

# The Role of Analyzing Statistical Indicators on Banks' Balance Sheets budgets

(Sudanese Banks Model)

إعداد

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## Abstract

This study addressed the role of analyzing statistical indicators on balance sheets in the light of Sudanese banks' model by using descriptive and analytical statistical methods. It measured the development of banks' performance, success, and continuity of their projects presented in the questions; Does the balance sheet analysis lead to continuous outlook for banking projects? Do statistical indicators play a leading role in budget analysis? Will these statistical indicators benefit in near future?

This research addressed the concepts of banks' balance sheets, and statistical indicators in terms of their objectives, importance, and elements to be applied to any banking model. It identified the importance of studying the indicators' roles in balance sheets analysis to interpret banking performance and reveal the future of such studies to develop the system. It recommended trainings to the administrative leaders in the banking system and educate them the importance of the balance sheets analysis and how to benefit more in Sudanese banks as a case study and their banking system.

Keywords: Statistical indicators, Statistical analysis, closing balance sheets of banks

## Introduction

The analysis of statistical indicators on the bank balance sheets has always been an engrossing part in the banking research. This discourse deals with the role of analyzing



statistical indicators on the final balance sheets of banks and applies the model of Sudanese banks. The balance sheets are importance in terms of analyzing the past performance to find out the reasons, causes and functions, not only preparing to redress the present but also avoiding weaknesses, maintaining strengths and then reading the approaching future. Local and global attention continued to focus on balance sheets analysis and became an indispensable approach in all areas and activities of the concerned institutions. The banking sector, particularly; which has the role of analyzing balance sheets indicators either, every month, quarter or semiannual, has assigned departments within the organizational structure to carry out balance sheets' analysis.

### Research problem

The banks which operate either locally or globally, encounter several barriers. The first barrier is, how to read the balance sheets to determine past, present, and future. This challenge is attributed to several reasons; first, how to apply statistical methods to process the data in the form of information. Secondly, to train their personnel so that they are capable to read banking indicators. The most important of those indicators is, the rate of rotation of budget size, the turnover rate size of resources and deposits, the turnover rate of investment ceilings, and the liquidity turnover rate of banks comprising published data that can be formulated in the form of published budget indicators. The second barrier is the need of applying



the balance sheets' information in the banks despite the data production through technical banking system. The third barrier is the produced data by E-banking system, which is not utilized and turns into wasted data that can be processed and even the situation is, further complicated due to constant change, rapid technological and technical development in context of E-banking. The research problem is the extent to which statistical analysis indicators can be applied and practiced in the development of banking system and their impact on the effectiveness of banking sector performance, which is considered backbone of the national economy.

## Research model

Table I  
Research model

Statistical indicators	Dependent variable
balance sheets size development	Size of liabilities = size of Asset
Capital development	Rate of increase in equity by offering shares or building reserves or capital
Investment asset development	Investment ceilings = diversification of investments (direct and indirect
Cost development	Expenses /revenue
Revenue development	Profits and losses = revenue - expenses
balance sheets turnover	Balance policy = withdrawal and deposit movement II
Turnover of deposit size	Withdrawal and deposit mechanisms = balances sheets for depositors
Investment ceiling	Liquidation investment + new implementation + profits
Liquidity turnover	Uses / Resourcesheets size development



## Research hypotheses

The hypotheses testing is made on the following assumptions:

- There is a statistically significant correlation between balance sheets' analysis and measuring strengths and weaknesses.
- There is a statistically significant correlation between balance sheets analysis and future reading.
- There is a statistically significant correlation between balance sheets analysis and avoidance of deficiencies.
- There is a statistically significant correlation between balance sheets analysis and sustainability.

## Research objectives

This research aims to achieve the followings:

- Demonstrating how to employ and prepare statistical indicators in balance sheets analysis.
- Demonstrating how to measure the development and success of balance sheets analysis and sustainability.
- Detecting continuous improvement of development through balance sheets analysis indicators.

## Research importance

This research is important in various following aspects:

The balance sheets analysis contributes as cognitive addition. This is an addition to the literature of scientific and cognitive research, attracts the local and global attention, addresses the targeted segments such as visual, audio, and written media.



This analysis is also observed as an integral science, and one must get benefit from this integration, especially the developing countries in general. Although, this area is still ambiguous but studies and researches show its practical range and give it importance by identifying the concepts of balance sheets analysis and indicators. One must seek to implement and apply them in organizations to see the expected impact of this exercise.

The area of balance sheets analysis needs scholarly attention of several applied and scientific researchers because of the limited number of studies and researches conducted explicitly in Sudan which did not cover all aspects of the subject. In addition, Sudanese bank managers' knowledge about the concepts and methods of balance sheets analysis and their indicators is still a performance of strategic planning tools, indicated by some studies and research already conducted. Moreover, this research could be an academic contribution that might benefit concerned people and open the way for future research projects.

It has to be noticed that the data and banking information neither took advantage of the analysis of statisticians, nor the banks gave benefits to the trained personnel in the field of statistical analysis. It lost its history and did not take advantage of its data and information to the maximum extent through scientific and academic publications and other published banking studies.



## Research methodology

The research in this study uses the deduction, analytical and historical approach including applied study and field study. The scientific research tools such as questionnaires, interviews, observations are used. The analytical descriptive method is used to describe the phenomena and events related to the study. Moreover, the case study methodology is appropriate for this research because of the accurate and detailed data it provides about the situation in question and its suitability for strategic studies. In addition, the comparison method, the technique of statistical analysis, SPSS to analyze questionnaires and test assumptions are used.

## Research data sources

The data sources of this study are divided into two types:

### Primary data Source:

Primary data source is the study of community and its outputs as field study research, which can be obtained through questionnaires to be distributed at the administrative level of the Sudanese Bank.

### Secondary data source:

Secondary data source includes references, dictionaries, books, magazines, periodicals, researches, academic thesis, reports, state publications, state agencies, local, international and regional agencies, organizations, and websites related to balance sheets analysis and indicators.



## Research limitations

**Spatial limitation:** The study is limited to The Republic of Sudan; Khartoum State-Sudanese banking sector; operating banks' projects.

**Time Limitation:** The study is limited to ٢٠١٩ - ٢٠١٥.

**Objective limitation:** The study is limited to statistical analysis and how the data is processed through the balance sheets.

## Theoretical Framework

### First: definitions of banks

A company whose business involves receiving on-demand deposits from its customers, pays customer bills withdrawn on such deposits, receives savings deposits, pays interest rates, grants businessmen and individuals' loans and invests government and private bonds.

Financial institutions that accept deposits, grant loans and advances and provide many other financial services, which are among the most important institutions in the monetary markets.

The bank is an institution that deals with money. Generally, it is said that banks withdraw excess money from people who do not need to use it currently and lend it to those who need to use it for productive purposes.

It is the company that has been certified by the state to engage in banking following the law.

The definitions of banks vary in terms of the laws and regulations that govern their business, which vary from country to country.





They also differ by their different nature and legal forms, so it is difficult to find a comprehensive definition about the different types, forms and laws governing their business.

Banking businesses are all banking services, particularly the acceptance and use of deposits with the bank's other resources to invest in full or in part by granting loans or in any other way legalized by the law.

Prof. Barry Siegel, Money, Banks and the Economy from monetarists' viewpoint.

- The same previous source, (I).
- Prof. Kamel Tkari, Dr. Ahmed Mandour, Economics.
- Prof. Khalid Amin Abdullah, Banking Operations and Modern Accounting Methods, Arab Banking Union.
- The same previous source, (E).
- Banking Law No. (٢٤) of ١٩٧١, Official Gazette, Issue ٢٣٠١, dated May ١٩٧١, ٢٥, and pluralism published in the Official Gazette No. ٢٥٣٣, Date of December ١٩٧٥, ٢٥, Article II.

The licensed bank is the enterprise that has been licensed to engage in banking in accordance with the law.

In the United States of America, banking law defined it as an institution that has obtained a bank license authorization, whether it has obtained such authorization from the central government or the federal government in which it operates. Others defined the bank as an institution where funds are granted by demand, but this definition is defective because



it is loose to include many institutions such as insurance companies and postal savings' funds with the obvious difference. The technique of gathering funds in banks is in the form of deposits. In contrast, those are contributions and monthly installments in insurance companies and cooperatives, also using and employing these funds, that enjoy a great deal of constancy and stability in financial companies while characterized by instability in banks because those are deposits of varying degrees of stability in terms of remaining in the banks as deposits.

The bank is the enterprise that accepts its debt in the settlement of debts between members and institutions of the community.

The bank is the enterprise that takes the trade of money in its craftsmanship.

### **The same previous reference (ع).**

- Prof. Khairat Dhaif, Financial Facilities Accounting, Cairo Alexandria Printing and Publishing Company, 1970.
- Prof. Mohammed Nabil Ibrahim & Prof. Mohamed Ali Hafez Al-Jed, Practical Commercial Banking Policy, Cairo, p. 70.
- Prof. Ziadeh Ramadan, Banking Department.
- Prof. Mohammed Nabil Ibrahim and Prof. Mohamed Hafez, previous reference, p. 77.

## **Second: Analysis of budgets on bank models**

### **First: Defining balance sheets analysis and how to benefit from them**



The process of analyzing balance sheets and their continuity and utilization is clearly stated in the seriousness of leaders in the banking system, and their ability to determine the degree of practice and actual application of these methods and measure the impact on the development of the performance of facilities in Sudan, in addition to, demonstrating the pattern and methods of management leadership prevailing in Sudanese enterprises and determining their quality. Against the background of (r) balance sheets analysis is also an ongoing strategic work that achieves the following functions: (٣)

- Using techniques of scientific strategic plans, statistical forecasting, and taking advantage of the available strategic alternatives.
- Paying attention to training and rehabilitation for all employees of the company, especially senior leaders who develop and implement strategic plans.
- Paying attention to strategic management, as the basis of reducing risks and gaps and supporting strengths.
- Paying attention to the strategic calendar before, during, and after the implementation of the company's strategic plans.

The nature of the balance sheets in banks can be achieved by studying strategic management and confirming its importance as an administrative technique and a scientific tool to achieve the company's objectives and understand the current and



future environment, under which the company operates (I) by analyzing balance sheets through which banks create several functions as Islamic banks assume the following:

- Islamic banks are interested in determining their message.
- Islamic banks are interested in setting their goals.
- Islamic banks are interested in analyzing external environmental factors.
- Islamic banks are interested in analyzing internal environmental factors.
- Islamic banks develop alternatives to their plans.
- Islamic banks take into account the elements of the implementation of the strategy.
- Islamic banks conduct a strategic evaluation process.

Balance sheets' analysis also required that the responsibilities, tasks and lack of proper allocation of the institution's resources don't conflict, affecting the strategic application that leads to create a significant gap between what was planned and what was already achieved concerning some participants, resulting in lower profitability rates than the previous year and weakness in liquidity rate. (٣)

- Fatima Abdullah Al Tayeb, Strategic Management and Its Impact on the Performance of the Sugar Industry in the Public Sector in Sudan, Unpublished PhD, Omdurman Islamic University, Higher studies School, Management Sciences, Department of Business Management, ٢٠٠٤.
- Amani Al-Nasri Mahjoub, Stratirateical Department of



Islamic Banks in Sudan, Unpublished Master's Thesis) Omdurman Islamic University, Higher Studies School, Management Sciences, 1999

- Mohammed Abdul Rahman Mohieddin Abdul Rahman, Impact of Strategic Management on Financial Performance at Sudan Telecom Ltd. Sudatel, Unpublished Master's Thesis, Omdurman Islamic University, Higher Studies School, Management Sciences, Department of Business Administration, ٢٠٠٠

Through analyzing balance sheets to be utilized, the following conditions must be considered:

- There is a connection between the objectives of the decision support center with a strategic line and its impact on modifications or promotions, dismissal, and resignation in current cases from time to time.
- The use of methods and mechanisms for collecting and analyzing information.
- Technical and human potential in terms of qualifications and advanced training.
- The center is concerned with work side elements that are not included in its work and tasks.
- The information must flow from data to operation and data extraction in the form of integrated information, but the problem remains that information and data within any unit are not ideally completed, a sign that should not go through the ignition of the red signal only because it is frightening



and disturbing.

Analysis of balance sheets and their indicators search for risks by identifying the following elements:

- Identifying and evaluating the strategies, objectives and policies applied in the company under study.
- Investigating and analyzing the risks of the company and how to avoid them.
- Identifying strategic management as a modern administrative approach.
- The study was based on the following two hypotheses:
- Risks affect the organization's long-term performance.
- The underlying risks encountered by the organization can be avoided by adopting a strategic management approach.
- Mahmoud Al-Ser Mohamed Taha, Strategic Management and its impact on the performance of information centers in Sudan, Study of the Council of Ministers Information Center Unpublished Master's Letter, Sudan University of Science and Technology, Higher Studies School Department of Business Administration, ٢٠٠٢.
- Mohammed Naji Jaafari Bashir, The Impact of Risks on Strategic Management by applying to Sukkar Kanana, A.D., ١٩٩٤.

Analysis of balance sheets and indicators through which personal assessments can be avoided, forecasts environmental barriers and changes, the company focuses on its strengths it maintains. These strengths are represented



by qualifying the company's employees with various training courses, in addition to the company's governmental protection because it is the exclusive protector of its property.

The analytical descriptive approach that describes phenomena and events are used instead of the personal assessment, specifically a technique of data analysis, testing of case study hypotheses, and SPSS are used for statistical analysis.

Alawia Saeed Osman, Impact of Strategic Management in Corporate Development, A case study of Chican Insurance, Unpublished Master's Thesis, Nilein University, Higher Studies School, Department of Business Administration, ٢٠١٣.

- Mohammed Hanafi Mohammed Nour, Strategic Management and Its Role in The Performance of Industrial Organizations, Case Study of Giad Group of Automotive and Truck Companies Ltd. Unpublished Master's Thesis, Nilen University, Higher Studies School, Department of Business Administration, ٢٠٠٥.

## **Second: The nature of forecasting statistical indicators**

١. Forecasting method is one of the special and most famous methods: such as forecasting techniques, methods of forecasting the analysis of environmental information. Organizations use several forecasting methods to anticipate any potential changes in the overall environment or the organization's environment. Forecasting is used to forecast



environmental changes, time series method, attitude analysis, techniques of use, estimation and guesswork, Delphi, or the use of arithmetic economy models «Econometrics».

**Scenario method I.** A model-building, regression analysis method, salesmen's estimations.

**The pictorial groups F.** Brainstorming will be addressed.

**The techniques in brief P.** The traditional entrance of this technique is the assumption:

#### A- Time-Series method

It includes the data analyzed for four basic components: attitude, cyclicity, periodical fluctuations, fluctuations due to random errors. The use of time series in forecasting is based on the basic assumption that what has happened in the past and can be repeated in the future. The correlation between forecasted variables will remain the same without any change. This may be contrary to the reality because what happens in the markets cannot be assumed to continue in future. Hence, there can be a logical reservation to this method, and those who use it shall make any adjustment in the outcome of the forecasting that comes from it, according to its expectations of the change of any variable that can affect the forecasting.

- Ismail Mohamed El-Sayed, op. cit., p. 14V
- Previous reference p. 107
- Falah Hassan Adai Al-Husseini, previous reference, p. 18

#### B. Guessing technique

This technique is used to forecast when management deals





with some variables that cannot be quantified, or when the correlation between the variables under analysis is unclear. One way, in this technique, is to take salespersons concerning the expected demand or to conduct a consumer survey of their intention to buy. The later technique is effective in forecasting demand for industrial merchandise, as the number of potential consumers is limited. This technique is usually used when the forecast is expected.

### **C. Delphi Technique**

It occurs in the technological environment, and according to this technique, technology experts are surveyed to find out their views on the expected technological development, and their opinions are grouped and any difference of opinion is determined, followed by sending of different answers to the same experts to clarify and explain the causes of the differences. This technique is usually used to forecast the time when the changes in technology are most likely to occur and identify the most likely factors in changing the expected time.

**D. Using arithmetic economy models:** Riyadh's economic models attempt to express some variables and determine the relationship between them arithmetically. It is mainly aimed at identifying the characteristics of the organization's products or environment, which lead to fluctuations in the desired variable, such as sales or profits. The administrative can expect forecasting values arithmetically, if variable forecast fluctuates.

**E. Scenario** This technique focuses on some important and



potential future events. In this method, forecasting is made under some potential and alternative circumstances to see if anything happens in each of these circumstances. Such a technique allows some questions of several alternative positions. Such as, what can happen to the predictable variable in these situations? Which perceptions are not acceptable by the use of other forecasting techniques? It is such a forecasting that helps the organizations to develop and improve some alternative strategies that can commensurate with every potential situation.

**F. Intuition:** «Intuition refers to the use of personal judgment, appreciation, or reliance on feeling, and seeing things from a personal perspective» (I)

«Personal judgment affects the size of information collected about the organization's environment, and if the senior management's judgment that the company cannot be subjected to competition in the markets, will not collect the information about competitors as an essential element of the organization's environment, so will the judgment. On the other hand, the manager tries to look at the problem and what is related to it as a whole and to see from it what could be the appropriate solution. The manager may be based on comparisons with similar problems from earlier times or other areas. Personal appreciation depends on the personal experience of the individual and his extensive knowledge of others' problems and experiences.

Then he looks at the problem, and bases on his feeling,



appreciation, and the person who can reach the appropriate solution. Intuitive and estimated processes are based on a person's ability to make comparisons between the nature of the problem and similar problems. Discretionary processes are not systematic, not routine and not accurate, and the lack of regularity in the flow of information, and by moving from an idea or solution to another idea or a solution randomly. When encountering administrative problems, the manager inclines to consider the problem as a whole is integrated forms and does not divide it into parts. Then tries to compare or match this problem with other similar problems that could be solved while he recalls back his previous experiences, so that he may find assistance, and may depend on some of his efforts or his peer managers, aiming at finding a solution to a problem close to that.

- Ahmed Maher, Decision-Making between Science and Innovation Alexandria (IFI): University House, ٢٠٠٨

Based on certain assumptions, overall view, using his intuition, sense and personal appreciation that the manager solves a problem and decides the best he finds fit (I). The main barrier encountered by the institutions today, is the administrative barrier of not having the administrative competencies capable of guiding and leading institutions in the right direction towards achieving their objectives and programs, following a strategic vision dealing with sound strategic planning and optimal exploitation of resources (٢).



### Third: Bank activity analysis model

View and analyze financial statements for ٢٠١٧-٢٠١٧.

Analysis of the list of the financial center in ٢٠١٧-٢٠١٧ to a bank.

It can be concluded from the table below:

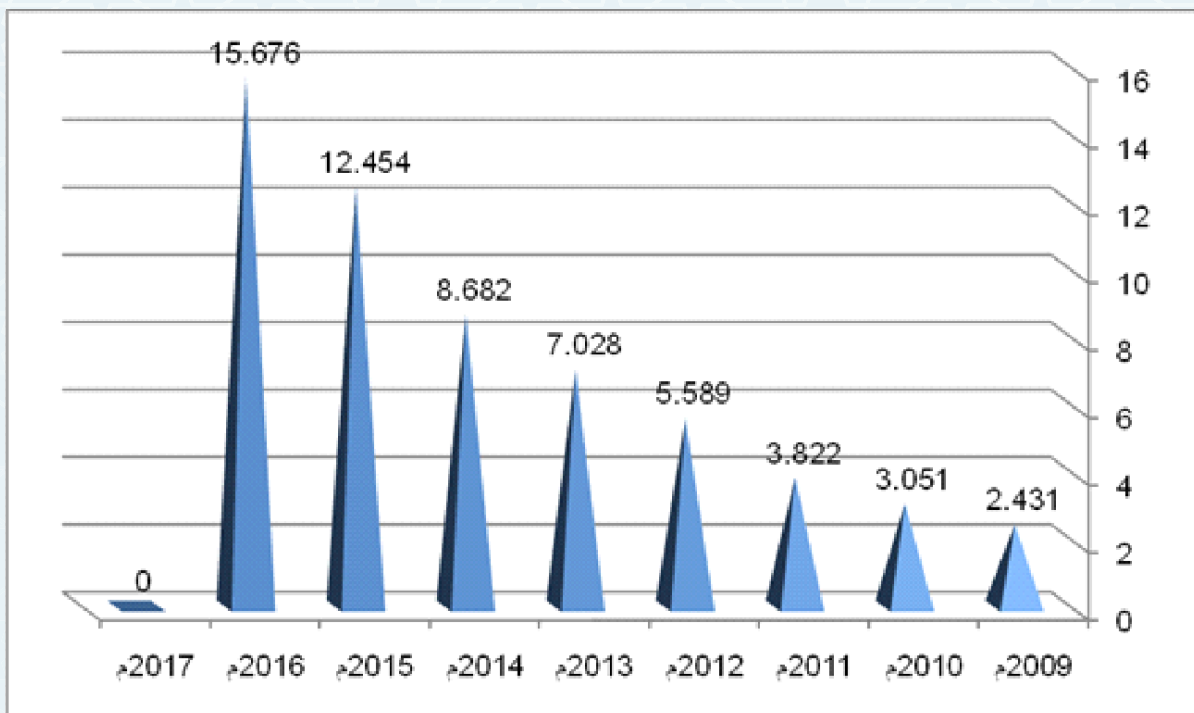
**Table ٢**

Fixed assets

Years	Total assets
2007	8.682.6
2008	12.454.0
2009	2.431.9
2010	3.407.0
2011	3.822.7
2012	5.589.8
2013	7.028.8
2014	8.682.6
2015	12.454.0
2016	15.677.5
2017	15.686.5

Source: Banks balance sheets posted on the bank's website

- Ismail Mohammed Al Sayed, previous reference, p. ١٧١
- Abdul Azim Abbas Tayfour Mohammed, Strategic Planning in some Rural Development Projects: Evaluating and Assessing the Experience of the United Nations Development Program in Sudan» focusing on the development project of The Lowest River Atbara and extending the letter of a doctoral letter published by the University of Khartoum, Higher Studies School, School of Management Sciences,
- Department of Business Administration, ٢٠٠٦.



It can be noticed that cash in ١١٤,٩١١ ;٢٠٧ and in ١٣٣,٤٠٣ ;٢٠٨ increased by %٣,١ and in ٢٠٩ an increase of ١,٨٦٦ by %٠,٢ to a slight decrease in ٢٠١٠ by %٢. Assets in the fiscal year ٢٠٠٨ reached



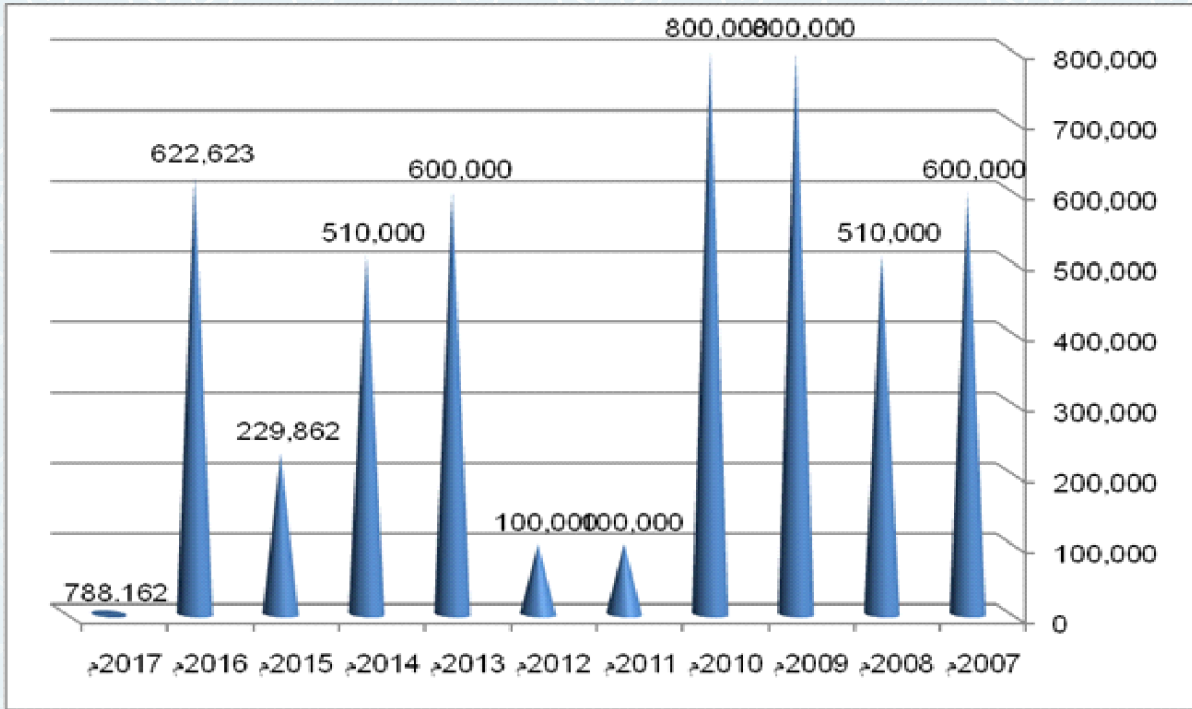
118,798 compared to 122,837 ;2017, a remarkable increase of 18,803 representing 15%, as found in 177,031,121 ;10,837 ;2019 a very significant increase over the years 2018-2017, and increased in 2010 by 20%, representing 12,808,192,929.

### Table 3

Authorized capital

Years	CAPITAL
2007	600,000,000
2008	510,000,000
2009	800,000,000
2010	800,000,000
2011	1,000,000,000
2012	1,000,000,000
2013	600,000,000
2014	510,000,000
2015	229,862,239
2016	622,623,079
2017	788.162.185

Source: Financial reports posted on the Bank's website



From the table above, it can be seen that the bank's authorized capital increased steadily during the years 2007-2017 as noticed in 2007 reached 600,000 and increased in 2008 to 510,000 by an increase of 15%, but in 2009 and 2010, there was a significant increase in capital of 800,000. An increase of 56%, which is higher than the required level of the Central Bank which made it keen for shareholders to strengthen the bank's financial position.

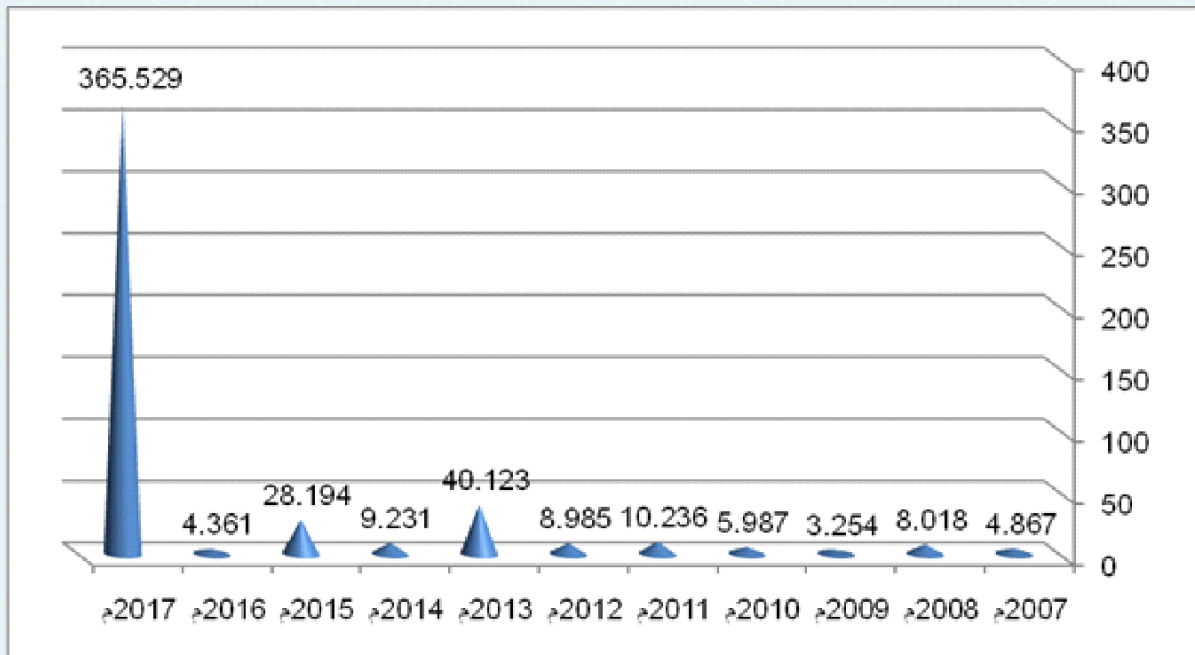
### Table 8

Long-term Investment



Years	CAPITAL
2007	4.867.623.2
2008	8.018.741.2
2009	3.254.123
2010	5.987.562
2011	10.236.542.1
2012	18.985.231.2
2013	40.120.120.0
2014	9.231.012.023
2015	28.194.259.2
2016	42.361.527.2
2017	32.65.529.827

Source: Financial reports posted on the bank's website







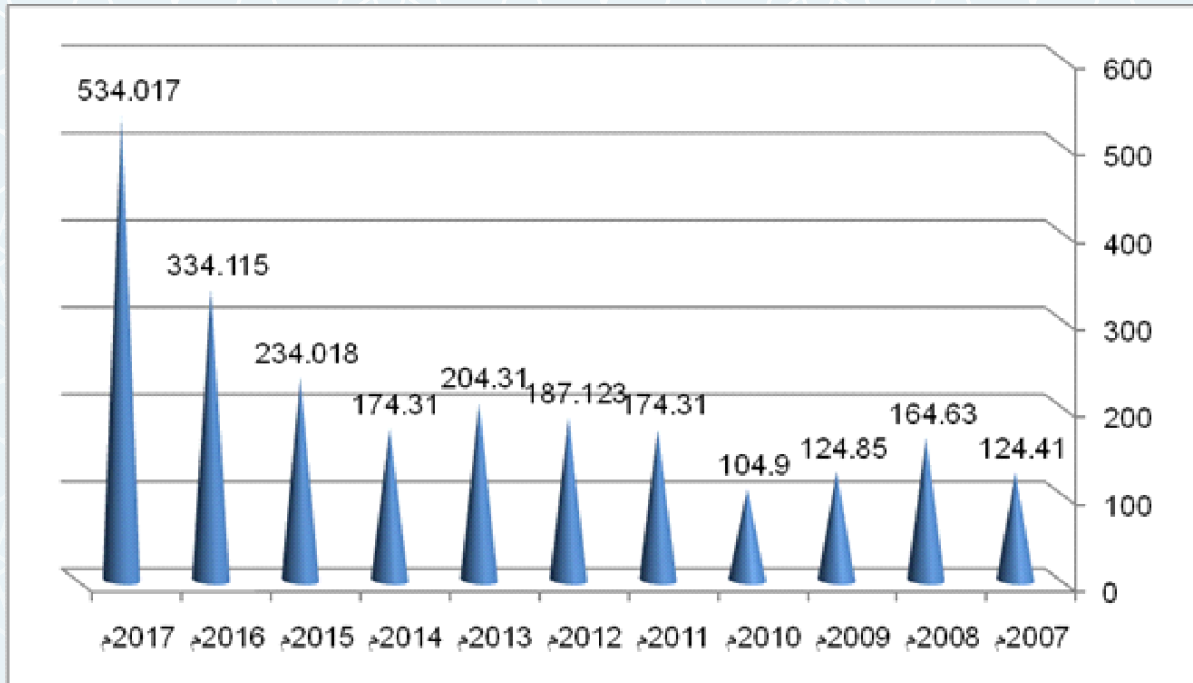
From the table above, investments in 2007 reached 124,410,564, to increase in 2008 to reach 164,632,231, an increase of 32%, while in 2009 investments in the Bank reached 124,852,464, up 2% from 2008. In 2010, investments increased by 18%, and in 2011 it was 174,310,664, and 2012 to 2014 noticed a significant increase in the Bank's investments to 187,310,234, and 2015 to 2017 noticed a significant increase in the Bank's investments to 234,018,273, and 2016 to 2017 noticed a significant increase in the Bank's investments to 334,115,173, and 2017 to 2018 noticed a significant increase in the Bank's investments to 534,017,073.

### Table 0

#### Cost of the human element

Years	Human element
2007	124.410.564
2008	164.632.231
2009	124.852.464
2010	104.900.654
2011	174.310.664
2012	187310.234
2013	204.310.634
2014	174.310.664
2015	234.018.273
2016	334.115.173
2017	534.017.073

Source: Financial reports posted on the bank's website



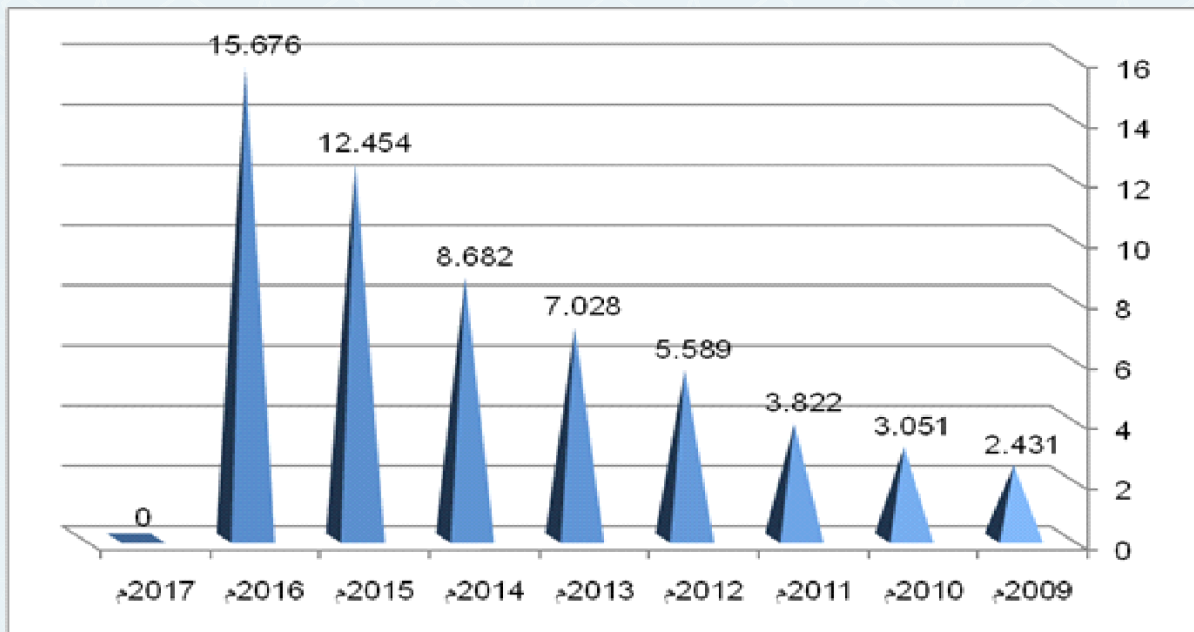
From the table above, it is clear that the bank's expenditure on the human element in 2017 was 534,017 to increase the expenditure more in 2016 up to 334,115 representing 61% to reduce the expenditure on the human element in 2015 up to 234,018, returning the expenditure in 2011 significantly to 174,31. Further, in 2012 up to 187,123, it was a significant figure in 2014 up to 174,31 due to expenditure cost on the human element in banks as proposed.

**Table 1**  
Liabilities



Years	Amount
2007	2.431.9
2008	3.051.9
2009	2.431.9
2010	3.051.9
2011	3.822.7
2012	5.589.8
2013	7.028.8
2014	8.682.6
2015	12.454.2
2016	15.676.5
2017	16.234.2

Source: Financial reports posted on the bank's website





**Table V**

Total amount of liabilities

<b>The total amount of liabilities is 777541; which is</b>		
	2007	2018
Deposits	494.712	591.890
Gainful receivables	89.382	48.502
Other liabilities	96.269	106.886
	777.541	650.100

The total liabilities at the end of ٢٠١٨ were ٧٧٧,٥٤١,٠٠٠ EGP compared to ٦٥٠,١٠٠,٠٠٠ EGP in ٢٠١٧.

### Authorization rights

- Authorized capital 1٠٠ million EGP.  
The capital paid in ٢٠١٨ was ٤٩,٩٨١ compared to ٢٠٠٩ at ٤٩,٢٠٩, an increase of ٧٧٢ and ١,٥٩.
- Reserves: ٢,٢٥٤ in ٢٠١٨ and ٢٠٠٩ at ٢,٢٢٧, an increase of ٢٧
- Profits: ٢٠١١ in ٥٨٦٠, ٢٠١٠ in ٢٠٠٩, and retained profits were distributed last year and did not show a ٣٨٤٩ decline.
- Total equity: ٨٣١,٧٨٧ in the fiscal year and in ٢٠١٨ up to ١٢٤,٣٩١ by ٠,١٤.
- Closing accounts: ٣٧٤,٩٢٥ in ٢٠٠٩ and ٢١٦,١٥٠ in ٢٠١٨, an increase of ١٥٨,٧٧٥.

### Capital and shareholders' equity

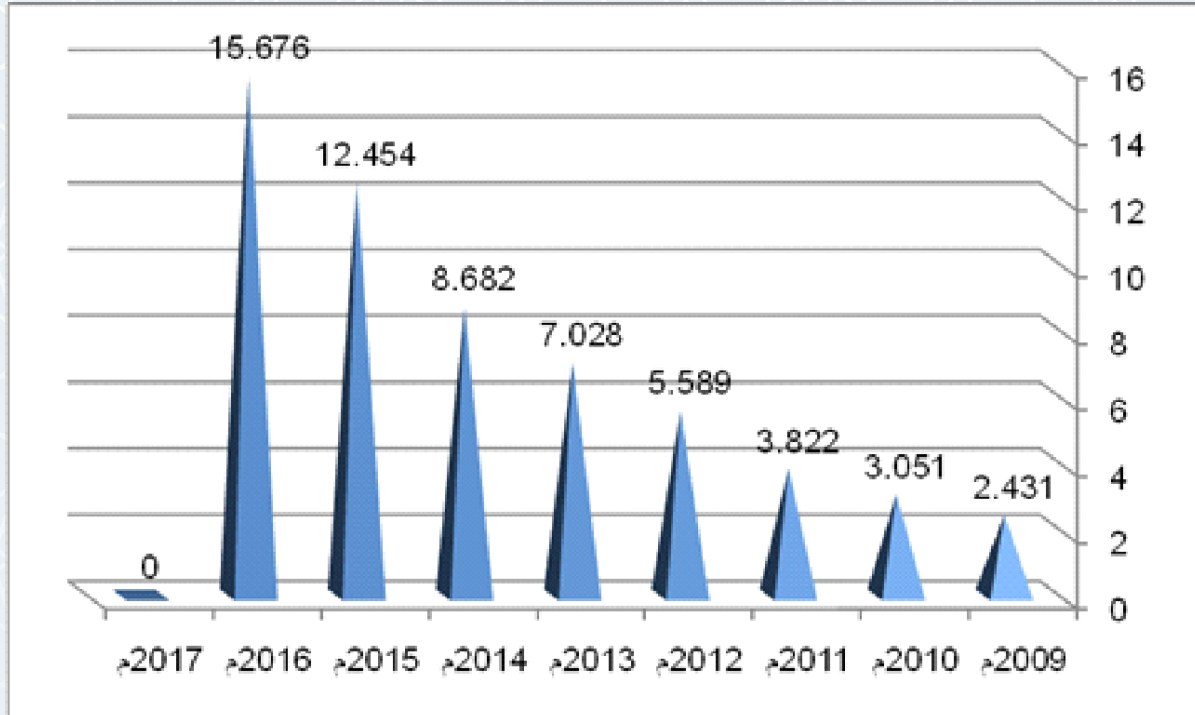


- The total shareholders' equity is represented by paid-up capital, reserves and achieved profits amounted to ٥٤,٢٤٦,٠٠٠ EGP, a slight decrease from the previous year ٢٠١٧ to ٢٠١٨.
- External Resources: Total external resources from deposits and other liabilities ٧٧,٥٤١,٠٠٠ EGP compared to the fiscal year ٢٠١٧ at ٦٥,٠٠٠ EGP with a growth rate of ٤٨% mainly due to the increase in external resources, and due to the growth of deposits (current and investment).
- Budget growth: The total final budget for the fiscal year ٢٠١٨ was ٨٣١,٧٨٧ compared to ٧٠٧,٣٩٦,٠٠٠ EGP in ٢٠١٧ with ١٨% growth rate and this percentage is real and reflects the size of the bank's expansion in the fiscal year ٢٠١٨.

**Table A**  
Expenditure

Years	Amount
2007	69.979.594
2008	54.638.602
2009	69.979.594
2010	54.638.602
2011	452.590.837
2012	69.979.594
2013	54.638.602
2014	587.508.986
2015	452.590.837
2016	587.508.986
2017	587.508.986

Source: Financial reports posted on the bank's website



Expenditures in \$0,010, \$..V increased significantly from \$..A, estimated \$..,0A1 equivalents to \$7,0 and increased in \$7.9 IV3,323,92 representing 32%, and increased in \$.. to reach expenses to \$43,737,893 representing 8% over the previous year.

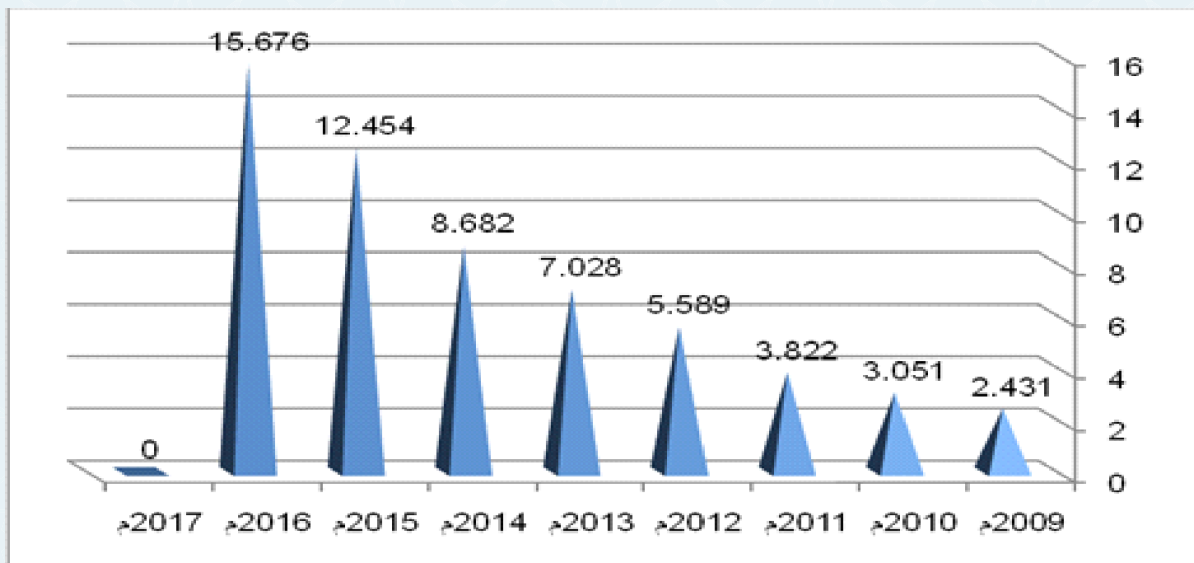
### Short-term investments

It is noticed that investments in \$..A amounted to 01,9, compared to 44,1 in \$..V, an increase of 5% from the list of cash flows in the Cooperative Development Bank. In \$..A, long-term investments were 3,70 and in 3,73 \$..V, which is very small and negligible investment, but in \$..A it is 3,7 higher than in \$..V. Expenditures in \$..A amounted to \$0,010, a significant increase

from ٢٠١٢, estimated at ٢٠,٥٨١, equivalent to %٦,٥. In ٢٠١٣, expenditures also increased by ١٧٣,٣٢٣,٩٢ representing %٣٢. In ٢٠١٤ expenditures ١٤٣,٦٣٧,٤٩٣ increased by %٤٠ over the previous year.

**Table ٩**  
Total profits

Years	Amount
2007	
2008	66.291.798
2009	13.254.0235
2010	15.676.560
2011	12.454.192
2012	15.676.560
2013	66.291.798
2014	13.254.0235
2015	15.676.560
2016	12.454.192
2017	15.676.560





Source: Financial reports posted on the bank's website

The chart above shows the total profits in ٢٠٧ were ٢,١٢٣,٢٠, an increase of %٢,٣ in ٢٠٨, with a profit of ٢٢٩,٨٦٢,٢٣٩. In ٢٠٩, profits increased to ٢٢٢,٦٢٣,٧٩, marking a slight decline in ٢٠٨ of %١,٢٥ of ١٨٨,١٦٢,١٨٥.

Total profits in ٢٠١٥ were ٢,١٢٣,٢٠, an increase of %٢,٣ in ٢٠١٦, with a profit of ٢٢٩,٨٦٢,٢٣٩. It also shows that profits increased in ٢٠١٧ to ٢٢٢,٦٢٣,٧٩, recording a slight decline in ٢٠١٨ of %١,٢٥ ١٨٨,١٦٢,١٨٥.

Total profits reached in ٢,١٢٣,٢٠; ٢٠١٥, an increase of %٢,٣ in ٢٠١٦, with a profit of ٢٢٩,٨٦٢,٢٣٩. It can be further seen that the profits increased in ٢٠١٧ to ٢٢٢,٦٢٣,٧٩, recording a slight decline in ٢٠١٨ by %١,٢٥ of ١٨٨,١٦٢,١٨٥.

## Component ٣: Evaluation of bank indicators

### Statistical analysis of study data ٢٠١٨-٢٠١٥

To test the main hypothesis (H1), a statistical test was conducted using the linear regression method. Linear regression coefficient was used to determine the impact of financial analysis results, using the financial position and income lists as an independent variable X, on the outcomes of the financial analysis using the cash flow list as a continuous variable Y as the linear regression determines for us a value of the coefficient that illustrates the extent to which the independent variable impacts on the dependent variable.

### Statistical analysis outcomes





The regression coefficient between the two variables is calculated to illustrate that the regression coefficient  $B = 0.304$  as shown in Figure I between the independent variable (financial analysis outcomes using financial position and income) and the dependent variable (financial analysis outcomes using the cash flow lists).

Figure I illustrates the regression coefficient B between the independent variable X and the dependent variable Y. The value of the constant linear regression equation is  $-3.421$ .

**Table I.**

		Unstandardized Coefficients
Model		B
1	(Constant)	-3.421
	x	0.304

This means that the results of the financial analysis of cash flows have been slightly influenced by the outcomes of the analysis of financial position and income, i.e. the change in the outcomes of the financial analysis using the financial position and income lists of one unit. It results a change in the outcomes of the financial analysis using cash flows of  $0.304$  units, which confirms the significant difference between them.

The determining coefficient  $R^2$  explains the change in the dependent variable (financial analysis outcomes using the cash flow list) because of the change in the independent

variable (financial analysis outcomes using financial position and income) and for other reasons, other than the independent variable as the determination coefficient  $R^2 = r^2$  between the two variables as shown in Figure 1, indicates:

Figure 1 illustrates the determining coefficient  $R^2$  and the binding coefficient  $R$  between the independent variable  $X$  and the dependent variable  $Y$

**Table II**

	R	R Square
Model		
1	-3.421	0.304

The figure also illustrates  $R$  the correlation coefficient between the independent variable and the dependent variable.

This suggests that  $R^2$  change in the dependent variable is caused by the change in the autonomous variable and  $0.7$  of the changes in the dependent variable are due to other reasons, namely the nature of the information contained in the cash flow, and this confirms our acceptance of the sub-hypothesis of the first major hypothesis. H1 states that the variety of outcomes is caused by the difference like the information and financial statements that each of these lists provides us so that each financial list operates independently from the other.

**Table IΓ**



Variables Entered/ Removed a			
Model	Variables Entered	Variables Removed	Method
1	Long-term investment, human resources, external capital. Expenditures b	0	Enter
a. Dependent Variable: capital			
.b. All requested variables entered			

**Table I٣**

Model Summary b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.849 a	0.721	0.661	7.68379
a. Predictors: (Constant), Long-term investment, human resources, capital. Expenditure				
b. Dependent Variable: capital				

**Table I٤**

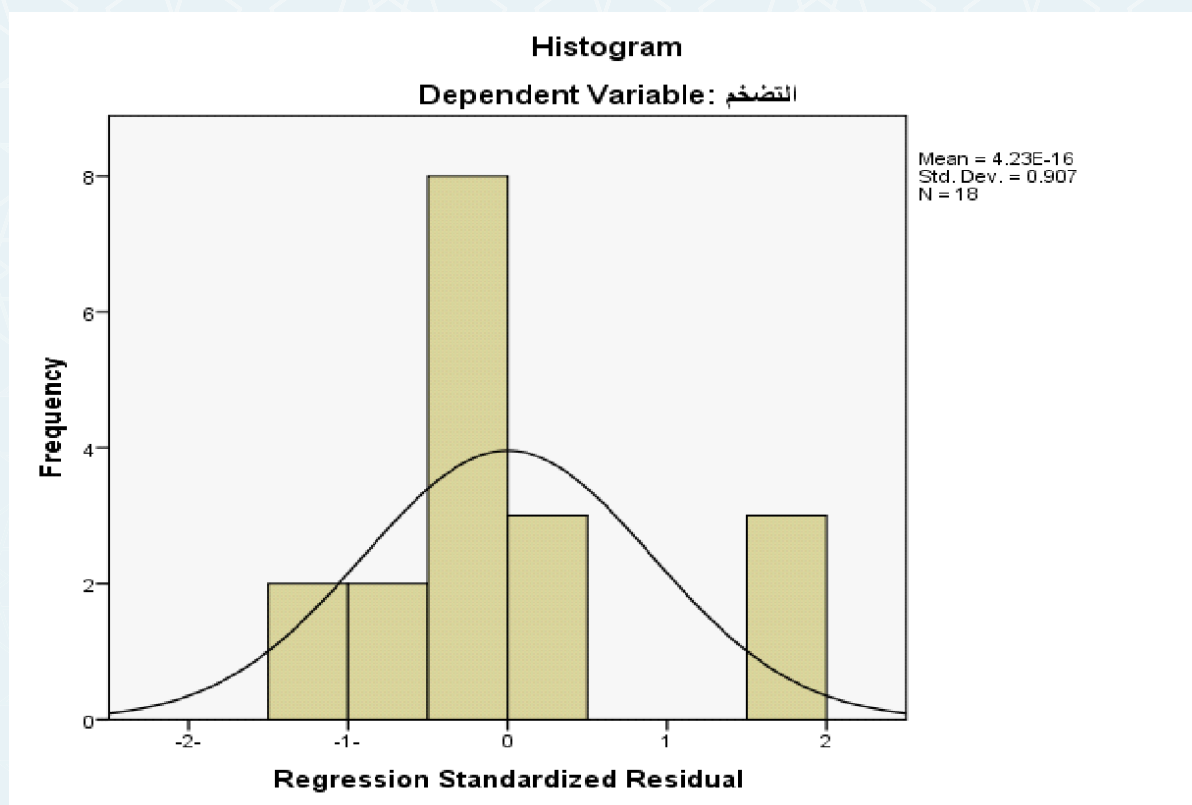
ANOVA a						
Model		Sum of Squares	df	Mean Square	F	.Sig
1	Regression	2133.593	3	711.198	12.046	000b.
	Residual	826.569	14	59.041		
	Total	2960.162	17			
a. Dependent Variable: capital						
b. Predictors: (Constant) Expenses, long-term investment, human resources, capital						

**Table I٥**



Coefficients a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.047	5.047		1.193	0.253
	Human resources	0.002	0.027	0.013	.091	0.929
	capital	3.647E-005	0.000	0.046	.295	0.773
	Long-term investment	6.349E-005	0.000	0.828	5.304	0.000
	Expenditure					

a. Dependent Variable: capital





From the table, we note that the regression method used is the enter method, as the program is found to insert all the independent variables into the multiple linear regression equation.

From the table, it can be noted that the values of the three correlation coefficients; the simple correlation coefficient  $R$ , have reached  $.869a$  while the determining coefficient was  $R^2 = .751$  whereas, the corrected determination coefficient was  $R^2 = .771$ , which means that the independent variables are interpretive HR test, external capital test, and long-term investment, expenses. It was able to account for  $.89$  changes in a capital test required and the rest  $.11$  attributable to other coefficients.

It is also noticed in the table that, it includes the values of variation analysis, in which the interpretive power of the model as a whole can be defined by the F statistic and as noticed from the high moral variation analysis table of the F Test,  $17.67$  confirming the high explanatory power of the statistical multiple linear regression model.

**Table 17**

Model Summary b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.869	.751	.771	12.93159
a. Predictors: (Constant), expenditure				
b. Dependent Variable: capital				



**Table IV**

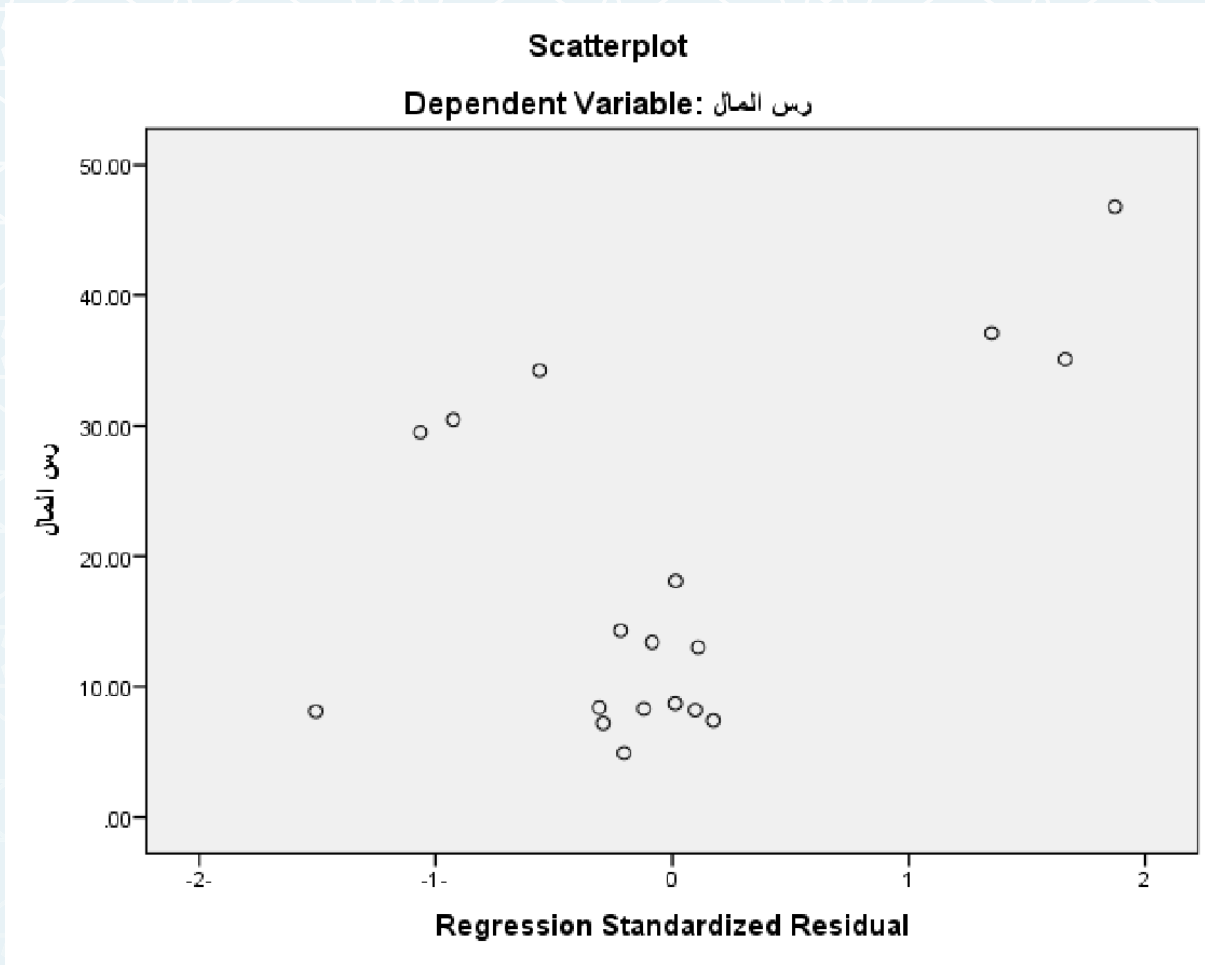
ANOVA a						
Model	Sum of Squares	df	Mean Square	F	.Sig.	
1	Regression	284.545	1	284.545	1.702	.211b.
	Residual	2675.617	16	167.226		
	Total	2960.162	17			
a. Dependent Variable: capital						
b. Predictors: (Constant), expenditure						

**Table I8**

Coefficients a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	22.754	4.458		5.104	0.000
	Expenditure	0.000	0.000	-.310-	-1.304-	.211
a. Dependent Variable: capital						

**Table I9**

Residuals Statistics a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	12.4893	22.7541	18.5106	4.09120	18
Residual	-16.35311-	24.04589	0.00000	12.54549	18
Std. Predicted Value	-1.472-	1.037	0.000	1.000	18
Std. Residual	-1.265-	1.859	0.000	0.970	18
a. Dependent Variable: capital					



**Table ٢٠**

Independent variables					Independent variables
X4 Expenditure	X3 Long-term investment	X2 External capital	X1 Human resources	Fixed limit	Y- capital
.211b	0.17	1.6		79.1	Coefficient value
5.104	0.275	2.146	-3.059	3.99	Test T values
1.702	0.789	0.055	0.01	0.002	Morale



From the table above, it can be concluded that independent variable (long-term investment test) was statistically a moral significant according to the T Test at the level of  $P \leq .,0$ , while almost HR Test to be moral at  $P \leq .,0$  but independent variable (External capital test) did not have a moral impact on the multiple regression model as tested, and from the fourth and final table the regression equations can be reached using Beta standard (fixed limit) as follows:

- The regression line equation (capital) on tests (human resources, long-term investment, long-term investment and expenses) is:

$$\text{Capital} = 1,013 + 181,8 \times \text{HR} + 0,118 - \text{Long-term investment} \times + 17,388 \times \text{external capital}.$$

The standard beta weights (fixed limit) are path coefficients, which can be summarized as follows:

- Input (capital test) as a dependent variable and tests (Capital rate - external capital - long-term investment) as separate variables.

$$\text{Capital} = 0,073 \times \text{HR} + 0,397 \times \text{External capital} + 0,83 \times \text{Long-term investment}.$$

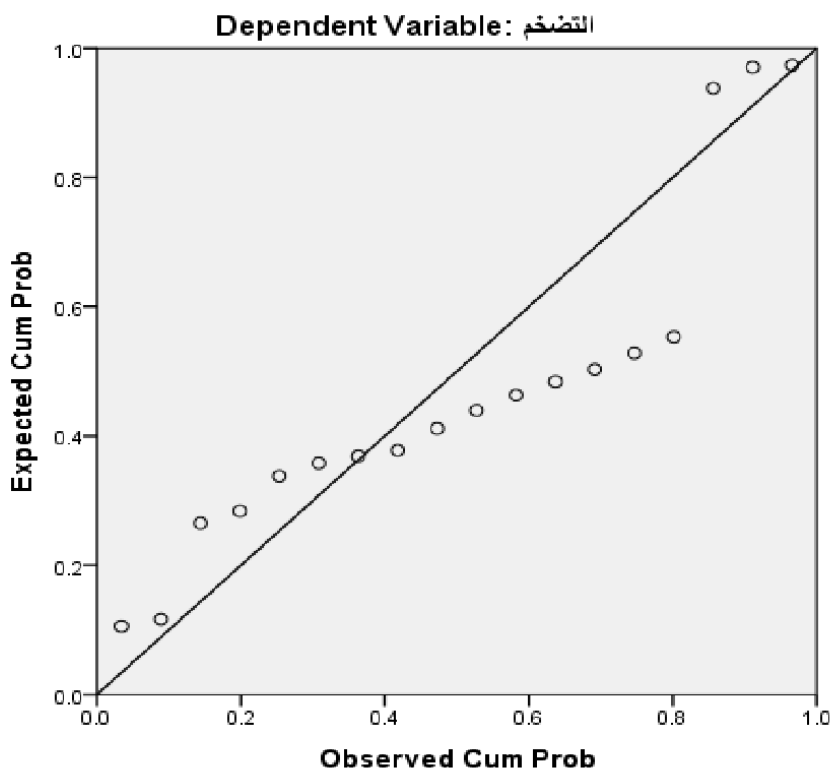
## Economic analysis

According to the logic of the economic theory, capital has an inverse relationship with human resources, a direct relationship with external capital and long-term investment. The external capital coefficient  $-0,93$  corresponds to the logic of the economic theory, meaning that each increase in one

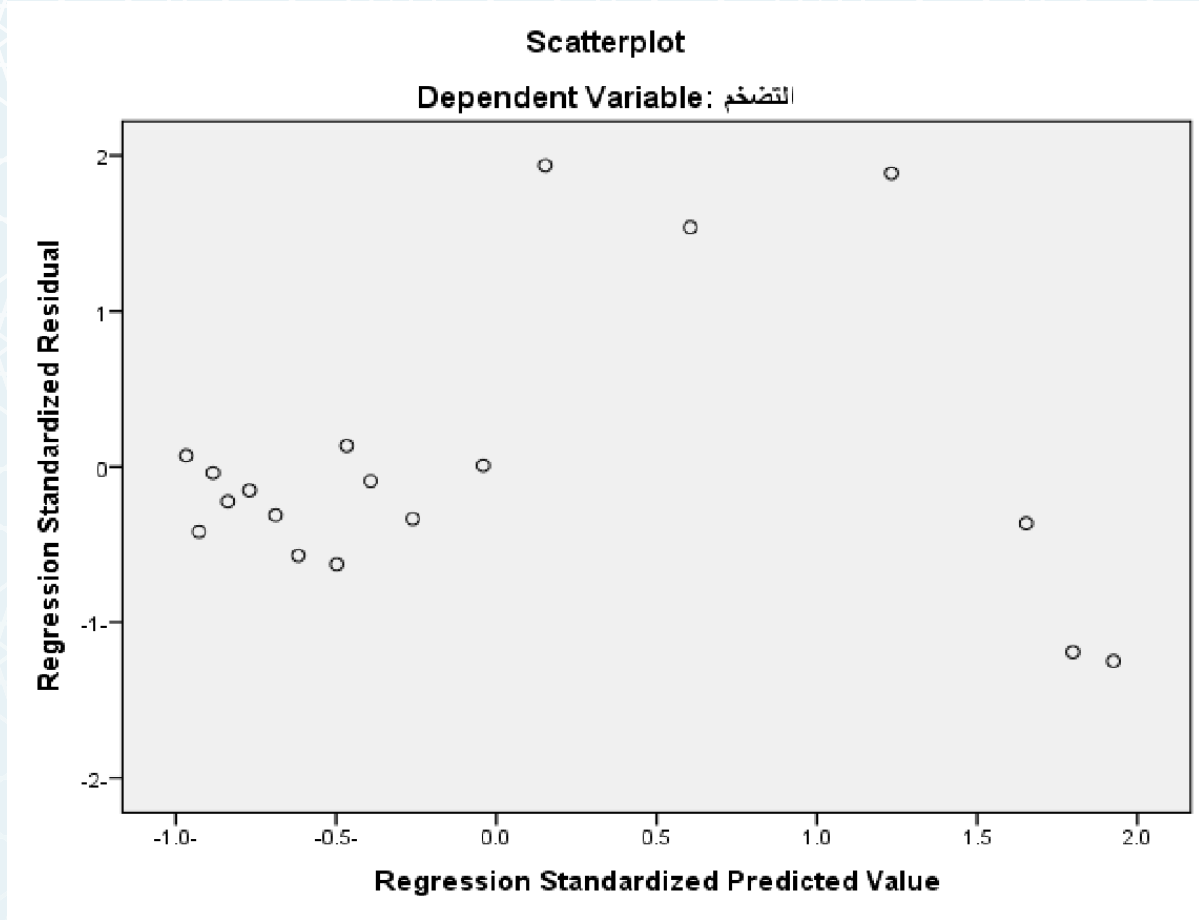


long-term investment will result in a reduction in the rate of capital with approximately 0 units , ١ , ٤ , ٩<sup>٣</sup> which means that each increase in human resources will result in the capital rising by ١, ١ units.

Normal P-P Plot of Regression Standardized Residual



The next graph shows the equation of multiple linear regression.



## Hypothesis testing:

First: There is a statistically significant relationship between increasing human resources and increasing capital:

## Regression analysis of study's fourth independent variable

To test the hypothesis of the first study, the researcher will use regression analysis, which measures the relationship between the independent variables and the dependent variable, and



by applying to the first independent variable of this research, the researcher reaches the following:

No.	Variables	Correlation Coefficient R	Determining Coefficient R <sup>2</sup>	T Test	Significance level	Variables
*	Capital					
4	Human resources	0.376	0.141	3.036		Accepted

Source: Researcher preparation using SPSS from field study data, ٢٠١٨

Table ٤٧/٤ illustrates the followings:

- The estimation results illustrate a direct correlation between human resources (the first independent variable) and the capital (the dependent variable), by the correlation coefficient value at ٠,٣٧٦.
- The determination coefficient was R<sup>2</sup> ٠,١٤١ and this value indicates that human resources (the first independent variable) account for changes in capital (the dependent variable) by ١٤,١%, while other variables have not included in the ٨٥,٩% model are explained.
- The calculated value of T was ٣,٠٣٦ at a level of moral significance ٠,٠٠٤, significant at a level less than ٠,٠٥. This result indicates a morally significant correlation between the first independent variable (HR) and the dependent variable (capital), which means accepting the validity of the first hypothesis of this research.

**Second hypothesis:** There is a correlation between disparities in the economic structure and capital.

**Regression analysis of the study's second independent variable:**

To test the fifth study hypothesis, the researcher will use regression analysis, which measures the correlation between the independent variables and the dependent variable, and by applying to the second independent variable of this research, the researcher reaches the following:

Outcomes of the regression analysis of the correlation between the second independent variable and the dependent variable

No.	Variables	Correlation Coefficient R	Determining Coefficient R <sup>2</sup>	T Test	Significance level	Variables
*	Capital					
3	External capital	0.469	0.220	3.978		Accepted

Source: Researcher preparation using SPSS from field study data, ٢٠١٨

**Table 0٠/٤** illustrates the following;

- The results' estimation show a direct correlation between external capital (the second independent variable) and capital (the dependent variable), through the value of the correlation coefficient where the correlation factor was



valued at .,٤٦٩.

- The value of the determination coefficient  $R^2$ , ٠.٢٠٢ indicates that external capital (the second independent variable) explains changes in the capital (the dependent variable) by ٢٠.٢%, while other variables are not included in the model account for ٧٩.٨%.
- The calculated value of T was ٣,٩٧٨ with a level of significance .,٠٠٨, a significance at a level less than ٠.٠٥. This result indicates a morally significant correlation between the second independent variable (external capital) and the dependent variable (capital), which means proof of the second hypothesis of this research.

**Third hypothesis:** There is a statistically significant correlation between long-term investment and capital rates.

### Regression analysis of study's fourth independent variable

To test the hypothesis of the third study, the researcher will use regression analysis, which measures the correlation between the independent variables and the dependent variable, and by applying to the third independent variable of this research, the researcher reaches the following:

No.	Variables	Correlation Coefficient R	Determining Coefficient R <sup>2</sup>	T Test	Significance level	Variables
*	Capital					
4	Long-term investment	0.976	0.841	7.036	0.008	Accepted



Source: Researcher preparation using SPSS from field study data, ٢٠١٨

Table ٤٧/٤ shows the following:

- The estimation outcomes illustrate a direct correlation between long-term investments (the third independent variable) the capital (the dependent variable), by correlation coefficient value as it was valued at ,٩٧٦.
- The determination coefficient was  $R^2,٨٤١$  and this value indicates that long-term investment (the third independent variable) explains changes in capital (the dependent variable) by  $\%٣٢,١$ , while other variables not included in the  $\%٦٧,٩,٩$  model are explained.

The calculated value of T was  $٧,٣٧$  at a level of significance level  $\%,٠٠٤$  which is significant at a moral level less than  $\%٠$ . This result indicates a morally significant correlation between the third independent variable (long-term investment) and the dependent variable (capital income), which means acceptance of the third hypothesis of this research.

**Fourth hypothesis:** there is a statistically significant correlation between GDP increases and capital rates: Study's fourth independent variable regression analysis To test the hypothesis of the first study, the researcher will use regression analysis, which measures the correlation between the independent variables and the dependent variable, and



by applying to the first independent variable of this research, the researcher reaches the following:

No.	Variables	Correlation Coefficient R	Determining Coefficient R <sup>2</sup>	T Test	Significance level	Variables
*	Capital					
4	Profits	0.376	0.141	3.036	0.004	Accepted

Source: Researcher preparation using SPSS from field study data, ٢٠١٨

Table ٤٧/٤ shows the following:

- The estimation results show a direct correlation between profits (the fourth independent variable) and capital (the dependent variable), through the value of the correlation coefficient as it was valued at ٠,٣٧٦.
- The value of the determination coefficient R<sup>٢</sup> ٠,١٤١ indicates that profits (the fourth independent variable) explain changes in the capital (the dependent variable) by ١٤,١%, while other variables are not included in the model for ٨٥,٩%.
- The calculated value of T was ٣,٠٣٦ at a level of moral significance ٠,٠٠٤, which is significant at a level less than ٥%. This outcome indicates a morally significant correlation between the fourth independent variable (earnings) and the dependent variable (capital) which means



acceptance of the fourth hypothesis of this research.

## Conclusion and results

The research concluded by reviewing the methodological and theoretical framework by addressing the development of banks in Sudan and the concepts of balance sheets' analysis, statistical indicators and their application to the Sudanese banking system as a model to analyze balance sheets. It concluded that:

- The balance sheet lines are consistent with the budget size and predictable for any balance sheet through time series analysis and linear regression analysis method.
- The study found that it was not possible to identify the rate of turnover of the size of the balance sheet, the rate of turnover of the size of resources, the rate of turnover of the investment ceiling or the rate of turnover of employees, the sequential training, and the overall employee through the turnover of the work or the demonstrating the comprehensive financial size.
- The Banking Strategic Information System (BSIS) does not serve the information needs of banking project management and serves as an early cautionary tool for threats that may derive from the external environment or potential vulnerabilities in the internal environment to guarantee continuous development of banking projects.
- The existing organizational structure is inadequate, unstable, does not accurately determine responsibilities





and tasks, and does not commensurate with the interaction at all levels to produce banking project management data and information from the proper application of the strategy.

- The study demonstrated that awareness of the effectiveness and convenience of strategic management and the presence of administrative thought by transforming daily, weekly, monthly, quarterly, semiannually, annually, periodically, occasionally, and above all seasonally directional data is a measurement of the past, present, and forecast the future.

## Recommendations

Based on the study results, several recommendations were made, the most important of which are:

- Banking management leaders must be trained and educated to know the importance of strategic management, strategic and critical thinking more broadly in Sudanese banks using time series and linear regression to forecast the near future.
- Taking the advantage of bank data and information to identify the rate of turnover of the size of the budget, the rate of turnover of resources, investment ceiling, and the rate of turnover of employees, and successive, targeted and comprehensive training through turnover of work and demonstrating the comprehensive financial size.
- Paying more attention to create a strategic information



system that serves the information needs of banking project management and serves as an early cautionary tool for threats. It may derive from the external environment or potential vulnerabilities in the internal environment to guarantee continuous development of banking projects.

- Establishing an appropriate and stable organizational structure in which responsibilities and tasks are carefully determined, and enables banking projects to be properly managed.
- Increasing awareness of the effectiveness and convenience of strategic management and the presence of administrative thinking in order to discuss and document daily data throughout the year. It is to determine directional ability and forecasting, as well as its seasonal, periodic and sudden course.

## Statement and Declarations

### Competing Interest

#### Financial competing interests

I declare the author has no competing interests or other interests that might be perceived to influence the interpretation of the article.

#### Non-financial competing interests

I declare the author has no non-financial competing interests or other interests that might be perceived to influence the interpretation of the article.

#### Publishing and Originality



This manuscript has not been published and is not currently under consideration for publication elsewhere.  
I certify that the submission is original work.

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