.701	0.716
DT2	16.34	4.384	0.617	0.753
DT3	16.48	4.618	0.541	0.792
DT4	16.22	4.695	0.623	0.750
Bank's human resources (*HR*) (Cronbach's alpha = 0.832)				
HR1	22.49	13.906	0.627	0.799
HR2	23.04	13.328	0.732	0.768
HR3	22.16	15.117	0.548	0.820
HR4	22.34	14.623	0.576	0.813
HR5	22.45	13.600	0.671	0.786
Financial resources (*FR*) (Cronbach's alpha = 0.654)				
FR1	11.56	3.839	0.503	0.512
FR2	11.52	4.209	0.453	0.580
FR3	12.47	3.130	0.463	0.584
Implementing the MPA analysis method and system (*IM*) (Cronbach's alpha = 0.725)				
IM1	19.16	8.115	0.429	0.704
IM2	18.99	7.021	0.497	0.674
IM3	18.52	7.162	0.476	0.682
IM4	19.47	5.800	0.587	0.635
IM5	19.37	6.643	0.468	0.687
Profit analysis multi-dimensional profits of Vietnamese commercial banks (MPA) (Cronbach's alpha = 0.846)				
MPA1	11.76	3.118	0.706	0.794
MPA2	11.75	2.890	0.724	0.776
MPA3	11.70	3.027	0.712	0.787