ANALYSIS OF THE CORRELATION BETWEEN OPERATIONAL RISKS AND OPERATIONAL PERFORMANCE: RESULTS OBTAINED BY COMPARING INDEPENDENT BANKS WITH THE FINANCIAL HOLDING SUBSIDIARY BANKS

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ABSTRACT

In recent decades, governments worldwide have lifted restrictions on financial businesses and banks to encourage financial liberalization, which has led to a surge in the emergence of banks. However, these banks are generally small in scope and provide similar services. To solve the problem of an excessively high number of banks and to evolve Taiwan into a regional financial center, the Taiwanese government began to encourage the domestic banking industry to adopt a financial holdings model of management. In addition, the Taiwanese government introduced the Basel Accords for the management of risk; the objectives are to use financial holdings management and risk management to elevate the operational performance of banks and facilitate bank differentiation. In this study, we investigated whether financial holdings management improved the operational performance of banks. A total of 30 Taiwanese listed or over-the-counter banks were selected as the study sample and divided into two categories (i.e., "financial holding subsidiary banks" and "independent banks without financial holdings") according to their operational method. The study explored whether the effects of risk management factors on the operational performance of banks differed between the two operational methods. The empirical results showed that the banks could enhance their operational performance by managing risks and that the effects of the risk management factors on their operational performance differed between the two operational methods. Many operational performance indicators showed that financial holding subsidiary banks outperformed independent banks. The results of this study can serve as a reference for government departments when promoting and formulating international financial strategies.

Key words: New Basel Accord, Operational performance of banks, Banks' risk management, Capital adequacy ratio.

1.   INTRODUCTION

For a long time, the domestic banking industry in Taiwan has shown poor competitiveness because of an excessive number of banks, overly homogeneous bank services and products offered by these banks, and disproportionally powerful foreign banks that have brought large sums of capital and developed financial instruments into Taiwan since it joined the WTO. To solve the problem of the "big gets bigger," the Taiwanese government has vigorously pushed the domestic banking industry to adopt a financial holdings model of management, with the goal being to expand the operating scale of the financial institutions to facilitate differentiated operations and economies of scale. Financial holdings management not only creates economies of scale but also enables subsidiary companies to engage in cross-promotion, which effectively reduces operating expenses and provides consumers with comprehensive banking services. Cross-industry sales increase customer loyalty and their willingness to stay with companies, which enhance the overall profitability of the financial holding institutions. In addition, because of the limited size of the domestic financial market, banks must compete with the international banks by transforming into larger banks and by engaging in cross-industry business operations that expand into foreign markets, and prevent a vicious cycle from forming in the domestic banking industry in which banks resort to competitive pricing.

The key factors leading financial institutions worldwide to succeed include not only that the financial institutions achieve favorable operational efficiency and engage in financial innovations but also that they strive to manage risk. Following the financial liberalization of the banking industry, financial institutions began to continually introduce new financial instruments, making the aggregate risk increasingly complex. Consequently, financial institutions that are insufficiently aware of risk control expose themselves to a high degree of risk. Examples of the serious consequences that result from ignoring risks include the Asian financial crisis in 1997, the credit card debt crisis in Taiwan in 2005 and 2006, and the subprime mortgage crisis in the United States in 2008.

In 2006, the Taiwanese government introduced the Basel Accords to improve the foundation of domestic financial institutions. The objective was to establish a risk management system for domestic financial institutions that could improve their operational performance and enable them to meet international standards, which would allow the Taiwanese banking industry to earn international recognition and enter the international market. However, whether banks could use financial holdings management to truly improve their operational performance warranted further research; this study investigated this topic by examining 30Taiwanese listed or over-the-counter banks. The banks were divided into two categories according to their operational method:"financial holding subsidiary banks"(hereinafter referred to as "FHS banks") and "independent banks without financial holdings"(hereinafter referred to as "independent banks").The present study explored whether the effects of the various risk management factors on operational performance differed between the different operational methods during the study period from June 2007 to June 2014. Empirical results were used to analyze whether the risk management of FHS banks was superior to that of independent banks. The results can serve as a reference for government departments when establishing risk indicators and deciding whether to continue promoting financial holdings management.

2.   LITERATURE REVIEW

2.1   Operational Risks of Banks

Since 1990, governments around the world have lifted restrictions on financial businesses to support favorable development in the financial industry. However, the new financial instruments introduced after the removal of these restrictions and the conflicts of interest emerging from cross-industry businesses have increased banks' operational risks, creating numerous financial problems. Therefore, financial supervisory agencies worldwide have been addressing the problem of operational risks, including the consideration of risk management. Liao (2006) found that overdue loan ratios and capital adequacy ratios were negatively correlated with bank efficiency. Cheng and Chou (1999) asserted that banks with increased overdue receivable ratios were accompanied by increased credit risks.

2.2   Operational Performance of Banks

Generally, indicators used to measure a bank's financial performance include finance-related ratios such as return on total assets ratio, shareholders' return on equity, and net profit ratio. Other methods for measuring a bank's financial performance include the CAMELS rating system proposed by Thomas (1986), which divides a bank's operational performance into five dimensions (i.e., capital adequacy, assets, management capability, earnings, and liquidity) and examines each dimension by calculating its respective financial ratios before using the indicators to measure the bank's performance.

Lee (1999) and Dai (2004) examined banks' operational performance and determined the influential factors: efficiency, profitability, capital adequacy, liquidity, management capabilities, and growth potential. Arshadi and Lawrence (1987) indicated that market share and interest revenue have a significant effect on banks' return on assets ratio. Miyakoshi and Tsukuda (2004) determined that a bank's regional location has a significant effect on its operational efficiency and that a company's employee education and training can enhance its operational performance.

2.3   Operational Risks and Performance Assessment of Banks

Previous studies have shown that favorable risk management not only enhances bank health but also improves its operational performance. Kuo (2007) and Tsai (2008) noted that using risk factors as input variables and managing these variables prior to banking operations could effectively enhance the bank's operational efficiency. Conversely, using the risk factors as output variables after banking operations converted the variables into reference information and revealed the relevant areas to be improved. Mester (1996) and Dai (2004) confirmed that an increasing ratio between equity capital and risk assets is accompanied by an increased ability for banks to make a profit. Sakar (2006) found that banks with a total market share of 3% in assets have better operational efficiency. Hsieh (2003) added that, when independent banks are changed into financial holding companies, their operating expenses decrease and their overall liquidity ratios increase.

Since the introduction of the Basel Accords by the Taiwanese government, numerous studies have explored the effect of the accords on the domestic banking industry. However, most of these studies have selected all of the banks in the banking industry as their study sample or compared the differences in a bank before and after it became a financial holding company; scant studies have investigated differences between banks that have adopted different operational methods. This study contends that banks' operational risks differ according to the operational method that they have adopted. In this study, the samples were divided into two types of institutions according to their operational method, namely FHS

banks and independent banks, and were compared to reveal whether differences in risk management factors existed that influenced their operational performance. In addition, the empirical results were used to analyze whether the risk management of FHS banks was superior to that of independent banks. The results can serve as a reference for government departments when establishing risk indicators and deciding whether to continue promoting financial holdings management.

3.   RESEARCH METHOD

3.1   Research Framework

This study referred to related literature on the operational risks of general banks and divided the Basel Accords into three dimensions and seven risk management factors. The operational performance of the banks was also divided into three dimensions, and financial indicators representing each respective dimension were selected to study the effect of risk management on banks' operational performance. The study framework is shown in Figure. 1.

3.2   Research Hypothesis

Related studies have shown that a bank's strengthened control over operational risks is accompanied by improved operational performance. By contrast, the poorer a bank's risk management structure and loan requirements(excessive lending) are, the poorer its asset quality. In addition, poor risk management structure and loan requirements may lead to nonperforming loans, which diminish a bank's profit and earnings and thus hinder its performance. Furlong and Keely (1989) indicated that a high capital adequacy ratio can effectively reduce increases in risk assets and lower operational risks, thus providing banks with more stability and security in their operations and effectively increasing their operational performance. Therefore, on the basis of the three dimensions of the Basel Accords, this study proposed the following hypotheses:

H1:   "Credit risk management factor" is correlated with "operational performance."

H1-1:   "Credit risk capital requirement" is correlated with "operational performance."

H1-2:   "Capital adequacy ratio" is correlated with "operational performance."

H1-3:   "Coverage ratio of allowances for bad debt" is correlated with "operational performance."

H2:   "Market risk management factors" are correlated with "operational performance."

H2-1:   "Market risk capital requirements" are correlated with "operational performance."

H2-2:   "Interest rate sensitivity gap and net worth ratio" are correlated with "operational performance."

H3:   "Operational risk management factors" are correlated with "operational performance."

H3-1:   "Operational risk capital requirements" are correlated with "operational performance."

H3-2:   "Employee turnover rate" is correlated with "operational performance."

3.3   Definitions of the Research Variables

The research sample comprised 30 Taiwanese listed or over-the-counter banks. Financial data were retrieved from the *Taiwan Economic Journal Database*, the *Financial Statistics Abstract*(prepared by the Statistics Office at the Banking Bureau of the Financial Supervisory Commission), and the *Basic*

Financial Data of the Republic of China (Taiwan). The study period was from June 2007 to June 2014. Table 1 is the definitions of the study variables.

4.   EMPIRICAL RESULTS

4.1   *Descriptive Statistical Analysis*

Descriptive statistical analysis was performed in this study. As shown in Table 2, the research sample had a mean capital adequacy ratio of 12.29%. After the banks were separated into FHS banks and independent banks, the results showed that the FHS banks had a mean capital adequacy ratio of 12.68% and that the independent banks had a mean capital adequacy ratio of11.93%. These results indicated that, under the guidelines of the Basel Accords, domestic banks in Taiwan are able to satisfy the requirement of an 8% capital adequacy ratio regardless of their operational method. The study sample showed a mean employee turnover rate of 7.2%, with FHS banks exhibiting a mean rate of 6.34% and independent banks a mean rate of 7.97%. The study sample demonstrated a mean earnings per share (EPS) of NT$0.43, with FHS banks showing a mean EPS of NT$0.8 and independent banks a mean EPS of NT$0.23. These results indicated that the profitability of FHS banks is superior to that of banks using other operational methods.

4.2   *Correlation Analysis*

In this study, regression analysis was used to understand the effect of the risk management factors on banks' operational performance. To prevent collinearity from occurring between the independent variables, this study used the variance inflation factor (VIF) to check for collinearity. A VIF value greater than 10 indicated the existence of collinearity. According to the empirical results shown in Table 3, the problem of collinearity did not exist in this study.

4.3   *Regression Analysis*

Table 4 is the regression analysis of the effect of various risk dimensions on the operational performance of FHS Banks. Table 5 is the effect of various risk dimensions on the operational performance of independent banks.

The empirical results (Tables 4 and 5) confirmed the correlations between the risk management factors and the banks' operational performance levels, verifying the dissimilar effects of the different operational methods. The remainder of Section 4.3.2 describes the investigation and analysis of the effects of the risk management factors (from the various risk dimensions) on the banks' operational performance levels.

The capital adequacy ratio was negatively correlated with the operating expenses of FHS banks, signifying the ability of the capital adequacy ratio to serve as an effective risk management indicator. In other words, the process for managing credit risk can be simplified by using the Basel Accord guidelines, and it is not necessary for banks to develop a risk management procedure by themselves or with others, which lowers related costs. However, use of the Basel Accord guidelines displayed no significant effect on the independent banks, which may have resulted from the independent banks having comparatively fewer risk assets and therefore not requiring complicated formulas to manage them. The banks were thus able to satisfy the Basel Accord requirements regarding equity capital without having to make deliberate adjustments or to manage risks.

Allowances for higher coverage ratios of allowances for bad debts was attributed to an increase in the revenue growth rates of FHS banks. Increases in the coverage ratios of allowances for bad debts were primarily due to nonperforming loans being effectively reduced or the allowances for bad debts having been appropriated in advance. Therefore, the higher the coverage ratios of allowances for bad debts, the smaller the impact by banks when nonperforming loans occur and the truer the profits posted by the banks. In this study, the FHS banks' coverage ratios of allowances for bad debt were significantly and positively correlated with the banks' operating expenses, which may have resulted from the appropriation of allowances for bad debts having not only elevated the banks' tolerance of bad debts but also reduced their tax expenditure. Therefore, FHS banks with higher revenues had a stronger motivation to voluntarily appropriate allowances for bad debts and thus exhibited comparatively higher operating expenses.

The interest rate sensitivity gap and net worth ratio had no significant effects on the operational performance of FHS banks, which may resulted from the "interest rate-sensitive assets and liabilities" possessed by the banks cancelling each other out or facilitating risk transfer (thus enabling the banks to exhibit superior management of interest rate risks). By contrast, the interest rate sensitivity gap and net worth ratio improved the independent banks' EPS, although this improvement came at the cost of increased operating expenses. These results showed that the independent banks demonstrated poorer management of interest rate risks than did FHS banks.

The employee turnover rate was significantly and negatively correlated with independent banks' operational performance levels. The higher the employee turnover rate was, the lower the banks' EPS. The main reasons contributing to this correlation were the increased training costs resulting from employee turnover and the costs incurred because of employee absences, which lowered the banks' organizational efficiency and their operational performance. However, the employee turnover rate exhibited no significant effect on the FHS banks because, compared with the independent banks, they were larger and had more talented personnel, thus enabling the banks to fill vacancies more quickly and to experience less of an effect on their operational performance.

The capital requirements based on credit risks displayed a significant and positive effect on the operational performance of the independent banks. The higher the credit risk capital requirements were, the lower the operating expenses. However, this effect was not observed in the FHS banks, indicating that the FHS banks had a greater ability to manage credit risks.

The capital requirements based on market risks displayed a significant and positive effect on both the FHS banks and the independent banks. The higher the market risk capital requirements were, the higher the increase in the banks' operational performance levels. Higher market risk capital requirements improved the FHS banks' EPS and reduced their operating expenses. Conversely, higher market risk capital requirements elevated the independent banks' EPS and revenue growth rates. However, previous studies have asserted that no significant correlations exist between market risk capital requirement and bank operational performance. However, as bank transactions become increasingly complex and internationalized, market risks will become much more complicated than in the past. In addition, market risk capital requirements have grown from an average of NT$2.3 billion before 2008 to NT$29.9 billion at the time of the present study, thus confirming the significant growth of market risks and emphasizing that banking institutions should focus on this matter.

The capital requirements based on operational risks were negatively correlated with the operational performance of independent banks. The higher the operational risk capital requirements were, the higher

the independent banks' operating expenses and the poorer their revenue growth. By contrast, despite the negative effect of operational risk capital requirements on the FHS banks' EPS and revenue growth rate, the operational risk capital requirements effectively reduced the FHS banks' operating expense ratios. These results indicated that the FHS banks were exposed to a wider diversity of operational risks than the independent banks and that the operating expenses incurred from managing operational risks could be effectively reduced by managing operational risk capital requirements.

5.   CONCLUSION AND RECOMMENDATIONS

5.1   Conclusion

The effects of risk management factors on the operational performance of banks differed between the two operational methods. For example, capital requirements based on operational risks neither elevated the operational performance of the independent banks nor increased the banks' operating expenses. By contrast, FHS banks featured business operations that were more diverse, thus enabling operational risk capital requirements to reduce the banks' operating expenses. These results can serve asa reference for government policy makers for effectively improving banks' operational efficiency by indicating that different assessment indicators be used when developing risk management indices for banks of different sizes and for banks that adopt different operational methods. In addition, the risk management of the FHS banks outperformed that of the independent banks. For example, variables such as the "interest rate sensitivity gap,""net worth ratio," and "employee turnover rate" exhibited no significant effect on the FHS banks, which may have resulted from the following reasons: first, the "interest rate-sensitive assets and liabilities" possessed by the banks cancelled each other out or facilitated risk transfer, enabling the banks to exhibit superior management of interest rate risks; second, the FHS banks were larger than the independent banks and had more talented personnel, enabling the FHS banks to fill vacancies more quickly and to maintain their operational performance. This study showed that FHS banks exhibit more competitive risk management (with greater ability and soundness) than do independent banks. The results also indicated that the government must continue to promote financial holdings management. The findings of this study may serve as a reference for government policy makers when formulating related policies, thus enabling banks to manage risks more effectively and to achieve greater operational efficiency. A compilation of the study results is shown in Table 6.
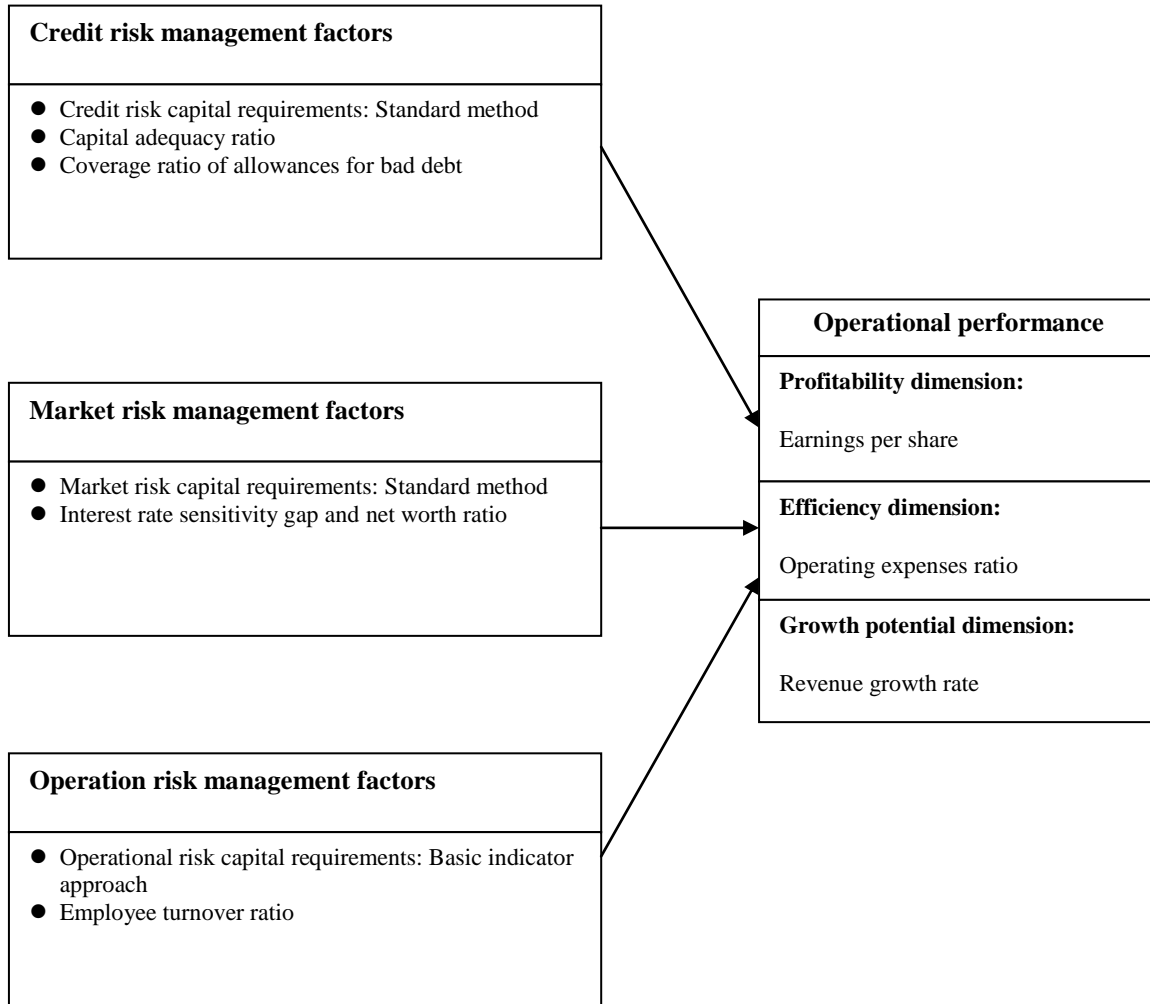
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FIGURE LEGENDS

Credit risk management factors

- Credit risk capital requirements: Standard method
- Capital adequacy ratio
- Coverage ratio of allowances for bad debt

Market risk management factors

- Market risk capital requirements: Standard method
- Interest rate sensitivity gap and net worth ratio

Operation risk management factors

- Operational risk capital requirements: Basic indicator approach
- Employee turnover ratio

Operational performance

Profitability dimension:

Earnings per share

Efficiency dimension:

Operating expenses ratio

Growth potential dimension:

Revenue growth rate

Figure 1: Study framework

Table 1: **Definitions of the Study Variables**

Risk dimensions	Independent variables	Definition	Reference sources
Credit risk	Credit risk capital requirements: Standard method	"Credit risk" refers to the loss suffered by a bank when its counterparty fails to fulfill its contractual obligations. An example is the occurrence of nonperforming loans because of a bank's failure to fulfill its due diligence when selecting borrowers of loans.	Basel Accords
	Capital adequacy ratio	"Capital adequacy ratio," the focus of the Basel Accords, is a crucial indicator for measuring the soundness of a bank's financial affairs. The purpose of the capital adequacy ratio is primarily to ensure that a bank has sufficient capital to cope with its credit, market, and operational risks.	Mester (1996) Kuo (2007) Tsai (2008)
	Coverage ratio of allowances for bad debt	"Coverage ratio of allowances for bad debt" is a critical indicator for evaluating a bank's risk tolerance for bad debts. Banks appropriate allowances for bad debts to compensate for nonperforming loans. Therefore, the more allowances that banks make for bad debts, the smaller the impact and crisis that a bank sustains when encountering bad debts.	Chen (2008) Lai (2008)
Market risk	Market risk capital requirements: Standard method	"Market risk" refers to the loss sustained by a bank because of volatility or changes in prices in the financial market.	Basel Accords
	Interest rate sensitivity gap and net worth ratio	Regardless of the "sign" of the interest rate sensitivity gap (i.e., positive or negative), the greater the interest rate sensitivity gap is, the greater the interest rate risk borne by a bank. Whether the bank makes a profit or suffers a loss is dependent on the interest rate movement.	Tseng (2008)
Operational risk	Operational risk capital requirements: basic indicator approach	"Operational risk" refers to the losses experienced by a bank because of reasons such as inappropriate internal procedures or operational failures, personnel or system errors, and external events.	Basel Accords
	Employee turnover rate	"Employee turnover rate" is mainly used to measure bank employees' level of work experience; the lower an employee turnover rate is, the longer his/her years of	Proposed by this study

service to the company and the more enriched his/her work experience. Similarly, such employees are less likely to make mistakes and are expected to be more efficient.

Performance dimensions	Dependent variables	Definition	Sources of reference
Profitability	Earnings per share	Higher earnings per share indicate that each share is able to generate a higher profit and that the company is able to create a higher profit by using comparatively fewer resources.	Tseng (2008)
Efficiency	Operating expenses ratio	For every dollar of operating income, the lower the operating expenses incurred by a bank, the better its operating cost control and operating efficiency becomes.	Hsieh (2003)
Growth potential	Revenue growth rate	"Revenue growth" signifies an expansion in a bank's business and an increase in revenue, which have a positive effect on the bank's operation.	TCRI Credit Risk Index

Table 2:   Descriptive Statistics of the Variables

Descriptive statistics

	Standard deviation	Minimum value	Maximum value	Mean	Median
Credit risk capital requirements: Standard method	4,406	229	18,950	5,021	3,258
Capital adequacy ratio	3.76	-24.54	33.06	12.29	11.62
Coverage ratio of allowances for bad debt	381.24	21	453	271.11	144.76
Market risk capital requirements: Standard method	194	3	933	192	133
Interest rate sensitivity gap and net worth ratio	69.48	-517	251	44.67	45.43
Operational Risk capital requirements: Basic indicator approach	247	11	761	170	106
Employee turnover rate	4.34	1	42	7.2	6
Earnings per share	2.8	-37.66	4.05	0.43	0.72
Operating expense ratio	10.96	11.72	82.15	39.22	39.38
Revenue growth rate	19.52	-54	103	1.03	3.77

Note: For the variables "Credit risk capital requirements: Standard method," "market risk capital requirements: Standard method," and "Operational risk capital requirements: Basic indicator approach," the unit is NT$100 million.

Table 3:   Collinearity Test

Dimensions	Risk management factors	Collinearity	
		Tolerance level	VIF
Credit risks	Credit risk capital requirements: Standard method	0.081	5.363
	Capital adequacy ratio	0.559	1.79
	Coverage ratio of allowances for bad debt	0.873	1.146
Market risks	Market risk capital requirements: Standard method	0.322	3.109
	Interest rate sensitivity gap and net worth ratio	0.661	1.512
Operational risks	Operational risk capital requirements: Basic indicator approach	0.102	6.769
	Employee turnover rate	0.7	1.429

Table 4 Effect of Various Risk Dimensions on the Operational Performance of FHS Banks

Financial holding subsidiary banks: All-possible-regression analysis

Y= dependent variables	Earnings per share	Operating expense ratio	Revenue growth rate
Intercepts	B=-16.719	B=298.261	B=-162.360
	T=-1.643	T=8.639	T=-1.659
	P=0.104	P=0.000***	P=0.101
X1= Credit risk capital requirements: Standard method	B=2.634	B=3.924	B=45.726
	T=1.023	T=0.449	T=1.847
	P=0.309	P=0.654	P=0.068
X2= Capital adequacy ratio	B=-0.041	B=-1.189	B=0.119
	T=-0.445	T=-3.838	T=0.136
	P=0.657	P=0.000***	P=0.892
X3= Coverage ratio of allowances for bad debt	B=0.002	B=0.016	B=0.031
	T=1.058	T=3.000	T=2.079
	P=0.293	P=0.004**	P=0.041*
X4= Market risk capital requirements: Standard method	B=4.233	B=-11.361	B=15.235
	T=4.029	T=-3.188	T=1.509
	P=0.000***	P=0.002**	P=0.135
X5= Interest rate sensitivity gap and net worth ratio	B=0.005	B=0.017	B=-0.037
	T=0.916	T=0.967	T=-0.741
	P=0.362	P=0.337	P=0.461
X6= Operational risk capital requirements: Basic indicator approach	B=-4.861	B=-26.702	B=-47.903
	T=-2.056	T=-3.329	T=-2.107
	P=0.043*	P=0.001***	P=0.038*
X7= Employee turnover rate	B=-0.062	B=-0.415	B=0.558
	T=-0.913	T=-1.810	T=0.858
	P=0.364	P=0.074	P=0.393
F	7.239	28.525	4.038
	P=0.000***	P=0.000***	P=0.001***
Durbin-Watson	1.840	1.089	1.411
Adjusted R^2	0.379	0.682	0.191

*P<0.1; **P<0.05; ***P<0.01

Table 5 Effect of Various Risk Dimensions on the operational Performance of Independent Banks

Independent banks without financial holdings: All-possible-regression analysis

Y = dependent variables	Earnings per share	Operating expense ratio	Revenue growth rate
Intercepts	B = -2.662	B = 157.573	B = -29.125
	T = -0.878	T = 6.097	T = -0.652
	P = 0.381	P = 0.000***	P = 0.515
X1 = Credit risk capital requirements: Standard method	B = 0.870	B = -33.339	B = 17.531
	T = 1.135	T = -5.101	T = 1.563
	P = 0.258	P = 0.000***	P = 0.120
X2 = Capital adequacy ratio	B = 0.006	B = -0.254	B = 0.655
	T = 0.141	T = -0.667	T = 1.000
	P = 0.888	P = 0.505	P = 0.319
X3 = Coverage ratio of allowances for bad debt	B = 0.001	B = -0.001	B = 0.002
	T = 3.475	T = -0.558	T = 0.585
	P = 0.001***	P = 0.577	P = 0.559
X4 = Market risk capital requirements: Standard method	B = 0.704	B = -3.171	B = 13.285
	T = 2.303	T = -1.217	T = 2.974
	P = 0.022*	P = 0.225	P = 0.003**
X5 = Interest rate sensitivity gap and net worth ratio	B = 0.005	B = 0.037	B = 0.012
	T = 3.269	T = 3.003	T = 0.573
	P = 0.001***	P = 0.003**	P = 0.567
X6 = Operational risk capital requirements: Basic indicator approach	B = -1.280	B = 25.791	B = -29.710
	T = -1.964	T = 4.642	T = -3.111
	P = 0.051	P = 0.000***	P = 0.002**
X7 = Employee turnover rate	B = -0.044	B = 0.015	B = -0.335
	T = -2.750	T = 0.109	T = -1.425
	P = 0.007**	P = 0.913	P = 0.156
F	13.288	6.487	5.926
	P = 0.000***	P = 0.000***	P = 0.000***
Durbin-Watson	1.611	1.733	1.615
Adjusted R^2	0.315	0.170	0.157

*P<0.1; **P<0.05; ***P<0.01

Table 6Results of the Study Hypothesis

Hypotheses	Financial holding subsidiary banks("FHS banks")	Independent banks
H1: "Credit risk management factor" is correlated with "operational performance."		
H1-1: "Credit risk capital requirement" is correlated with "operational performance."	Rejected	Accepted
H1-2: "Capital adequacy ratio" is correlated with "operational performance."	Accepted	Rejected
H1-3: "Coverage ratio of allowances for bad debt" is correlated with "operational performance."	Accepted	Accepted
H2: "Market risk management factor" is correlated with "operational performance."		
H2-1: "Market risk capital requirement" is correlated with "operational performance."	Accepted	Accepted
H2-2: "Interest rate sensitivity gap and net worth ratio" are correlated with "operational performance."	Rejected	Accepted
H3: "Operational risk management factor" is correlated with "operational performance."		
H3-1: "Operational risk capital requirement" is correlated with "operational performance."	Accepted	Accepted
H3-2: "Employee turnover rate" is correlated with "operational performance."	Rejected	Accepted