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**THE ROLE OF ISLAMIC FINANCIAL ENGINEERING IN REDUCING
THE IMPACTS OF FINANCIAL CRISES (A FIELD STUDY ON
ISLAMIC BANKS IN SUDAN)**

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Abstract

The study examined the role of Islamic financial engineering in mitigating the impacts of financial crises, with a field study conducted on a sample of Islamic banks in Sudan. The study found that some financial institutions, including banks and other financial entities, did not fully utilize the tools and strategies of Islamic financial engineering to address the effects of financial crises that have impacted the economy at various times, particularly those operating within the Islamic economy. The study aimed to identify the tools and strategies of Islamic financial engineering and to determine the economic and financial impacts of financial crises. It also sought to study the relationship between the tools and strategies of Islamic financial engineering and their financial impacts. The study encourages Sudanese financial institutions to take advantage of the benefits of the Islamic financial structure in reducing or addressing the effects of financial crises. The study adopted an inductive approach, a descriptive analytical approach, and a historical approach. Data was collected from a sample of Islamic banks using a questionnaire. To achieve the study's objectives, the following hypotheses were tested: the use of Islamic financial engineering tools to address the effects of financial crises, the use of Islamic financial engineering strategies in dealing with the effects of financial crises. The study concluded that the use of Islamic financial engineering tools helps in reducing the impacts of financial crises. The application of Islamic financial engineering strategies contributes to mitigating the effects of financial crises. The study recommended the following: There is a clear and urgent need for more scientific research by specialists to advance Islamic finance and deepen and expand interest in Islamic banking and financial services.

Keywords: Islamic Financial Engineering, Financial Crises, Islamic Banks.

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ملخص

وتناولت الدراسة دور الهندسة المالية الإسلامية في التخفيف. آثار الأزمات المالية مع دراسة ميدانية على عينة من البنوك الإسلامية في السودان. وتوصلت الدراسة إلى أن بعض المؤسسات المالية، بما فيها البنوك والجهات المالية الأخرى، لم تستغل بشكل كامل أدوات واستراتيجيات الهندسة المالية الإسلامية لمعالجة آثار الأزمات المالية التي أثرت على الاقتصاد في أوقات مختلفة، ولا سيما تلك العاملة ضمن الاقتصاد الإسلامي. هدفت الدراسة إلى التعرف على أدوات واستراتيجيات الهندسة المالية الإسلامية وتحديد الآثار الاقتصادية والمالية للأزمات المالية. كما سعت إلى دراسة العلاقة بين أدوات واستراتيجيات الهندسة المالية الإسلامية وتأثيراتها المالية. وتشجع الدراسة المؤسسات المالية السودانية على الاستفادة من فوائد الهيكل المالي الإسلامي في الحد من آثار الأزمات المالية أو معالجتها. واعتمدت الدراسة على المنهج الاستقرائي، والمنهج الوصفي التحليلي، والمنهج التاريخي. تم جمع البيانات من عينة من البنوك الإسلامية باستخدام الاستبيان. ولتحقيق أهداف الدراسة تم اختبار الفرضيات التالية: استخدام أدوات الهندسة المالية الإسلامية لمعالجة آثار الأزمات المالية، استخدام استراتيجيات الهندسة المالية الإسلامية في التعامل مع آثار الأزمات المالية. وخلصت الدراسة إلى أن استخدام استراتيجيات الهندسة المالية الإسلامية في التعامل مع آثار الأزمات المالية تساعد أدوات الهندسة المالية الإسلامية في الحد من آثار الأزمات المالية. إن تطبيق استراتيجيات الهندسة المالية الإسلامية يساهم في التخفيف من آثار الأزمات المالية. وأوصت الدراسة بما يلي: أن هناك حاجة واضحة وملحة لمزيد من البحث العلمي من قبل المتخصصين للنهوض بالتمويل الإسلامي وتعميق وتوسيع الاهتمام بالصيرفة والخدمات المالية الإسلامية.

الكلمات المفتاحية: الهندسة المالية الإسلامية، الأزمات المالية، البنوك الإسلامية

1. Methodological framework:

The world economy is still suffering the crisis, considered the most severe since the Great depression, where economic downturn at historic magnitude and many countries across the globe, irrespective of their development level, are still under strain dealing with this crisis. Since the last four decades, the Islamic financial engineering follow indirect pace en route to the presence a well-established alternative to interest-based financial system, which took financial and economic system has been reeling heavier crises. Islamic Financial Engineering role contribute in reducing the impact of the crisis, Islamic banking is required to establish clear foundations of Islamic financial industry independent of usurious financial industry despite the fact that it would be more expensive than tradition and simulation, however, it is more rewarding and more productive, this hand On the other hand, this would preserve the authenticity of Islamic financial institutions and help them avoid a lot of risk, it also allows them to take advantage of the current financial industry products, also it helps to complete the system's knowledge of the Islamic financial industry, giving it greater capacity to provide services funding and other more professional and high credibility (Hussein,2015,P3) the global economy faced one of the most difficult crisis in modern history, as it had to bear at the same repercussions persistent global financial crisis, which quickly turned into an economic crisis have had a negative impact on the different countries of the world and sectors of the global economy repercussions, and these sectors banking the International Financial Engineers Association has defined the concept of financial engineering as “the process by which the financial instruments used by the financial institution are developed, as well as the application of the financial theory in an innovative manner and finding solutions to the financial problems that

the institution suffers through finding financial instruments that benefit the institution Finance (Asuquo,2011,P15)

1.1 Statement of problem:

The problem of the study is that some financial institutions, whether, banks or insurance companies, do not benefit from the tools and strategies of Islamic financial engineering in dealing with the effects of financial crises that affect economies from another period, especially those operating in Islamic economies. The problem can therefore be formed in the following questions:

1. Does the use of Islamic financial engineering tools helps in reducing the impact of financial crises?
2. Does the use of Islamic financial engineering strategies contributes reducing the impact the effects of financial crises?

1.2 Importance of the study:

The most important thing about this study is that it is considered one of the rare studies (according to the researchers) that addressed the importance of utilizing Islamic financial engineering tools and strategies in dealing with the effects of financial crises. This study will be an addition to the scientific library to provide science students and researchers with important information about the subject of the study and its variables.

1.3 Objectives of the study:

The study aimed to achieve the following goals:

- a. Identify the tools and strategies of Islamic financial engineering
- b. Identify the economic and financial effects of financial crises.

1.4 Hypotheses of the study:

To achieve the study's objectives, the following hypotheses were tested:

The first hypothesis: The use of Islamic financial engineering helps reducing the impact of financial crises.

The second hypothesis: The use of Islamic financial engineering strategies contributes in reducing the impact of financial crises.

1.5 Sources of data collection:

Initial Sources: The primary data of this study collected using questionnaire.

Secondary Sources: Secondary data collected from references, previous studies related to research subject and internet.

1.6 Methodology of the study:

The study adopted inductive approach, analytical descriptive approach, and historical approach.

1.7 Limits of the study:

Spatial limits of the study represented on Islamic banks in Sudan . limits carries out in 2023.

2. Previous studies review:

The study of Mohammad (2016); This study aims to examine the role of Islamic financial engineering in minimizing global financial crises results on Islamic Banking, researcher based on literature review and previous studies , reviewing financial crises events and analyzing the differences between traditional and Islamic operations banks , researcher showing many important results such as : Islamic financial engineering have positive role in minimizing crises effects , Islamic financial engineering depend on Islamic Rules during operations, so that researcher recommended that : If traditional banks want to avoid crises in future must follow Islamic financial rules.

The study Amer, (2018); The study aimed to identify the role of financial engineering in the growth and development of Islamic banking in Palestine; this is through the acknowledgment of the role of the Sharia Supervisory Board represented by the jurisprudential opinions on new Islamic products and tools. Moreover, the role of the regulations and instructions issued by the Palestine Monetary Authority (PMA) concerning Islamic banks. In addition to the impact of experience and employees' training, as well as the impact of modern technology on the growth and development of Islamic banking in Palestine .The researcher used the analytical descriptive approach to reach conclusions and recommendations that can be generalized .The study has reached many conclusions, and the following are the most important ones: The views of the Sharia Supervisory Board in the banks operating in Palestine play a major role in the growth and development of Islamic banking, while the other areas play a moderate role in the growth and development of Islamic banking in Palestine. The study recommended the need to spread the culture of electronic Islamic banking, and the need to update the regulations and instructions governing Islamic banking. In addition to the need for cooperation and coordination between the Sharia Supervisory Boards of the banks and the unified authority that is affiliated with the PMA.

The study of Akli Mohand (2020); The financial crises, coupled with negative repercussions on the economies of countries, led to thinking about finding alternatives to overcome these effects as a result of the capitalist system, which necessitates the introduction of new mechanisms. The Islamic system finds itself as an alternative. Islamic Bank to provide precautionary measures to prevent and avoid financial crises. This paper attempts to define the concept of Islamic financial architecture and its characteristics, and to present the most important products of the financial engineering industry in Islamic financial institutions and their ability to deal with financial crises These products are the strength of Islamic economic policies derived from Islamic Sharia.

The study of Ali. et al (2022); The purpose this study to measure and analyze the impact of the relationship between indicators of financial engineering innovations in reducing financial distress and improving performance for a sample of companies listed on the Iraqi Stock Exchange, The research community represented in the industrial sector for companies listed in the Iraq Stock Exchange for a period of three years and for the period extending from (2019-2021), The researchers reached a number of conclusions, the most important of which are(Reliance on financial engineering indicators leads to a decrease in the occurrence of financial stumbling, as the increase in dependence on financial engineering indicators by one unit leads to a decrease in financial stumbling by (1.430) referred to by a coefficient (B). The researchers reached a number of recommendations, the most important of which are(We recommend the Iraqi Company for Engineering Works and the Iraqi Company for Carpets and Furniture to overcome the critical situation it is exposed to as a result of financial stumbling through developing performance and improving the quality of goods and services to gain customer satisfaction).

3. Literature of study:

Through literature, researchers will define financial engineering, Islamic financial banks, and the role of financial engineering in reducing crises. Therefore, the researchers will divide this chapter into two sections

3.1. Financial Engineering:

Any institution known in view of the functions, and services provided to the community, and we have learned the functions of conventional banks of accepting deposits and crediting loans, doubling the money supply and the provision of banking services such as money orders, banking, and the work of clearing and Islamic banks are those services, but according to the requirements of the law Islamic and increase it its social functions such as payment of zakat shareholders and open interest-free loans, financial aid, and more than banks grow for in the investment field so that the investment side in the traditional commercial banks is limited to bank credit granted, while he is in plenty of Islamic banks, both in terms of investment is direct by clients according to different investment formulas, or through direct investment by Islamic banks such as real estate investment, which is this concept deserves to be called universal banks means that their work is not limited to financial intermediation, but also to the investment side and social side, as it deserves to be called development banks.(Mohammad,2016.P49)

3.2. Concept of Financial Engineering :

The Islamic financial engineering is the range of activities that include design, development and implementation of each of the financial instruments and processes and innovative operations, in addition the formulation of innovative solutions to the problems of funding and all in the context of religion Shara principles(Mohammad Hilmi,P50).

3.3 positives and bright spots for the application of Islamic financial engineering:

positives and bright spots for the application of Islamic financial engineering: The application of Islamic financial engineering will provide Islamic banks and financial institutions the most important advantages (Mohammad,2016,50)

A. avoid imitation of traditional banks products: tradition is the only alternative for creativity in the absence of Islamic financial engineering and the inability of financial institutions for innovation and the development of Islamic financial products compete with their conventional counterparts, but in return must not download Islamic financial institutions are unbearable they are working according to Sharia But within traditional economic systems, which imposes a number of challenges to use some of authentic Islamic financial products, and force those institutions to use some of traditional products after framed legitimate framework, and the infrastructure institutions for Islamic financial industry which is supposed to bear a part of the burden of research and development have not yet its duty to the fullest.

B. The provision of alternatives to traditional financial products: Islamic financial engineering is a way for creativity and development and the creation of the Islamic alternative products to conventional products, and this requires the ability to find alternative products traditional financial products in an environment lacking the catalysts of creativity, in addition to the scarcity of creative individuals, and the need to culture institutions Islamic Finance and understanding of creativity, and the extent of interest in operations research and development, and the extent of knowledge of the creators specialists legitimacy concepts that will enhance the original creativity annual.(Fagbemi,2014,P12).

3.4 The nature of the financial crisis:

No doubt the capitalist system not survive of crisis until enter into another crisis ,the economy fast spidery fast deployment of collapse, and the capitalist system history tells that the facts and figures, it is a continuous crises and frequent system, was the senior Westerner economist admitted under the crisis that the crises of the economy of the capitalist economy , also acknowledged that the capitalist economy in a dummy economy in which (98%) of the money is not offset by physical assets and (2%) of the money is matched by physical assets, and represents the real economy and the paradox that the global crisis pudenda capitalist system appears, it has shown The current crisis that debt banking systems in Western countries than the size of the national product to those far countries, and the best example of this is what has happened in the State of K (Iceland), where on the verge of bankruptcy crisis has shown that the Icelandic banking system's debt volume of nearly 100 trillion while size national product nearly 20 trillion just, faithful see where he came from this difference that exceeds five times the Icelandic national product, he in fact represents the imaginary economy, the bubble economy(DuCharme,2004,P46)

3.5 The concept of financial crisis :

It can be said that the crisis is a growing and sustained accumulation of unexpected things and happenings on a particular level of a part of the system or the whole system; in addition to strong influence on the parties within the system or outside it physically, psychologically and behaviorally. However, for the financial crisis there is no specific definition or concept, but the simplified concepts of the term “financial crisis”, mean that the financial crisis is a sharp and sudden disturbance in some economic balances followed the collapse of a number of financial institutions to extend its effects to other sectors. The crisis in general is defined in social terms as a "cease or block of organized and expected events and disturbance of habits and customs, which requires rapid change to restore balance to form new habits that are more appropriate (Berisha, 2014, p 33)

3.6. The effects of the financial crisis on Islamic banks Islamic Banks influence by the crisis can be categorized into two types:

A. Islamic banks that have been affected directly are those banks that have had investments in global stock through international investment portfolios and international investment funds. This section is affected by the crisis, especially those banks that were involved or investing in

portfolios or investment funds linked to the real estate sector. However these Investments were limited, and did not affect their financial positions, or their profitability of a lot.

- B. the banks affected by the crisis indirectly as a result of the impact of the crisis on all sectors of the economy, without exception, to varying degrees, knowing that the financial sector and banking one were the most affected by the crisis, like any economic institution affected by the general situation of crisis. It must be emphasized is that their vulnerability was limited as that none of them had been exposed to bankruptcy or financial difficulties necessitated the intervention of central banks because of the crisis as some of the impacts were positive, such as increased deposits of Islamic banks(Naim,2012,p3).

4. Field study:

4.1. Field study procedures:

The researchers discuss the method and procedures followed in the implementation of the study. This includes a description of the study community, the sample of the study, the method of preparing its tools, and the statistical methods used to test the Hypotheses of the study. The study community is the total group of elements that the researchers seeks to generalize the results related to the problem. The study community consists of , **Islamic banks in Sudan.**

- 4.1.1. The study's sample:** The sample of the study was determined according to its scientific specifications that achieve the objectives of the study from the internal auditor, external auditor, accountant, risk office, investment officers, and head of department the study population consists of a sample of employees in the three Islamic banks in Sudan, Khartoum State. The number of employees reached (750) employees until the end of 2022 For the 2022 annual report issued by each bank. A stratified sample targeting 30% of the population The sample size was (225) employees. The following table shows the population and sample Study in numbers:

Table 1. Distribution of the society and sample of the study

Name of Islamic bank	Number of Employees	Sample study 30%
Faisal Islamic Bank	500	150
Sudanese Islamic Bank	150	45
Tadhamon Islamic Bank	100	30
Total	750	225

- 4.1.2. Data collection:** A total of (225) forms were distributed on the pre-defined and targeted sample to verify the hypotheses of the study. A total of (225) forms were collected for analysis, (100%), To produce accurate results and disseminate them to the study community, the researchers are keen to vary the sample of the study in terms of its coverage on the following:

- a. Individuals of different years of age (less than 30 years, 30 years and less than 35 years, 35 years and less than 40 years, more than 40 years).

- b. Individuals with different qualifications (BSc, High Diploma, Master, PhD, Other).
- c. Individuals from different scientific disciplines (accounting, financial and banking studies, business administration, accounting information systems, economics, other.).
- d. Individuals of various functional occupations (internal auditor, Accountant, risk office, investment officer, department head, other).
- e. Individuals of different years of experience (less than 5 years, 5 years and less than 10 years, 10 years and less than 15 years, 15 years and less than 20 years, more than 20 years).

4.1.3. Tools of the study: The tools of the study are the means used by the researchers to collect the necessary data on the phenomenon studied. There are many tools used in the field of scientific research to obtain the necessary information and data. The researchers adopted the questionnaire as a main tool for collecting data from the study sample:

- a. Applicable for information from a number of individuals.
- b. Low cost and easy to apply.
- c. Easy to develop questions and answer questions and answer questions. d. The questionnaire provides time for the respondent and gives him an opportunity to think.
- e. Respondents in the questionnaire feel free to express opinions they fear others disagree with.

4.1.4. Stability and truthfulness Study tools:

a. Stability and Virtual Honesty: In order to ascertain the veracity of the questionnaires, the researchers presented the questionnaire to a number of academic arbitrators and specialists in the field of study. After the questionnaire was retrieved from the arbitrators, the proposed amendments were made. Stability and statistical honesty: The consistency of the test means that the scale gives the same results if used once under similar conditions. Stability means that if a test is applied to a group of individuals and their scores are monitored, then the same test is applied to the same group and the scores are obtained, the test is perfectly stable, also known as the accuracy and consistency of the measurements obtained from the test. The most commonly used methods for estimating the stability of a scale are (Half-way distribution using the Spearman-Brown formula, Alpha-Cronbach method, Method of re-application of the test).Honesty is a measure used to determine the degree of honesty among respondents through their answers to a given scale.

b. Use a questionnaire for survey sample:

The questionnaire was distributed to a sample of (5) individuals from the research community and from outside the research sample in accordance with their characteristics with the sample of the study to calculate the stability factor, to determine the degree of response of the respondents to the questionnaire and to identify ambiguous questions and to provide preliminary testing of hypotheses and to clarify some design and methodological problems. The stability test for the questionnaire was conducted using the alpha-Cronbach coefficient and the result was 0.873. This means that the data is stable as shown in Table (1) below:

Table (1): Alpha Kronbach coefficient of the questionnaire

Number	Axis	Number of ferries	Stability(constancy)
1	first hypothesis	5	0.935
2	second hypothesis	5	0.972
3	Total statements	10	0.961

Source: Prepared by researchers, based on field study's data, 2023

The above table shows that the Kronbach coefficient for all the terms of the questionnaire is 0.961, which is high and the reference to the terms of the questionnaire is that the increase in the value of the Kronbach coefficient means increasing the credibility of the data. This means that the measure measures what is measured.

4.1.5. Used Statistical methods: To achieve the objectives of the study and to verify its hypotheses, the statistical methods used are (Frequency distribution of responses, Percentages, Spearman-Brown equation to calculate the coefficient of stability, Arithmetic mean, standard deviation and variance and chi - square test to denote hypotheses).

4.2. Data analysis and Hypotheses testing

The researchers analyzed personal data, questionnaire data and tested the hypotheses of the study using statistical methods. In addition, a comparison is made between the most important results of the field study and the results of the previous studies, as follows:

2. Analysis of the questionnaire data:

First hypothesis: The use of Islamic financial engineering Instruments helps in reducing the impacts of financial crises.

Table (2)

The frequency distribution of the responses of the sample members of the study for the first hypothesis phrases

No	Sentences	Frequency and percentage%									
		Strongly Disagree		disagree		Neutral		Agree		Strongly agree	
		F	P	F	p	f	P	F	P	f	P
1	The use of Islamic Ejarah instruments helps in reducing the impacts of financial crises	26	11.6%	26	11.5%	33	14.7%	60	26.7	80	35.6%
2	The use of Islamic Musharakah formula helps in reducing the impacts of financial crises	23	10.2%	29	12.9%	40	17.8%	56	24.9%	77	34.2%
3	Using Islamic Murabaha formula helps in reducing the impacts of financial crises	30	13.3%	18	8%	46	20.4%	65	28.9%	66	29.3%
4	The use of Islamic Salum formula helps in reducing the impacts of financial crises	14	6.2%	27	12%	35	15.6%	74	32.9%	75	33.3%
5	Using the Islamic Mudaraba formula helps limit the effects of financial crises	35	15.6%	40	17.8%	50	22.2%	49	21.8%	51	22.3%

Source: Prepared by researchers, based on field study’s data, 2023

From table (2) that explains the ratios and frequencies of the hypothesis expressions, which states, “The use of Islamic financial engineering Instruments helps in reducing the impacts of financial crises. ”, the researchers noticed that, the respondents, answers are strongly agree and agree.

Table (3)

The mean and the mode of the responses of the sample members of the study for the phrases of the first hypothesis

No	Sentences	Mean	Mode	Explanation
1	The use of Islamic Ejarah instruments helps in reducing the impacts of financial crises	4.01	4	Strongly agree

2	The use of Islamic Musharakah formula helps in reducing the impacts of financial crises	4.00	5	Strongly agree
3	Using Islamic Murabaha formula helps in reducing the impacts of financial crises	4.05	5	Strongly agree
4	The use of Islamic Salum formula helps in reducing the impacts of financial crises	4.9	5	Strongly agree
5	Using the Islamic Mudaraba formula helps limit the effects of financial crises	4.16	5	Strongly agree

Source: Prepared by researchers, based on field study's data, 2023.

From table (3), the researchers noticing that the descriptive statistics of the first hypothesis's terms which states, "table (3) that explains the ratios and frequencies of the hypothesis expressions, which states, "There are statistical significance relationship exists between **The use of Islamic financial engineering Instruments helps in reducing the impacts of financial crises.**", the arithmetic mean is in the range between (4.00– 4.16) and the mode is in the range between (4-5). According to the Five-digit Liker's scale, the respondents, answers are; strongly agree and agree.

Table (4)
Test of Chi - square for the first hypothesis

no	Sentences	Chi-square	Degree of freedom	Statistical significance
1	The use of Islamic Ejarah instruments helps in reducing the impacts of financial crises	135.553	1	.000
2	The use of Islamic Musharakah formula helps in reducing the impacts of financial crises	120.081	2	.000
3	Using Islamic Murabaha formula helps in reducing the impacts of financial crises	122.343	2	.000

4	The use of Islamic Salum formula helps in reducing the impacts of financial crises	114.631	1	.000
5	Using the Islamic Mudaraba formula helps limit the effects of financial crises	76.338	2	.000

Source: Prepared by researchers, based on field study’s data, 2023.

In order to test the validity of the hypothesis, which states **The use of Islamic financial engineering Instruments helps in reducing the impacts of financial crises.**", the ki square test was used for the axis expressions. The values of the ki square calculated as follows (135.553– 120.081– 122.343– 114.631– 76.338) With degrees of freedom (1), and with the statistical significance for all terms (0.00), When comparing the level of statistical significance with the permissible level of significance (0.05) we find that the level of statistical significance is less than the level of morale, which means there are differences of statistical significance of the terms of the hypothesis.

The second hypothesis: The use of Islamic financial engineering strategies contributes in reducing the impact of financial crises.”

Table (5)

The frequency distribution of the responses of the sample members of the study for the second hypothesis phrases

No	Sentences	Frequency and percentage%									
		Strongly Disagree		Disagree		neutral		Agree		Strongly agree	
		F	P%	F	P	f	p	F	P	F	P
1	Using short-term hedging strategies contributes in reducing the impacts of financial crises	21	9.3%	40	17.8%	55	24.4%	50	22.2%	59	26.2%
2	Using long-term hedging strategies contributes in reducing the impacts of financial crises	13	5.8%	18	8%	45	20%	64	28.4%	85	37.8%
3	The strategy of investment opportunities inside and outside the financial markets	24	10.7%	33	14.7%	51	22.7%	58	25.8%	59	26.2%

	contributes in reducing the impacts of financial crises										
4	The dynamic operating strategy of new financial products contributes in reducing the impacts of financial crises	11	4.9%	25	11.1%	63	28%	51	22.7%	75	33.3%
5	The strategy of identifying financial risks in financial instruments contributes to addressing the effects of financial crises	31	13.8%	19	8.4%	58	25.8%	55	24.4%	62	27.5%

Source: Prepared by researchers, based on field study's data, 2023.

From table (5), which explains the ratios and frequencies of the hypothesis terms, which states, "The use of Islamic financial engineering strategies contributes in reducing the impact of financial crises." the researchers noticed that, the respondents, answers are strongly agree and agree.

Table (6)

The mean and the mode of the responses of the sample members of the study for the phrases of second hypothesis

No	Sentences	Mean	mode	Explanation
1	Using short-term hedging strategies contributes in reducing the impacts of financial crises	4.03	4	Strongly agree
2	Using long-term hedging strategies contributes in reducing the impacts of financial crises	4.10	5	Strongly agree
3	The strategy of investment opportunities inside and outside the financial markets contributes in reducing the impacts of financial crises	4.13	5	Strongly agree
4	The dynamic operating strategy of new financial products contributes in reducing the impacts of financial crises	4.01	5	Strongly agree
5	The strategy of identifying financial risks in financial instruments contributes to addressing the effects of financial crises	4.16	5	Strongly agree

Source: Prepared by researchers , based on field study's data, 2023

From table (6), the researcher noticed from the descriptive statistics of the first hypothesis’s terms, which states, “The use of Islamic financial engineering strategies contributes in reducing the impact of financial crises.”, the Arithmetic mean is in the range (4.01– 4.16), and the mode is in the range between (4-5). According to the five-digit Likert’s scale, the respondents’ answers are; strongly agree and agree.

**Table (7)
Test of Chi – square for the second hypothesis**

no	Sentences	Chi-square	Degree of freedom	Statistical significance
1	Using short-term hedging strategies contributes in reducing the impacts of financial crises	127.605	1	.000
2	Using long-term hedging strategies contributes in reducing the impacts of financial crises	132.961	2	.000
3	The strategy of investment opportunities inside and outside the financial markets contributes in reducing the impacts of financial crises	104.245	2	.000
4	The dynamic operating strategy of new financial products contributes in reducing the impacts of financial crises	152.009	1	.000
5	The strategy of identifying financial risks in financial instruments contributes to addressing the effects of financial crises	110.186	2	.000

Source: Prepared by researchers, based on field study’s data, 2023.

In order to test the validity of the hypothesis, which states, “**The use of Islamic financial engineering strategies contributes in reducing the impact of financial crises**”, the Chi-square test used for the axis expressions. The values of the Chi-square calculated as ((127.605– 132.961– 104.245– 152.009– 110.186)), with degrees of freedom (1), and with the statistical significance for all terms (0.00). When comparing the level of statistical significance with the permissible level of significance (0.05) we find that the level of statistical significance is less than the level of morale, which means there are differences of statistical significance of the terms of the hypothesis. From above discussion, the researchers conclude that, the second hypothesis that states, “The use of Islamic financial engineering strategies contributes in reducing the impact of financial crises”, achieved.

5. Results of the study:

After completing the theoretical framework of the study and data, researcher found the following results:

- a. The strategy of identifying financial risks in financial instruments contributes to addressing the effects of financial crises.
- b. The use of Islamic financial engineering Instruments helps in reducing the impacts of financial crises.
- c. The use of Islamic financial engineering strategies contributes in reducing the impacts of financial crises
- d. Using short-term and long-term hedging strategies contributes in reducing the impacts of financial crises.
- e. The use of the Islamic (Mudarabah, Salum) formulas helps in reducing the impacts of financial crises.

6. Recommendations:

Base on the results of this study, researchers recommended the following:

- a. Adopt Islamic financial engineering to develop quality components and building strategies to meet the needs of customers so that these strategies be in accordance with Islamic law.
- b Also must be allocated to specific aspects of Islamic banking services are distinguishable from purely regular services of the bank.
- c. The establishment of crisis management or a committee where all Islamic banks share in addition to the Central Bank and supports research and decision-making bodies in Islamic banks, and focus on the role of Islamic financial engineering in it.
- d. It is clear the urgent need for more scientific research by professionals for Islamic financial gain access to sophisticated engineering.
- e. The researchers hope that this study will be the nucleus of a number of scientific researches that focus on each financial engineering tool, knowing how to deal with these processes in banks' accounting systems, knowing how to deal with them, and exploring their distance from usurious transactions.

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