GALAXY INTERNATIONAL INTERDISCIPLINARY RESEARCH JOURNAL (GIIRJ)
ISSN (E): 2347-6915
Vol. 11, Issue 09, Sep. (2023)

THE USE OF FINANCIAL ENGINEERING TECHNIQUES IN RISK MANAGEMENT IN BANKS: APPLIED STUDY OF A SAMPLE OF IRAQI PRIVATE BANKS

Ahmed Ali Abdlhussein Al-Mutlag [1]
[1] Jinan University / College of Business Administration
10211638@students.jinan.edu.lb

Lina Hassan Bassam [2]
[2] Jinan University / College of Business Administration
(lina.bassam@ul.edu.lb

ABSTRACT

Iraqi private banks are considered one of the most important financial institutions, as they play a distinct economic and social role in Iraq, through their practice of banking and investment services. This study mainly aims to define financial engineering and banking risk management and determine its importance by highlighting the role of its techniques in managing those risks, as well as measuring the level of adoption of the methods of that engineering in risk management in Iraqi private banks while measuring the nature of the correlation and measuring the level of impact.

In the first chapters, study dealt with the theoretical aspect of financial engineering and banking risk management, as this engineering is considered one of the most prominent and recent entrances in the science of finance, as it focuses on addressing financing problems and risk on the one hand and introducing new financial products on the other hand. Based on the foregoing, and based on the importance of the role that financial engineering plays in the process of managing banking risks in banks through its risk management techniques, the topic of adopting financial engineering procedures in risk management in Iraqi private banks has been addressed in this thesis. A group of Iraqi private banks was chosen as a field of study in order to achieve the desires of the current research, as this required obtaining the opinions of workers in a sample of Iraqi private banks amounting to (106) individuals. The descriptive approach was followed to extract and analyze a package of results, and through it we concluded that there is a correlation of significant significance as well as a direct effect relationship between the financial engineering variable and the banking risk management variable and methods of using financial engineering techniques and risk management in banks, with recommendations to intensify efforts to increase the level of awareness and develop Iraqi banking risk management.

Keywords: Financial Engineering Techniques, Risk Management in Banks.

INTRODUCTION

The financial sector and banks are the backbone of the economic life of any country, and its safety is linked to the safety of the economic performance of the state, given that the banking sector is primarily responsible for financing economic activity and the national economy, but the large-scale developments in the banking industry and developments in electronic means and their use by InIn banks they adhere firmly to risk management, but the latter is at the

heart of the function of the banking industry, and on this basis monetary institutions and banks always aim to reduce and mitigate risk and its impact as much as possible.

Hence, the necessity of financial engineering and its techniques, especially in light of the current circumstances, emerged in study of new and innovative financial solutions and tools to obstacle financing and risk management in the finance and banking sectors, because it justifies its existence and imposes itself by finding quantitative methods that help predict and measure obstacles facing banking activities. Financial engineering is one of the most important topics that are concerned with study and analysis of Regulatory risk, the banking industry is based on the content of the art of risk management in light of recurrent crises, this caused serious losses in financial organizations and banks in this matter requires the search for hedging, forecasting and measurement tools through the establishment of new financial instruments and technology that help reduce the financial risks of banks, thus avoiding financial failure.

From the above, it is incumbent on those in charge of the organizations of Iraq's private banks to keep in mind specific strategies to audit negative phenomena and develop appropriate procedures to identify, measure and track risks to reduce or limit their effects, and it can be said that banking activities not only lead to avoiding risks, but have become a necessity. It must be dealt with, as banking risks have become the cornerstone necessary for doing business, in addition to many transformations that have occurred in the Iraqi banking sector that contributed and helped the sector to expand and spread, and the entry of many Arabs and foreigners. The work of banks in the Iraqi environment, which led to the possibility of being affected by global economic crises when they occur, so current research tries to prove the feasibility of using and developing instructions and regulatory systems, at the international and local levels, for the Iraqi banking environment.

PART ONE: THE METHODOLOGY OF STUDY

1- The problem of research:

Risk management has an important role to play in the banking system, with the many repeated crises that banking operations have been exposed to, especially in the last period, the importance of this role has increased. These problems have played a key factor in the process of highlighting the need for banking industries at the local level, to give them an international horizon, especially with the Arab world's interest in entering this field. This development in the role of the banking industry requires those in charge of it and researchers in this Researching methods and innovating methodologies and tools that help identify and measure the risks associated with their activities. Hence the emergence of financial engineering and the development of its technologies.

Based on the foregoing and based on the function that financial engineering can play in providing the appropriate correction of the risk associated with banking business, and so the problem of study came as follows: To what extent are financial engineering techniques used in managing the risks of Iraqi private banks and is there a relationship between the use of these techniques and risk management?

Under this problem are sub-questions as follows::

1. Is there a relationship between financial engineering techniques and banking risk management in Iraqi private banks?

2. What is the size and direction of the impact relationship between financial engineering techniques and the level of banking risk management in Iraqi private banks?

2- THE IMPORTANCE OF RESEARCH:

The field of banking risk management occupied the thought of many researchers and its importance increased, due to successive crises and thus the idea of economic and financial activity mixed with risk, which led to the emergence of financial engineering and its various tools, such as financial derivatives, securitization and other tools.

The importance of this research stems from the scientific contribution it provides, as it addresses a basic issue, which is the use of financial engineering methods, the importance of study is the importance of these engineering as a tool that ensures that the goal of measuring and hedging risks is the strength and durability that drives the bank to continue its operations, and the efficiency of those procedures in the face of its competitors.

At the academic level, this study is considered one of the first studies of its kind at the level of Iraqi private banks, which may be the beginning of subsequent studies in this field.

3- RESEARCH OBJECTIVES:

Based on the above, this work mainly aims to reveal some aspects of financial engineering techniques on the one hand, and to identify the reality and impact of risk management in Iraqi private banks on the other hand, in addition to the following objectives:

a. Define financial engineering and determine its importance by highlighting the role of its technologies in controlling monetary and banking risks.

b. Define banking risk management and know the extent of its impact on banks and the methods and process of managing them.

c. Measuring the level of use of financial engineering measures in the process of controlling risks in Iraqi private banks.

d. Determine the nature of the correlation between financial engineering procedures and the level of banking risk control for Iraqi private banks.

e. Measuring the size of the effectiveness between the methods of financial structuring and the level of banking risk management in Iraqi private banks.

4- RESEARCH HYPOTHESES:

To answer the main problem and the questions raised, we can formulate the following hypotheses:

The first main hypothesis: There is a significant correlation between financial engineering techniques and risk management in Iraqi private banks. The following sub-hypotheses are branched out:

a. There is a significant correlation between the perception of the concept of financial engineering and banking risk management in Iraqi private banks.

b. There is a significant correlation between financial engineering techniques and banking risk management in Iraqi private banks.

The second main hypothesis: There is a significant direct effect between financial engineering techniques and risk management in Iraqi private banks. The following sub-hypotheses branch out:

a. There is a significant direct impact between the perception of the concept of financial engineering and banking risk management in Iraqi private banks.

b. There is a significant direct impact between financial engineering techniques and banking risk management in Iraqi private banks.

5- RESEARCH VARIABLES:

The study includes two types of variables:

Independent Variable: Financial Engineering Techniques

Dependent Variable: Risk Management

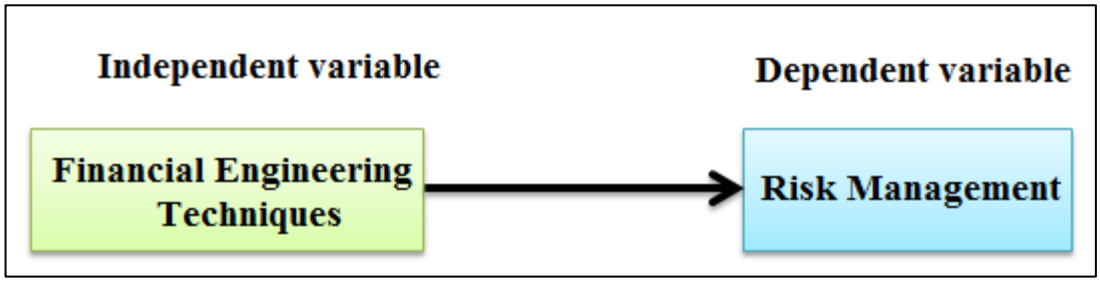

Figure 1 Hypothesis schema for research

PART TWO: THE THEORETICAL SIDE

First: Financial Engineering

1. The Origin and Development of Financial Engineering

Its appearance in finance dates back to the eighties with the increase and expansion of the margins of derivative financial instruments. However, the concept of financial engineering and its applications is much older than that, although it is not in circulation as a term, so the evidence for the use of the short-lived tool limits and complexities in credit and payment operations dating back to the First Crusade (1095 - 1099) which was known through the personal letters of a Jewish merchant in Cairo at the time. General ideas related to the multiplicity of risks of modern risk management methods, and the quantification of insurance problems, are taken into account The basic elements of the formulation of insurance pricing policy in the fourth century were understood, at least in the practice of the century AD (Radwan, 2005, pp. 92-93).

In recent years, a new applied and academic concept has emerged in the financial world represented by financial engineering, a manifestation of new financial innovations aimed at developing new vocabulary in the financial markets through financial instruments and transactions. It has met the needs and desires of investors by diversifying sources of income by expanding the scope of investment and reducing risks, so financial engineering has become a modernization process by activating global financial exchanges and introducing new financial innovations in institutional investors, and its impact on Strategic thinking of monetary institutions, and the presence of emerging financial markets and global financial centers (Shehab, 1996:3) can also reduce the cost of existing activities and enable the development of new products, services and markets (Tufan, 1996:236).

2. The concept of financial engineering

Researchers have varied many definitions of financial engineering, and many researchers have tried to define them by thinking about the combinations they look at in financial engineering: The financial engineer performs this process through certain financial engineering strategies that depend on diagnosing the requirements of dealers in the financial markets and their capabilities on the one hand, and analyzing and diagnosing opportunities and challenges in these markets on the other hand, in order to determine the optimal financial engineering strategy from the point of view of dealers, which has always been Financial engineers on its innovation and development (Height, 1995, p. 22).

The term financial engineering is also a well-established concept, but it seems relatively new in terms of its specialization and breadth of field. It refers to "the design, development and implementation of innovative financial instruments and mechanisms and innovative solutions to financing problems" (Finnerty, 1988:14).

3. The importance of financial engineering

As in any new concept developed in the economic arena, financial engineering offers a lot of Solutions to many of the problems facing the investor, the importance of using financial engineering tools and techniques is summarized as follows: (Al-Abadi, 2008, p. 107)

a. Devising modern methods for measuring and understanding financial risk management whereby complex risks that accumulate together in traditional tools can be isolated or sorted, so that all risks can be managed independently and at a higher level..

b. To protect the portfolio, the portfolio manager buys an option in the currency market, and up to a certain limit against exposure to unfavorable price fluctuations in foreign exchange rates, the purchase of this option may reduce the realization of gains arising from the purchase of foreign shares, but nevertheless allow for positive results of the funds to be invested.

c. Supporting the services provided by financial institutions to clients to serve their purposes in building more diversified portfolios, which would increase the customer base of these institutions.

d. Diversifying the portfolios of financial institutions from instruments derived from investment returns, fees and commissions for services by exposing revenue and profit opportunities, through banks carrying out hedging and speculation operations, making markets and forming financial centers.

e. Swapping the flow of interest payments on fixed-rate obligations with a variable interest rate instrument by the financial manager of institutions, the purpose of which is either to reduce the proportion of fixed interest obligations (and increase variable interest obligations) in the financial structure of the enterprise or to reduce the burden of fixed interest payments if their rates fall.

f. Raising investment returns while reducing the costs of expenses and investors in derivative instruments, as well as diversifying the range of financing and investment alternatives available to them and reducing the risk of loss.

g. Investors (who wish to acquire certain equity) purchase options or instruments to purchase shares in order to have an independent opportunity to purchase shares at a price

equal to only a fraction of their prevailing price in the future (after improving the conditions of the institution at the time) (Abdulhai, 2014, p. 11)

Second: Risk Management in Banks

1. Origin and development of banking risks

The concept of risk is circulating among the general public in their daily dealings, if the word risk is pronounced, it means that we are talking about uncertainty or the possibility of an unexpected loss, and this meaning applies to risk in economic transactions and commercial activities, the risk arises when there is more than one possibility or result, and the final result is unknown.

Risks arise when doing any work more than one possibility about its result with uncertainty that will be the final results of this work, and risks are manifested in uncertain circumstances or events, which, if they occur, will have a negative or positive impact on the objectives of the project, and the concept of risk is mainly related to the state of uncertainty and exposure to this situation accompanying the activities of financial institutions. Risks are also usually associated with poor communication channels within the organization between its components, between the organization and its external environment, as well as the life cycle and sophistication of the product, as well as the lack of training and education necessary to develop existing skills and expertise. This risk has traditionally been measured using the standard deviation of the expected outcome from the actual outcome. Although the uncertainty is the situation faced by all businesses in practicing their activities, this situation is deeper in financial institutions, especially banking ones, due to the nature of the activities of these institutions that are based on trading in the funds of others and working to maximize their profits and increase the strength of their financial position through their aspiration to mitigate the risks resulting from the uncertainty in their activities at the beginning of providing their services (Abdelhay, 2014, p.:13).

When the Insurance Buyers Association started in 1975 as the Insurance and Risk Management Association. This change shows that transformation is happening. The idea of risk management seemed logical and reasonable, and spread from one institution to another, as the Insurance and Risk Management Association began publishing a magazine under the name (Risk Management), where the insurance sector was located. The American Management Association publishes a wide range of reports and studies to help manage risk, and the American Insurance Institute has developed a risk management educational program consisting of a series of tests that qualify individuals to earn (risk management fellows). The curriculum of the program was revised in 1973, and the title of the graduate of the program was changed to "Risk Management Researcher", and many of the concepts emerging in the academic classroom were transferred and applied in the business world (Abdelaal, 2003, p. 50).

2. The Concept Of Risk Management

The general meaning of danger refers to all harmful events that threaten a person in himself, his money or his family, and this reflects the general meaning of danger (Miraj Jadidi, 2003, p. 16).

Milton defines it as the situation or circumstance in which the decision-maker can identify and place probability distributions for an event in the light of previous studies (Tommy Ibrahim, 2007-2008, p. 57).

Risk is defined as the possibility of an organization experiencing previously unexpected or unplanned losses or fluctuations in the expected return of an investment.

Joel bessis has been defined as risk-taking: it is an irregular effect on profitability. Due to many factors such as uncertainty, risk estimation needs to be contingent on the effectiveness of abnormal events occurring under uncertain conditions on profitability.

Risk is also defined as a double mixture of event probability and results-delivering.

Risk management is a scientific approach to dealing with pure risks by predicting expected or possible loss and forming and executing actions that reduce the likelihood of loss or the financial impact of the loss that occurs (Al-Rawi, 2009, pp. 24-25).

The risks are also the state of concern about the financial quotient in the following time, for a decision that may be issued by the economic man at the present time, depending on the past, for the result of study of the behavior of the natural or general phenomenon (Abdel Salam, 2003, p. 6). Hazards mean a situation in which there is a probability of a tendency different from the desired or expected results (Abdelaal, 2003, p. 16).

It is also defined by financial risk management: it is the justification, designation and economic control of these voluntary risks of the enterprise that threaten assets or capacity.

It is a systematic and systematic work to identify and assess material losses arising from the realization of risks to individuals or institutions and to select and apply the most appropriate means to address these losses. Through this definition, it is clear that risk management is a systematic work whose purpose is to identify and measure losses resulting from the realization of risks (Abu Bakr and Al-Sifo, 2009, p. 49).

Williamz et Heinse define it as objective uncertainty regarding a given situation, i.e. risk is formed by uncertainty (Balqini, 2004, p. 12).

Financial risk management is also defined as performance that explains systemic and continuous by realizing, inventorying, presenting and guessing the factors that threaten the assets, capabilities, objectives and reputation of the organization and trying to control them to avoid future organizational crises (Abouri, 2006, 21).

Risk management: It is all the measures and procedures that management works on to reduce and limit the non-positive effects that are formed due to risks and keep them at a minimum (David Murph, 2008, p. 46).

3. Objective of Risk Management

The theory of bearing a certain level of risk is a must for monetary and non-financial institutions alike, as these institutions aspire to achieve their goals of growth, continuity, achieving returns, strengthening confidence in them and their reputation, and avoiding a decline in their economic performance. Taking on a certain level of risk requires organizations to develop successful risk management. One of the most important institutions that need The nature of its work is to find a purposeful risk management is the financial and banking companies, as the risk management aims to organize between all departments in the bank in order to ensure the security of all data about the risk, coming from all banking activities,

especially those related to credit, liquidity and market risks, in a periodic, regular and timely manner and in the form of a complete report prepared periodicallyHe went to senior management to discuss it and take the necessary actions towards. It must also ensure the integrity of information and data and the continuity of its flow to assist in the preparation of a comprehensive risk report periodically and accurately, and this report must include, among other things, guidelines related to reducing exposure rates, whether to a number of high-risk activities, some geographical locations or units with related links, within which it is located. The full amount of its liabilities is a high rate of the bank's assets or in the association of a number of risks with the realized return.

The primary objective of risk management is to help the bank's management to be able to correctly identify, identify, estimate and anticipate problems on the bank's value. It also aims to verify all legal conditions, especially those related to risk management, calculate total exposure to risks, determine its concentration, and the methods to be followed to avoid expected risks (Abdelhay, 2006, pp. 38-39).

PART THREE: THE PRACTICAL SIDE

First: A brief overview of the establishment and development of Iraqi private banks:

The ownership of the banking sector in Iraq until 1991 was limited to government banks only and there is no role for the private sector in this activity, as there were six government banks operating in Iraq, including two commercial banks e and banks Rafidain and Rashid and three specialized banks e and the industrial, agricultural and real estate bank as there is a socialist bank that provides loans and soft advances to state employees and some segments of society.

The urgent need led to the emergence and establishment of private banks that contribute to banking in Iraq, as Chapter V of the laws of the Central Bank of Iraq No. 64 of 1976 was canceled and replaced by Law No. 12 of 1991, under which private bodies were allowed to build banks and practice banking work, and accordingly, the period from 1991 to 2000 witnessed the establishment of fifteen private banks, one mixed bank and one UnitedInvestment Bank, as well as one Islamic bank. And the Iraqi Islamic Bank for Development and Investment.

Based on the role of the Central Bank of Iraq, it has sought to increase private banking activities, by motivating it to reduce the surplus of cash in circulation on the establishment of many private banks based on the provisions, rules and procedures issued by the Central Bank in this regard, as the latter sought to strengthen the branches and sections of those banks to become spread in all possible places.

The table below shows the category of private banks in Iraq, the number of their branches and the date of establishment:

Table (1) Private banks in Iraq, the number of their branches and the date of establishment

t	Bank Name	Year Established	Number of branches
1	Bank of Baghdad	1992	36
2	Iraqi Islamic Bank	1993	15
3	Middle East Investment Bank	1993	13
4	National Bank of Iraq	1995	10
5	Gulf Commercial Bank	1999	23
6	Ashur International Investment Bank	2005	9
7	Mansour Investment Bank	2006	8
8	South Islamic Bank	2016	10

Second: Referring to the basic research variables and the dimension of their author

The current research included in its models that tested two main variables revealed by model (2) as it shows the dimensions and enumeration of the statements that make up the structure of their calculation and the symbols used in the statistical application

Table (2) Clarification of the variable, dimension, number of issues and notations related to them

t	factors	Number of ferries	Icon
1	Understanding the concept of financial engineering	8	PER
2	Use of financial engineering techniques	12	TEC
variable	Financial Engineering Techniques	20	INDEP
variable	Risk Management in Banks	11	DEP

Third: Examination of the normal distribution of information

Table (3) shows the expected division of the data of the financial engineering techniques variable and the size of their stability about their source, and the arithmetic ratio of the Kolmogorov-Smirnova examination was achieved (0.057) while the level of morale of the test was (0.200), as it is one of the highest hypothetical moral levels of (5%), which means the absence of moral significance, and by the same examination, the moral degree through which it appears that the division is normal is the percentage that exceeds the size of the morale (5%) (as a result of considering the examination as one of the categories of non-parameterism). The calculation indicates that the distributions are normal in contrast when the percentage of significance is less than or equivalent to (5%), which indicates that the information is not distributed normally, and here the application reveals that the data are divided naturally, and this shows that the expressions of the financial engineering techniques factor are all subordinate to natural fragmentation, which directs the researcher to rely on parametric analysis in examining assumptions

Table 3 Kolmogorov-Smirnova test for search variables

		Financial Engineering Techniques	Risk Management in Banks
N		109	
Normal Parameters[a,b]	Mean	3.9000	4.1707
	Std. Deviation	.46417	.60766
Most Extreme Differences	Absolute	.057	.086
	Positive	.056	.086
	Negative	-.057-	-.084-
Test Statistic		.057	.086
Asymp. Sig. (2-tailed)		.200	.051
a. Test distribution is Normal.			

Fourth: Stability test for measuring instrument

It is clear that the ratios of the (Cronbach alpha) coefficient for the main variable of the research range between (0.77 - 0.90). These degrees obtained have statistical acceptance and approved stability levels, so the research tools and criteria are valid for final application due to their accuracy, stability and high validity.

Table (4) Coefficient values (Cronbach alpha)

t	Variables and dimensions	Cronbach Alpha Laboratories
1	Understanding the concept of financial engineering	0.77
2	Use of financial engineering techniques	0.84
variable	**Financial Engineering Techniques**	**0.88**
variable	**Risk Management in Banks**	**0.90**

Fifth: Statistical Description

1. Statistical description of the variable of financial engineering techniques

At the level of the variable financial engineering techniques, it was found that after the realization of the techniques of this engineering, it received the greatest fame among the categories surveyed, where the average achieved the largest degree (3.93) and a deviation of (.819), which illustrates the good agreement of the beliefs of the groups about this dimension, where the degree of response was solved in a high order and came in the number one degree This dimension and then gradually solved according to the arithmetic average after using financial engineering methods Where the mean achieved (3.86) and a deviation rate (874.) side that reveals that the variation in the answers was little, which shows graphically the existence of consensus in the views of the studied group to the extent to which the methods of these geometries adopt the perimeter of implementation and a large response size.

In total, the arithmetic mean of the financial engineering techniques variable is (3.89) which represents the average value of the variable, and the deviation between the standard response model and the financial engineering technology variable is (846). There is an average degree of agreement on this variable, which indicates that geometric variables are well usable. According to the financial officials in the research sample of the private bank of Iraq.

Table (5) Arithmetic mean, standard deviation, percentage of answers and gradual importance of the basic dimensions of financial engineering technology (n=106)

NO.	Basic Dimension	mean	S.D	Relative importance	Answer Level	Ordinal importance
1	Understanding financial engineering techniques	**3.93**	**.819**	**0.79**	High	First
2	Adoption of Financial Engineering Technology	**3.86**	**.874**	**0.77**	High	Second
general mean		**3.89**	**.846**	**0.78**	**High**	-

2. Statistical description of the risk management variable in the bank

The following paragraph reveals the description and diagnosis of the variables of the bank's risk management, including eleven basic paragraphs (questions), and it can be seen clearly from Table (3-13) that the paragraph with the highest arithmetic average is number two, the content of which there is an independent committee called the "Risk Management Committee" that is responsible for formulating the general policy for managing the risk management of your bank), and its average is (4.30), and the content of this paragraph is slightly scattered, which is (770). This shows that the group surveyed is in harmony with its beliefs about the question, where the answer received a very high level and of great relative importance (85%).

As for the lower medium, it is in paragraph 6 (the bank with which it deals uses the risk transfer policy as a method of risk management) because it is (3.96), a broker with a high level of response, where its standard deviation reached (0.935), which indicates that the degree of dispersion of this paragraph is small, which shows the compatibility of the perspective of the categories surveyed around the text of that paragraph, it has reached the consistency and importance of the content of this phrase (79).

As for the variable (risk management in the bank) obtained the arithmetic mean (4.16) and a deviation of (852.), which shows the harmony of the responses of the studied category to the availability of the risk management variable in the bank and a high level of answer, and this means that a relentless endeavor by the management of private banks to focus on the preparation of measures for managing the risks that hinder the field of its banking work and that these policies contribute significantly to achieving the goals of banking performance.

Table (6) Arithmetic mean, standard deviation, percentage of responses and the gradual importance of the basic dimensions of risk management in the bank (n=106)

NO.	mean	S.D	Relative importance	Answer Level	Ordinal importance
1	4.27	.822	.85	Very high	2
2	4.30	.770	.86	Very high	1
3	4.20	.777	.84	Very high	5
4	4.17	.790	.83	High	6
5	4.16	.821	.83	High	7
6	3.96	.935	.79	High	11
7	4.08	.863	.82	High	10
8	4.10	.882	.82	High	9
9	4.21	.891	.84	Very high	4
10	4.15	1.002	.83	High	8
11	4.23	.822	.85	Very high	3
	4.16	**0.852**	**0.83**	High	

Sixth: Testing the hypotheses of study

Testing the first major correlation hypothesis: There is a significant correlation between financial engineering techniques and risk management in Iraqi private banks

Since this assumption involves verifying the emergence of a certain level of financial engineering methods and the degree of correlation between the occurrence and management of

bank risk through the content of the assumption (there is a significant relationship between financial engineering systems and banking risk management variables)

Since the values shown in the correlation matrix table (7) are displayed at the level of independent and dependent variables, it is clear that there is a strong level of correlation between the variables of financial engineering technology and the bank risk management variable, so that the correlation ratio is (.540 **), which is a significant value, and two asterisks above this value indicate a statistically acceptable significance, indicating that t The calculated is above its scheduled value and within the confidence level (0.99), which means it is acceptable under the importance limit (0.01). There is a good relationship between the availability of technical financial engineering variables and the availability of risk management variables within banks in the scope constraints of application of the current study. In Iraqi private banks. This result indicates support for acceptance and validation of the hypothesis that there is a key link between the variables of banking financial engineering techniques and the variables of risk management.

Table (7) Matrix of Correlation Transactions between Financial Engineering Technology and the Bank's Risk Management Variable

Correlations					
		PER	**TEC**	**INDEP**	**DEP**
PER	Pearson Correlation	1	.588**	.886**	.361**
	Sig. (2-tailed)		.000	.000	.000
	N	106	106	106	106
TEC	Pearson Correlation	.588**	1	.896**	.596**
	Sig. (2-tailed)	.000		.000	.000
	N	106	106	106	106
INDEP	Pearson Correlation	.886**	.896**	1	.540**
	Sig. (2-tailed)	.000	.000		.000
	N	106	106	106	106
DEP	Pearson Correlation	.361**	.596**	.540**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	106	106	106	106
Correlations are significant at the 0.01 level (2 tails).					

The second main hypothesis: (A direct effect relationship appears in the form of a significant function between the financial engineering technology variable and the risk management variable in the bank)

This assumption focuses on measuring the effectiveness of the independent variable Financial engineering techniques in the approved variable Risk management in the bank:

By examining Figure (8), it becomes clear to us a positive effect statement with significant significance. For the factor of financial engineering techniques in the level of risk management in the bank, it is also shown that the degree of the standard impact factor has become (0.54), which indicates that the variable of financial engineering technology directly affects its counterpart Punt risk management by (54%) at the level of Iraqi private banks Category Surveyed, Which reveals that the change of one deviation unit of financial engineering methods in the Iraqi private banks studied will be directly transformed in the risk management in the

bank by a value of (54%) and these responses are considered significant, because the value of the critical ratio (C.R.) in Figure (3-16) (6.568) at a significant level (P-Value = 0.01) as a result in the same model.

Based on the above, the second basic hypothesis associated with the achievement of a positive effect on financial engineering methods and the risk management variable of the bank can be accepted within the scope of positive effects.

Table (8) Estimates of the impact model between the variable of banking engineering techniques and the variable of risk management in the bank

Variable and dimensions	track	Variables	Standard Beta values	Non-standard Beta values	Measurement error	Critical ratio	Moral
Financial Engineering Techniques	-->	Risk Management at QIB	.540	.706	.108	6.568	***

Source: Created by the researcher by the output of **the Amos application. V.23**

PART FOUR: CONCLUSIONS AND RECOMMENDATIONS

First: Conclusions

In the light of the above ideas, studies and research, the researcher concludes the results of the theoretical side to the following:

1. Financial engineering is a concept as old as financial transactions, but it seems relatively modern in terms of term and specialization, as it is an effective basis for the processes of creativity and innovation.
2. The success and growth of banks is closely linked to the extent of innovation and creativity in banking products, and the provision of various services.
3. Risk management, which is a system for predicting potential risk in order to develop plans to study and measure it and determine the amount of potential effects on the business, assets and revenues of banks and financial organizations, as this system is complete and dedicated to arranging the appropriate environment and the necessary tools to avoid these risks or to reduce and control them and their provisions to flip from the effects that may cause them. While hedging is a risk management tool that investors resort to to hedge and reduce risk by reducing losses by compromising the possibility of profit.
4. The multiplicity and diversity of financial risks is an important incentive to search for financial tools and innovations that suit and suit this diversity.
5. The areas of risk management are still new topics for Iraqi private banks, as they lack the planning that must be embodied in the banking departments to face developments.
6. Iraqi private banks do not use the modern and innovative monetary instruments widely used by many international banks and financial institutions to reduce risks and increase returns.

Second: Recommendations

1. The level of perception of financial engineering in Iraq's private banks under study is good, but it requires officials to make more intensive efforts to understand this engineering well and use it in risk management.
2. The Banks' Notification Department must ensure that the process of developing banking products is constantly conducted and updated whenever necessary, and that the process is carried out in a thoughtful and productive manner, not just routine procedures and steps.
3. Intensifying efforts and communication work between banks and their employees, which in turn raises the confidence of customers and society as a whole in banking services, allowing protection from risks on the one hand, and increasing the size of the portfolio as well as increasing the volume of deposits.
4. It is necessary to establish the foundations of financial engineering and financial risk management and clarify their limits so that the bank can benefit from its tools and products.
5. The researcher proposes to direct researchers in the field of economics and financial and accounting sciences to familiarize themselves with study of the adoption of financial engineering methods, which are based on finding quantitative methods that help measure and predict the risks faced by banking activities.

REFERENCES

1. Balqini, Muhammad Tawfiq. (2004). Principles of Risk Management and Insurance, Dar Al-Kitab Academy, Mansoura.
2. Tommy, Abraham. (2007-2008). "The Algerian Knowledge System and the Basel Conventions", a supplementary note for obtaining a master's degree in economics, Mohamed Lakhdar Biskra University.
3. Jadidi , Miraj. (2003) . Al-Wajeez in Algerian Insurance Law, Dar Houma, Algeria.
4. Narrator, Khalid Wahib. (2009). Financial Risk Management, Dar Al-Masirah, Amman.
5. Radwan, Samir Abdel Hamid. (2005). Financial derivatives and their role in risk management and the role of financial engineering in the manufacture of their tools - a comparative study between man-made systems and the provisions of Islamic Sharia, Universities Publishing House, first edition, Egypt.
6. Al-Sifo, Walid Ismail, and Abd Ahmed Abu Bakr. (2009). Risk Management and Insurance, Dar Al-Bazouri Scientific for Publishing and Distribution, Jordan.
7. Abadi, Abeer Fawzan. (2005). "Financial Risk Management in Banking and Finance", Amman, Jordan.
8. Abbadi, Hisham Fawzi Dabbas. (2008) . Financial Engineering and its Tools with a Focus on Financial Strategies, Al-Warraq Foundation for Publishing and Distribution, Jordan.
9. Abdul Hai, Muhammad Abdul Hamid. (2010). "Risk Management in Islamic Banks (A Comparative study)", Note. Unpublished Master's degree, Finance and Banking, University of Aleppo, Syria.
10. Abdul Hai, Muhammad Abdul Hamid. (2014). "The Use of Financial Engineering Techniques in Islamic Risk Management", Unpublished PhD thesis, majoring in Banking and Financial Sciences, Aleppo University, Syria.

11. Abd al-Salam, appealed to Mahmoud. (2003). Risk Management, Cairo University Center for Open Education.
12. Abdel Aal Hammad, Tariq. (2003). "Financial derivatives risk management concepts. University House - Publishing and Distribution, Alexandria, Egypt.
13. Abdel Aal, Tariq. (2009). Risk Management, Individuals and Departments, Companies, Banks, Ain Shams University House, Alexandria.
14. Abouri, Zaid Mounir. (2006). Insurance and Risk Management, First Edition, Dar Kunooz Al-Marefa for Publishing and Distribution, Amman.
15. "David Murphy. (2008). Understanding the Risk (The Theory and Practice of Financial Risk Management), Taylor and Francis Group, London, UK".
16. Finnerty, J.D. (1988). Financial Engineering in Corporate Finance: An Overview, Financial management.
17. Shehab, Lmed. (1996). Financial Engineering: Concept, Strategies, and Instrument.
18. Tufano, Peter. (1996). How Financial Engineering Can Advantage Corporate Strategy, *Harvard Business Review, (Jan-Feb").*
19. Tufano, Peter. (1998). The Determinates of stock price Exsponre, Financial Engineering and the gold Mining Industry", the Journal of Finance, Vol. 53, No. 3, June.