A meta-analysis of the factors affecting the banking industry's profitability using the CMA software

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Abstract

Profitability is an intrinsic factor to keep the bank strong because profitability shows that a bank is operating efficiently. Considering the strong relationship between a strong banking system and economic growth, research on the determinants of bank profitability has been widely conducted. However, according to the extent of the studies, there is no proper and consistent attitude regarding the factors that determine the bank's profitability. Accordingly, the purpose of this research was meta-analysis of factors affecting the profitability of the banking industry. This research was based on the purpose of applied-developmental research. In order to achieve the purpose of the study, first, articles were searched with the keywords of banking profitability and banking performance, and finally, 51 studies were selected for meta-analysis based on the inclusion and exclusion indicators of the articles. In order to analyze the data in this research, the overall effect size index and Z value were used to check its significance. Also, in the diffusion detection section, along with the use of funnel and precision charts, Duvall and Toid indices have been used to show point estimates and obtain error-free Q and N values. The results of the research show that there are 14 effective factors for the profitability of the banking industry, the most important of which are inflation, deposits and operational efficiency.

Keywords: bank, meta-analysis, profitability
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1 Introduction

The disturbances in the global financial system during the recent years have highlighted the fact that a well-functioning financial system is very essential for financial growth. The role of banks in providing general economic activities and different market sectors, in particular, is still central and enables the economy to be more productive since it allows investors who have low resources to utilize the savings of people who do not have investing skills. A healthy and profitable banking industry can better endure negative shocks and contribute to the financial system's stability [53]. Banks play a vital role in the economy not only to regulate liquidity, but also to strengthen the manufacturing sectors of a country, and assist with individual consumption and capital accumulation [68]. The truth is that there is a close relationship between the better performance of this sector and the boost of economic growth in a country

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[33]. Banks play a vital role in economic performance since they are an important factor in the financial system of countries.

Profitability is an intrinsic factor in the financial strength of a bank because profitability indicates whether a bank is performing efficiently. Considering the strong connection between a strong banking system and economic growth, research has been conducted extensively regarding the indicative factors of bank profitability. This research consists of individual and cross-country analyses and covers the internal and external factors on the right-hand side of the equation. Internal factors are similar to bank-specific factors that are only affected by management. Later, external factors such as industry-specific and macroeconomic variables were added. The external factors are beyond the scope of management and are determined by market forces and governmental impacts [26]. The indicative factors of bank profitability are susceptible to distinctions in different periods and environmental differences. However, some commonalities can be found among these different outcomes and can be utilized to improve the current knowledge regarding the indicative factors.

Profitability is one of the most important concerns of organizations since securing a higher profit margin from their investments promotes them to increase their capital, hire more employees, have innovations, and improve the processes; in other words, it grants them to extend their value creation. Banks are also no exception to this rule. In truth, these organizations also have concerns regarding competition strategies, efficiency levels, and risk management to increase profits [73].

The experimental results of the studies conducted in the field of bank profitability have been noticeably different due to the contrast in data sets, periods, investigated environments, and the studied countries. However, some common elements allow further categorization of the bank's profitability factors. Thus, based on the considered issue, this research is based on two main matters. Firstly, there is a kind of ambiguity in the studies conducted regarding the determining factors of profitability in the banking system, which is due to a variety of studies in this field, since researchers have kept tabs on the issue of profitability in the banking industry from specific aspects. This research seeks to conduct a meta-analysis on the factor affecting the profitability in the banking industry to achieve correct decision-making following the internal conditions of the banks, which is based on Islamic banking, which can identify a set of different factors as the determining factors of profitability in the banking industry. The second matter is related to the domestic economic conditions, which have caused the profitability of the banking industry to be largely impacted by macroeconomic issues and hurt the banking system. Identifying the determining factors of profitability in the banking industry can assist managers and policymakers of this industry with their decisions.

2 Literature review

Despite the many changes in the list of variables that contribute to bank profitability, little has changed regarding the nature of bank profitability itself. Bank profitability is usually measured based on the return on assets other indispensable ratios to measure bank profitability are the return on equity and the net profit margin. According to Golin and Delhaise [32], return on assets has become a crucial variable to operationalize bank profitability; also, it has the most use in the empirical literature. Athanasoglou et al. [6] also indicated that central banks and regulatory institutions utilize a return on assets to measure bank profitability. Net profit margin is only a suitable measurement method of bank profitability when interest income and expenses are closely related to banks' behavior [29]. Recent literature has questioned the explanatory power of profitability to indicate the efficiency of a bank, which is similar to bank performance [60, 62]. Therefore, more explanation is required to prove bank profitability as one of the indicative elements of bank performance [60]. Intermediation cost and operational performance are regarded as the other elements that are less frequently used to study bank performance. This leads to the use of return on assets, return on equity, and (to a lesser extent) net profit margin of both bank profitability and bank performance literature having only a subtle difference between them. Bank performance can be considered as a broader understanding of the bank's efficiency and therefore it cannot be utilized as a subsidiary for bank profitability [62]. It is argued that the key ratios to explain bank profitability alone are not enough to explain efficiency [26]. The literature related to bank performance has been developed more than three decades ago utilizing the theories of market power and efficient structure [6]. The market power theory argues that profits are made when market forces become stronger. On the contrary, the efficient structure theory assumes that profits are made by effective management and therefore require higher focus. In the past decades, various studies have been conducted regarding the factors affecting bank profitability in developed and developing economies. Nevertheless, all of them had contradictory results. Factors affecting bank profitability can be divided into several different groups; Based on the theoretical framework of Jadah et al. [40] these groups can be named bank-specific variables, economic indicators, and governmental variables. Investigating numerous pieces of research in the research background has determined several factors for bank profitability, the overview of which is

shown in Table 1 based on various researchers.

Table 1: The factors affecting the profitability of the banking industry in the research literature

Factor affecting banking profitability	Researchers
Capital adequacy	[1, 3, 9, 11, 16, 17, 19, 24, 25, 27, 30, 34, 36, 37, 40, 43, 44, 45, 46, 52, 53, 54, 55, 56, 58, 59, 65, 70, 75, 76]
Bank size (total assets)	[1, 2, 3, 9, 11, 12, 17, 19, 24, 25, 27, 28, 30, 34, 35, 36, 37, 40, 43, 44, 46, 53, 55, 56, 57, 58, 65, 70, 72, 73, 75]
Money supply	[1, 3, 4, 12, 14, 19, 24, 25, 27, 28, 35, 37, 40, 41, 46, 51, 52, 53, 55, 59, 65, 67, 72, 73]
Gross domestic product	[1, 3, 9, 11, 16, 17, 19, 23, 24, 25, 27, 30, 34, 36, 37, 40, 41, 43, 45, 46, 51, 54, 58, 59, 61, 65, 70, 71, 75]
Inflation	[1, 3, 9, 12, 16, 17, 21, 23, 24, 30, 34, 36, 37, 38, 40, 41, 43, 46, 55, 59, 61, 64, 65, 70, 75]
Exchange rate	[19, 23, 30, 37, 71, 72, 73]
Credit risk	[1, 2, 4, 8, 9, 21, 24, 25, 35, 38, 40, 46, 54, 59, 61, 65, 70, 71, 72, 73, 76]
Characteristics of industry	[19]
Deposits (deposit to total asset)	[1, 3, 4, 9, 14, 23, 28, 34, 37, 43, 55, 56]
Total profit to total income (income efficiency)	[24, 64]
Bank life (age)	[24, 58]
Tax rate	[24]
Interest rate	[3, 14, 24, 25, 30, 36, 40, 46, 51, 53, 61, 71]
Loan amounts	[34, 39, 41, 43, 58, 76]
Asset quality (Loan to total asset)	[16, 37, 40, 56, 57, 61]
Operational efficiency	[1, 3, 4, 12, 16, 17, 25, 27, 30, 41, 43, 45, 46, 52, 54, 55, 56, 57, 58, 59, 61, 64, 65, 70]
Money supply growth (total money supply)	[35, 69]
Income to total assets	[4, 70]
Net profit margin	[9, 52, 54, 59]
Overhead to total assets	[11, 58]
Unemployment rate	[23, 28, 38, 40]
Herfindahl index	[51, 64]
Debt to equity	[4, 30, 55]
Debt to total asset	[55]
Deposit to debt	[57]
Deposit interest rate	[28]
Bank ownership	[12, 35]
Direct foreign investment	[28]
Fee income	[41, 51, 56, 57, 71]
Competition	[39, 64]
Political instability	[44]
Lending rate (interest income to total loan	[73]
Government effectiveness	[40, 44]
Supervising quality	[40]
Net interest income	[8]
Crude oil price	[37]

3 Research methodology

This research is applied-developmental in terms of research purpose and descriptive in terms of research method. The research approach is quantitative since the meta-analysis method is used in this research. The statistical population of this research consists of all the conducted research related to the profitability of the banking industry. To determine an appropriate sample, the article's inclusion and exclusion criteria have been used in the study. The article's inclusion index was: 1- articles published after the financial crisis of 2007-2008 related to the banking industry's profitability. The first studies of 2010 are considered. 2- Studies related to factors affecting the profitability of the banking industry in Iran were not conducted. 3- Studies that are considered articles published in reputable scientific journals. The considered journal should be indexed in one of the academic databases of Scopus, Web of Science, Elsevier, John Wiley, and Taylor publications. 4- the conducted studies for Islamic countries should be indexed in at least the academic database of Google Scholar.

Based on the considered indicators of the preliminary investigations, 78 articles were selected for the research, some of which were conducted qualitatively and some required analysis data and information were not provided to the researcher. In other words, the study's exclusion index included 1- Qualitative research. 2-The required information for the analysis including the coefficient of effectiveness, and the significance of the coefficient is not shown in the article. After investigating the inclusion and exclusion criteria, 51 articles were ultimately selected out of 78 total articles for the research.

To gather and select the articles in this research, first, the keywords of banking profitability and banking performance were investigated and then basic information regarding the title of dependent variables, the title of independent variables, the coefficient of effectiveness of each of them, the significance of the coefficients and sample size were examined based on the prepared worksheet and entered in it. To analyze the data in this research, the overall effect size index and Z value were used to check the effect size and its significance. The effect size in the contingency table which is also shown by the W symbol, is obtained based on the following equation:

$$W = \sqrt{\sum_{i=1}^{m} \frac{(P_{oi} - P_{ei})^2}{P_{ei}}} \tag{3.1}$$

. in the equation above, the parameters are as follows:

M: Indicates the number of cells in the contingency table

P_{oi}: Specifies the percentage of observations in each cell

P_{ei}: Specifies the expected percentage in each cell based on the null hypothesis

W can also be calculated using two other methods. The equation below shows the calculation of the W size effect based on the Contingency Coefficient. In this equation, C represents the contingency coefficient in the contingency table:

$$W = \sqrt{\frac{C^2}{1 - C^2}} \tag{3.2}$$

Another method to calculate the effect size in tests based on the contingency table is to use the Cramer's V coefficient also known as "Cramer's V". This equation Is well defined in the following:

$$W = V\sqrt{d_{\min} - 1} \tag{3.3}$$

in this equation, $d_{\min}$ is the smallest value of the contingency table's length or width meaning that any dimension of the contingency table that is smaller, is considered a $d_{\min}$ value.

Cohen's F statistic is used in between-subject analysis and one-way analysis of variance as well as factorial design. Moreover, there will be not any issue to utilize it to show the effect size in the analysis or variance analysis with repeated values or mixed analysis of variance. Cohen's F statistic is calculated based on the equation below. Note that, there will be a correlation between the size of the eta-squared effect or "partial eta-squared" and the size of Cohen's F statistic in this way:

$$f = \sqrt{\frac{\eta_P^2}{1 - \eta_P^2}} \tag{3.4}$$

F's value is interpreted as follows:

Low effect: $f = 0.1$ or thereabouts

Medium effect: $f = 0.25$ or thereabouts

High effect: $f = 0.4$ or thereabouts

To determine the Z statistic, we consider two cases. In the first case, it is assumed that the purpose of the statistical test is to compare the population ratio with a constant p_0 value, which is specified in the zero hypothesis. In the second case, we assume that the purpose of the test is to compare two proportions of the population and we want to determine the correlation between p_A and p_B. Whether they are equal, one bigger or smaller than the other. First, we examine the test statistic in the first case. In this way, based on the quantity or volume of the sample specified by n, the test statistic will be as follows:

$$Z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}} \tag{3.5}$$

Note that the statistic is written based on the null hypothesis, and based on this assumption, if n is great, it will have a normal distribution. In the second case, there are two p_A and P_B ratios. Again, based on the null hypothesis, we determine the test statistic and its distribution:

$$Z = \frac{(\hat{p}_A - \hat{p}_B) - p^*}{\sqrt{\hat{p}(1-\hat{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \tag{3.6}$$

Meta-analyzers can calculate the effect size by having the mean, variance, and standard deviation values of the groups, but the most common statistics in this field are $\ll r \gg$ and $\ll d \gg$, $\ll d \gg$ is usually used for group differences, and $\ll r \gg$ for study correlations. Thus, if $\ll z \gg, \ll t \gg$ and $\ll F \gg$ tests are used in a study, their effect size can be calculated based on the following formulas:

$$d = (2t)/\sqrt{df}$$
$$d = (2\sqrt{f})/df$$
$$d = 2r/\sqrt{(1 - r^2)} \tag{3.7}$$

$$r = \sqrt{(X^2/n)}$$
$$r = \sqrt{(t^2/(t^2 + df))}$$
$$r = \sqrt{(F/(F + df))} \tag{3.8}$$

The best criterion to interpret and judge the effect size, either through the $\ll r \gg$ or $\ll d \gg$ index, should be obtained from reviewing the research background. That is, to calculate the effect size values of the research that has been conducted over several years and to choose their average as a proper criterion for comparing other effect size values that will be conducted in the future in that field of research.

Also, in the publication bias part, in addition to funnel and precision charts, Duval and Tweedie's trim and fill can be considered to demonstrate the point estimates and to obtain the safe Q and N values. Rosenthal's significant result was obtained from the combination of their effect size. At least a few more studies are required for the result to lose its significance. In this method, Stauffer's approach has been used in the following equation:

$$Z_s = (\sum_{i=1}^{k} Z_i)/\sqrt{k} \tag{3.9}$$

in this equation, k is the number of studies and the combined result obtained from k studies, and the effect size of the i study. If we consider the expected threshold for measuring the significance of the combined effect size, a significant result of the k study will be established in the following equation:

$$Z_s \geq Z_a \tag{3.10}$$

4 Research findings

The initial investigations of the conducted studies in Table 2 indicated 41 variables affecting the profitability of the banking industry. Before addressing the effect size, one of the essential indicators that should be carried out in

the meta-analysis to be assured of the obtained results is publication bias. Like any other study, meta-analysis is satisfactory and produces valid results only when adequate data is utilized. There may be issues such as incomplete and inadequate data reporting, lack of independence, publication bias, and research in data analysis. One of the major issues of meta-analysis is publication and publication bias, and there may be times when statistically significant studies are published more than non-significant ones. This index seeks to examine whether there is a study that has been effective in the research results and has remained far-fetched from the researcher's standpoint. Logically, if a study is effective in the results of the meta-analysis, it can cause wrong conclusions in it. There are various indicators for this purpose, some of which are examined in this section to investigate publication bias.

Table 2: The frequency of the factors affecting the profitability of the banking industry in the meta-analysis studies

Factors affecting banking profitability	Frequency in research	Symbol
Capital adequacy	40	C1
Bank size (total assets)	37	C2
Money supply	23	C3
Gross domestic product	37	C4
Inflation	34	C5
Exchange rate	7	C6
Credit risk	26	C7
Characteristics of industry	1	C8
Annual growth of deposits	2	C9
Deposits (deposit to total asset)	13	C10
Total profit to total income (income efficiency)	3	C11
Bank life (age)	2	C12
Tax rate	2	C13
Interest rate	12	C14
Loan amounts	5	C15
Asset quality (Loan to total asset)	14	C16
Operational efficiency	27	C17
Money supply growth (total money supply)	2	C18
Income to total assets	2	C19
Net profit margin	4	C20
Overhead to total assets	2	C21
Unemployment rate	4	C22
Herfindahl index	3	C23
Debt to equity	3	C24
Debt to total asset	1	C25
Deposit to debt	1	C26
Deposit interest rate	1	C27
Bank ownership	2	C28
Direct foreign investment	1	C29
Fee income	4	C30
Competition	2	C31
Political instability	2	C32
Bank branches per 100,000 people	1	C33
Bank account per 100 people	1	C34
Number of ATMs per 100,000 people	1	C35
Solvency index (the ratio between banks' capital and their risk-weighted assets)	1	C36
Lending rate (interest income to total loan	1	C37
Government effectiveness	2	C38
Supervising quality	2	C39
Net interest income	1	C40
Crude oil price	1	C41

The first indicator is the visual inspection of studies on a normal chart based on a funnel plot. The funnel plot

of studies on a normal chart is shown in Figure 1. The results of Figure 1 indicate that, roughly, the selected studies are selected normally and have high reliability. In other words, if the information within the sample is standard and symmetrical, it can be claimed that the sample is symmetrical and reliable.
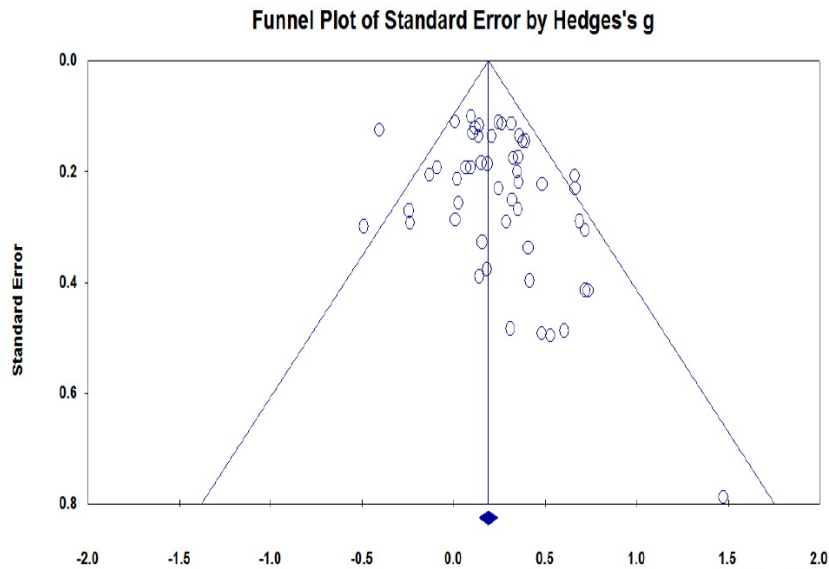

Figure 1: Funnel plot checking the normality of distribution of the selected studies

The second examined chart regarding publication bias is the precision plot or the precision chart. In the precision chart, the studies that were not used in the research can be added to the chart and study the degree of change in the effect size. The precision plot or the precision chart is shown in Figure 2. The results of Figure 2 indicate that the effect size does not change with the inclusion of the studies that were not used in the research. In other words, the selected studies are adequately capable of investigating the factors affecting the profitability of the banking industry and it is not required to add another study to the meta-analysis.
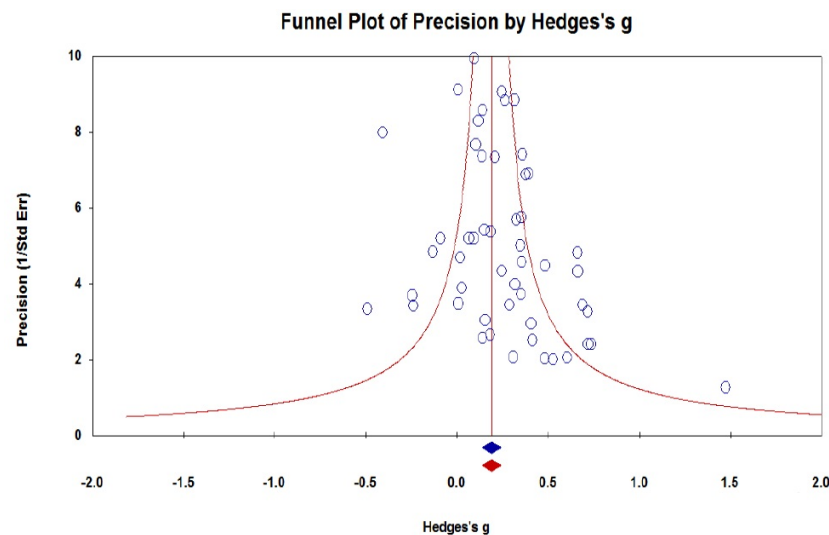

Figure 2: The Precision plot comparing the effect size of the conducted studies with the excluded studies

The next indicator examining the publication bias based on the statistics is Duval and Tweedie's trim and fill can be pointed out to show the point estimates and to obtain the Q value. The obtained results from this index are shown in Table 3. The results of Table 3 indicate that in the two cases of the observation value (only the conducted studies) and the adjusted value (considering some studies that are excluded) in the two models of fixed effects and random effects, there is no difference in the estimated point values and the Q value is not created. In other words, the results of the two categories of observation value and adjusted value based on Duval and Tweedie's index indicate that there

would be no change in the effect size of the point estimates whether it was possible to add a study to the total of conducted studies in the research based on Duval and Tweedie's index which increases the validity of the obtained results from the meta-analysis.

Table 3: The results of Duval and Tweedie's trim and fill investigating the publication bias

	Fixed effects			Random effects			Q value
	Effect size	Lower limit	Upper limit	Effect size	Lower limit	Upper limit	
Observation value	0.188	0.137	0.238	0.204	0.135	0.273	80.368
Adjusted value	0.188	0.137	0.238	0.204	0.135	0.273	80.368

Last but not least, the final indicator checking the publication bias is the Fail-safe N analysis. The determining Rosenthal of the number of missing studies (with the average effect equal to zero), that is, the number of studies confirming the null hypothesis required to be added to the analysis and obtain a statistically insignificant overall effect and change the results, is suggested. Cooper called this number the safe incomplete quantity. Table 4 indicates the calculations regarding the Fail-safe N (the fail-safe quantity for the meta-analysis is indicated).

The results of Table 4 indicate that 731 more studies should be conducted and examined so that the combined two-sided P value exceeds 0.05. In particular, 731 more studies should be carried out so that an error occurs in the final results of the calculations and analyses. These results indicate the high accuracy and validity of the conducted studies and the obtained results. 731 cases of error distance are an indicator of a noticeable and adequate distance.

Table 4: Fail-safe N calculations (Fail-safe quantity)

Indicator	Value
The z value of the observed studies	7.670
A p-value of the observed studies	0.000
Alpha value	0.050
Remainder	2
Z for alpha	1.959
Number of the observed studies	51.00
Number of the missing studies raising the P value to alpha	731.000

After ensuring the validity of the selected studies in the meta-analysis, ultimately, the overall effect size is examined in two ways of fixed and random effects for the conducted studies to check the significance of the conducted studies in the meta-analysis of the factors affecting the profitability of the banking industry. In this section, the null hypothesis emphasizes on this matter that there is no significant difference between the obtained effect sizes and the alternative hypothesis indicates that there is a significant difference between the obtained effect sizes. The results of investigating the differences between the effect sizes are shown in Table 5.

The results of Table 5 indicate that the overall effect size obtained in the fixed effects model is equal to 0.188 and 0.204 in the random effects model, both effect sizes having Z values of 7.335 and 5.773 respectively are significant at the reliability level of 95 percent. In other words, the results of this table indicate that there is a significant difference between the obtained effect sizes and that it is possible to determine the factors affecting the profitability in the banking industry based on the effect sizes.

Table 5: The results of the significance of the effect sizes in the two models of fixed and random effects

Model	Number of studies	Effect size	Lower limit	Upper limit	Value %	Significance %
Fixed effects	51	0.188	0.138	0.238	7.335	0.000
Random effects	51	0.204	0.135	0.274	5.773	0.000

The results regarding the effect sizes of each of the obtained variables from the meta-analysis are shown in Table 6.

Table 6: The frequency and effect size of the variables affecting the profitability of the banking industry

Variable	Frequency	Effect size	Result
Capital adequacy	40	0.302	Approved
Bank size (total assets)	37	0.319	Approved
Money supply	23	0.319	Approved
Gross domestic product	37	0.331	Approved
Inflation	34	0.350	Approved
Exchange rate	7	0.093	Rejected
Credit risk	26	0.327	Approved
Characteristics of industry	1	0.098	Rejected
Annual growth of deposits	2	0.080	Rejected
Deposits (deposit to total asset)	13	0.355	Approved
Total profit to total income (income efficiency)	3	0.096	Rejected
Bank life (age)	2	0.097	Rejected
Tax rate	2	0.095	Rejected
Interest rate	12	0.326	Approved
Loan amounts	5	0.097	Rejected
Asset quality (Loan to total asset)	14	0.323	Approved
Operational efficiency	27	0.343	Approved
Money supply growth (total money supply)	2	0.091	Rejected
Income to total assets	2	0.090	Rejected
Net profit margin	4	0.090	Rejected
Overhead to total assets	2	0.095	Approved
Unemployment rate	4	0.294	Rejected
Herfindahl index	3	0.092	Rejected
Debt to equity	3	0.086	Rejected
Debt to total asset	1	0.095	Rejected
Deposit to debt	1	0.094	Rejected
Deposit interest rate	1	0.090	Rejected
Bank ownership	2	0.091	Rejected
Direct foreign investment	1	0.091	Rejected
Fee income	4	0.052	Rejected
Competition	2	0.086	Rejected
Political instability	2	0.319	Approved
Bank branches per 100,000 people	1	0.091	Rejected
Bank account per 100 people	1	0.089	Rejected
Number of ATMs per 100,000 people	1	0.088	Rejected
Solvency index (the ratio between banks' capital and their risk-weighted assets)	1	0.086	Rejected
Lending rate (interest income to total loan	1	0.088	Rejected
Government effectiveness	2	0.370	Approved
Supervising quality	2	0.338	Approved
Net interest income	1	0.094	Rejected
Crude oil price	1	0.090	Rejected

5 Discussion and conclusion

This research aims to conduct a meta-analysis of the factors affecting the profitability of the banking industry. To achieve this research goal, while reviewing various studies, the indicators regarding the publication bias were first investigated and after ensuring the validity of the selected studies in the meta-analysis, the overall effect size was examined in two methods of fixed and random effects for the conducted studies. The results indicated that the overall effect size obtained in the fixed effects model is equal to 0.188 and 0.204 in the random effects model, both effect sizes having Z values of 7.335 and 5.773 respectively are significant at the reliability level of 95 percent. In other words, the results of this table indicate that there is a significant difference between the obtained effect sizes and that it is possible to determine the factors affecting the profitability in the banking industry based on the effect sizes. Based on

the obtained results of the effect sizes, the variables whose effect sizes are less than the study's overall effect size in the random effects model and are indicated as weak effect sizes in both correlation studies and regression analysis were removed from the study and the effect sizes greater than the overall effect size were selected as the variables affecting the profitability of the banking industry. Accordingly, 14 variables of capital adequacy, bank size (total assets), liquidity, credit risk, deposits (deposits to total assets), asset quality (loans to total assets), operational efficiency, gross domestic product, inflation, interest rate, Unemployment rate, political instability, governmental effectiveness, and supervision quality were selected as the factors affecting the profitability of the banking industry. The results obtained regarding the variable of capital adequacy were in line with the results of the studies of [41, 61, 69]. In the context of bank size, empirical evidence regarding the effect of bank size on profitability are highly contradictory. In the studies of [6, 13, 60], it is reported that bank size does not affect performance. Nonetheless, De Andres and Vallelado [20] indicated in their research that large banks have low costs and consequently high market strength. Kumar and Bird [46] indicated that bank size is a key factor in the profitability of Indian and Chinese banks. Regarding liquidity, the obtained results were in line with the study results of [40, 41]. Concerning credit risk, the studies of Noman et al. [61] and Petria et al. [63] demonstrated the significant impact of credit risk on bank profitability. Also, previous empirical studies indicated a positive and significant correlation between the ratio of total loans to total assets and bank profitability. yet, the obtained data contradicts the results of [74]. Meanwhile, Liang et al. [50] found an insignificant correlation between the ratio of total loans to total assets and bank profitability. Considering operational efficiency, the results of this study were consistent with the studies of [1, 27, 58, 70]. The studies of Petria Et al. [63] and Jara-Bertin et al. [41] discovered a positive relationship between GDP growth and bank performance. Regarding the inflation rate, many studies have indicated a positive and significant connection between inflation and bank profitability. Similar to the studies of [35, 61], some other studies such as Bilal et al. [9] indicated that inflation harms bank performance. In the context of interest rate, the obtained results in this study are in line with the results of the study of Bilal et al. [9] and are contradictory with the results of the studies of [44, 61]. In the context of unemployment, Bordeleau and Graham [10] argued that unemployment negatively affects bank performance.

Concerning the effect of regulation on bank profitability, the literature review has led to inconclusive results, to the extent that some authors have succeeded to highlight the positive effect of regulation on bank performance, and others indicate negative effects. Levine et al. [49], demonstrated in cross-examination of Southeast Asian banks that the regulatory restrictions imposed by the government allow banks to increase their credit facilities and maintain a large share of the market, which leads to greater profitability. La Porta et al. [47] studied the determining factors of bank profitability and discovered that a weak legal system can protect bank debtors and prompt a decrease in bank profitability in the economy. In this regard, Demirgüç-Kunt and Levine [22] realized that a better legal system and effective regulatory systems are associated with less corruption and can reduce frictions or common inefficiencies in the financial system. In the case of Asian banks, one can imagine that with the emergence of effective legal and regulatory systems, insubstantial rules and corruption will be reduced and ultimately, indicate a positive connection with bank profitability.

Political instability is another sort of country-specific risk that can alternate the economy, bank output, and performance. Dang and Nguyen [18] consider political unreliability as one of the main factors affecting the profitability of the banking sector. Yahya et al. [77] investigated the effect of political instability on the profitability of Yemeni banks and found a positive connection. Nonetheless, Şanlısoy et al. [66] analyzed the effect of political instability in Turkey and discovered a noticeable negative correlation between these two variables. In a study, Ghosh [31] studied the correlation between political instability and the profitability of a bank in some countries of the Middle East and North Africa and found an inverse relationship. Moreover, Jebnoun [42] investigated the effect of political instability in Tunisia and confirmed a negative connection. Concerning government effectiveness, Chan and Abd Karim [15] indicated that government effectiveness and bank efficiency are positively connected. Furthermore, Lensink et al. [48] discovered that governmental effectiveness reduces bank costs in dealing with bureaucracy. However, Barth et al. [7] indicated that bank nationalization is negatively connected to the development of the banking sector and positively connected to bank inefficiency measures. Therefore, Arun and Turner [5] argued that the deficiencies related to bank management, pressure the governments in developing countries to withdraw from the banking sector.

In general, it should be noted that many researchers and policymakers agree that the banking sector plays an important role in stimulating sustainable economic development. In this regard, banks play a leading role in the economy and their stability is vital for the financial system. Consequently, if a financial system is efficient, it will achieve profitability.

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