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THE IMPACT OF RISK MANAGEMENT ON THE IMPLEMENTATION OF BASEL III BY THE LIBYAN BANKING INDUSTRY

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ABSTRACT

The importance of banking for the functioning of the economy and the origin of the funds that finance it motivates the concern of monetary authorities for the stability of these institutions. The sub-prime crisis of 2008 highlighted the risks that affect the banking industry and the associated cost to the economy when they are not properly managed, and their risk is mitigated. The current study has used the quantitative research approach. In the quantitative approach, the researchers used the questionnaire to collect the primary data from the research respondents. The study population was the staff who work in the Libyan banking industry, and the samples were 310 respondents.
The findings of this research have confirmed a positive and significant relationship between risk management and the implementation of Basel III by the Libyan banking industry. Basel III recommends that the authorities monitor the growth of bank credit and other indicators to assess whether excessive risks are being generated in the system financially. Based on this assessment, the authorities would decide when to activate the countercyclical capital to contain excessive credit expansion and, therefore, minimize the probability of severe banking problems.

1. Introduction

Banking activity is characterized by having a high level of leverage; that is, its commercial activities (loans and investments) are financed mainly with resources from the public, which generate a significant proportion of passive contractual obligations. Illustratively, at the end of 2017, Libyan banks had a ratio of liabilities to equity of 10.85 times, which magnifies the importance of adequately monitoring banks' activity to maintain the confidence of depositors in the system preserve financial stability (Ozili 2019). If bank liabilities cannot be paid within the required periods, a liquidity problem will arise in the bank due to a temporary mismatch in cash flows. On the other hand, the cause of non-payment is deterioration in the quality of the assets; then, the bank faces a solvency problem. The prolongation of liquidity problems can also trigger solvency problems in an institution (Feridun and Özün 2020). On the other hand, capital can earn or lose value according to its performance without generating breaches of obligations with its shareholders. Therefore, intuitively, the greater the capital contributed by the owners of a banking entity, the lower the risk of experiencing problems of non-compliance (Kim and Katchova 2020, Merikas et al. 2020).

The importance of banking for the functioning of the economy and the origin of the funds that finance it motivates the concern of monetary authorities for the stability of these institutions (O'Brien and Farooqi 2019). The sub-prime crisis of 2008 highlighted the risks that affect the banking industry and the associated cost to the economy when they are not properly managed and mitigated. Precisely about this crisis, the Basel Committee on Banking Supervision (from now on referred to as the Basel Committee or simply the Committee) reviewed its capital adequacy framework intending to correct the shortcomings detected in terms of quality and quantity of capital and of the risk coverage, process that ended in December 2017 with the publication of the final version of the Basel III Capital Accord (Farooqi and O'Brien 2019). Meanwhile, the legal framework that governs the Libyan banking sector in terms of capital recorded its most significant changes in 1986 and 1997, which indeed Libyan banking is subject to the recommendations of the Basel Capital Accord I, which came into force in 1988 and was replaced by Basel II in 2004 (Xiong et al. 2018). For this reason, local banking regulation has significant delays concerning the evolution of international standards. At least three factors make the implementation of Basel III in Libya desirable (Brester and Watts 2019). The first one is that the Basel standards strengthen the solvency of the bank. Implementing these standards would improve the competitiveness of Libyan banks, both locally and internationally, facilitating access to new financing sources, more diversified, lower cost or longer-term, thus contributing to greater system stability. It is worth remembering that many jurisdictions in the region are already transitioning towards these standards, including Argentina, Brazil, Mexico, Peru and Colombia (Mignola, Ugoccioni and Cope 2016).

This study aims to find out the impact of risk management on the implementation of Basel III by the Libyan banking industry. This research will provide a comprehensive literature review of the research variables. The following sections

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will show the methodology used in this research and the tests and examinations used in the study. This paper will also discuss the findings of this research and include a conclusion for this research.

2. Literature Review

Risk management is the process of identifying, analyzing, and responding to risk factors over the life of a project and for the benefit of its objectives. Appropriate risk management involves the control of possible future events. In addition, it is proactive rather than reactive. Risk management systems are designed to do more than identifying risk. The system must also be able to quantify the risk and predict its impact on the project.

Consequently, the result is an acceptable or unacceptable risk (Ramlall 2018). The acceptance or non-acceptance of risk often depends on the level of tolerance of the project manager for the risk. Suppose risk management is configured as a continuous and disciplined process of identifying and solving a problem. In that case, the system will easily complement other systems, including organization, planning, and budgeting, and cost control. Surprises will decrease because the emphasis now will be proactive management rather than reactive management.

Once the project team identifies all the possible risks that can harm the project's success, it must choose the ones that are most likely to happen. It will base its decision on past experiences regarding the probability of occurrence, its intuition, the lessons learned, the historical data, among others. At the beginning of a project, there is more at risk than moving towards its completion. Consequently, risk management should be done at the beginning of the life cycle of the project, as well as continuously. The importance is that opportunity and risk usually remain relatively high during project planning (at the beginning of the life cycle), but due to the relatively low level of investment at this point, what is at stake remains low (Leonida and Muzzupappa 2018).

On the contrary, during the execution of the project, the risk falls progressively to lower levels as the unknown becomes known. At the same time, what is at stake increases steadily as the necessary resources are invested progressively to complete the project. The critical point is that risk management is a continuous process and, as such, is carried out not only at the beginning of the project but continuously throughout the life of the project (Chockalingam, Dabadghao and Soetekouw 2018).

The main responsibility of a project leader is to control the management of risks. That is the process of identification, analysis, and response capacity to all possible risk factors that could arise during the project. The correct management of risks allows reducing the possibility of the appearance of the risk factor and its impact. Based on the knowledge of these risks, it can be defined whether a project is viable or not, the project manager's task, who will decide whether or not each of the risks can be taken. The main advantage of risk management is that if it is treated as a continuous and disciplined management system, there is a reduction in surprises. Thus, the emphasis will be on proactivity and not on reactivity, in that the project will be developed with greater agility (Wicks et al. 2017). The risk management process starts when the team identifies the possible threats of the project and which among them are those that are more likely to occur according to previous experience, statistical data, etc. The time to make this identification must be before starting the project life cycle, although risk management continues throughout the life of the same. In this process, new risks will be identified, and the presence of others will be annulled; all must be managed. The deliverable that emerges from this identification is a risk register, which allows this information to be shared by all team members (Le, Nasir and Huynh 2020).

After the registration is completed, an assessment of each risk is made. A value is given to each risk, and according to that, it is decided where the efforts will be concentrated. At this point in the risk management process, it defines what type of risk the project faces and decides what should be done with each of them. Normally, it is often to focus on those risks high and medium-high severity and likelihood (Alhammadi, Archer and Asutay 2020).

After the identification and analysis, the management includes the generation of responses to each risk, and these can be of three types: the elimination of risk, something that is achieved by eliminating the cause; the mitigation, i.e. reducing the monetary value of a risk after mitigating the likelihood of occurrence; and the acceptance, that is, accept the consequences of risk. In the latter case, a contingency plan is usually made, and corrective measures are taken to solve the problems that arise as the consequences of the accepted risks are presented. Finally, monitoring and control begin. The risk management plan is updated, making use of the risk register, a document that is gradually being completed with descriptions of the actions proposed in each case (Grira and Labidi 2020). The registry must be rich in information; it must include, for example, the costs included in each measure that must be taken. The contingency plan should be used when a problem arises and should also be explanatory and have determined the cost of each movement. Keeping track of risks is the only way to get risk management to work. Information on the risks should be included in each project status report document, as this will avoid surprises that could jeopardize the execution of the project (Oricchio et al. 2020).

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3. Research Model and Hypotheses

Pham, Hoang and Doan (2020) state that this was the basis of the Dodd-Frank Act or even sees it as the basis of the same. Following Pinedo (2011), it can be said that in December 2009 the most radical changes were enacted in the financial sector, approving the proposal above that would create a Financial Stability Board and a Financial Consumer Protection Agency. Finally, in July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act were approved. Swamy (2020) speaks of a global reform that touches all the critical points from the crisis. Its main characteristics are: raising the capital and liquidity requirements, increasing regulation in those entities that suppose a systemic risk, establishing a resolution authority for those intermediaries with difficulties with new rules for the degrees and derivatives, protecting the consumer, and achieving greater international protection. Figuet, Fox, Christensen and Madsen (2019) underscore the most forceful aspects of this law. They talk about a redesign of the institutional framework. This is based on some of the events that occurred in the crisis, where financial stability or consumer protection was diluted in the different agencies. Therefore, one of the main changes introduced is the competence of the regulatory and supervisory agencies so that it can be clear about who is responsible for what. Thus, two new regulatory bodies are created, the Financial Stability Board (CEF) and the Consumer Protection Agency (CFP, for its acronym in English Bureau of Consumer Financial Protection). The CEF was created with the objective of identifying and responding to emerging risks throughout the financial system, advising the Federal Reserve (FED) on the identification of those entities that pose a high systemic risk and facilitating the exchange of information and coordination (Farooqi and O'Brien 2019).

Topcu (2008) emphasized the importance of risk management in banking in his study. In the study, risk management was examined, and information was given about the relationship between credit risk and credit risk measurement methods and capital adequacy. Choudhury and Daly (2019)examined the reflections of Basel criteria on the banking sector in Turkey in their study. In this study, Vakıfbank was chosen as a model bank, and the compliance of this bank with the criteria was investigated. Bacheer, ElMassah and AlSayed (2019) handled risk management in his study and examined the relevance of Basel II criteria to risk management. Abdul Rahim et al. (2019) examined credit rating methods and practices in their study and surveyed credit rating. This survey has evaluated the study with the method it has determined. Hence this research proposes the following hypothesis.

H1: There is a positive and significant relationship between risk management and the implementation of Basel III by the Libyan banking industry.

Based on the above arguments this research proposes the following conceptual framework:

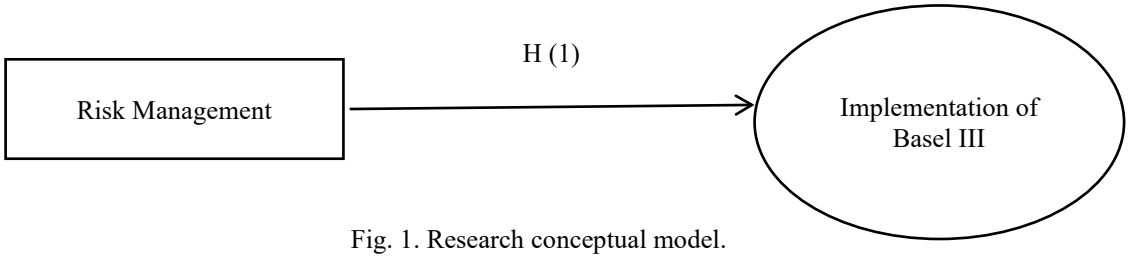

Fig. 1. Research conceptual model.

4. Methodology

The current research has employed the quantitative research approach because it presents facts and events in an observable, measurable, and numerically expressible manner by objectifying them. The aim is to measure the social behaviors of individuals objectively through observation, experiment, and test and to explain them with numerical data baes on descriptive and analytical approach (Saeed, Bekhet and Dhar 2017); (Saeed, and Bekhet 2018)..

A quantitative survey was conducted, which was used as a method of collecting data for this research. A quantitative survey is ideal for use in a cross-sectional study like this, where data is collected just once from the research population. There is generally one kind of survey used: the quantitative survey (questionnaire) (Creswell and Creswell 2017).

The required data for this study will be collected from the banking industry in Libya. All the involved staff dealing with the Basel cord implementation forms the population of this study. The study population is all the banking staff dealing with the Basel cord in the Libyan banking industry. The following bank's list represents the population of the study.

1) Libyan Arab Foreign Bank
2) National Commercial Bank
3) National Agricultural Bank of Libya
4) Arab Group Bank

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5) Aman Bank for Commerce and Development

6) Bank of Commerce and Development

7) Sahara Bank

8) Gumhouria Bank

9) Central Bank of Libya

10) Banque Sahélo-Saharienne pour l'Investissement et le Commerce.

In statistics, the sample size is known as one certain number of subjects or things that make up the sample drawn from a population, necessary for the data obtained to be representative of the population.

Determining the sample size is based on the equation of Krejcie and Morgan (1970) as follow:

$S = X2NP (1 - P) \div d2(N - 1) + X2P(1 - P)$

s = required sample size.

X2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

Hence the sample size is 310.

The SPSS was used in the study for testing the relationships between the independent variables and the dependent variable.

5. Data Analysis and Results

To achieve the research objective, the descriptive statistics analysis was employed to clarify the respondent's profile, the assigned factors of the research, the descriptive analysis shows the mean and standard deviation. Before proceeding to the inferential tests, explanatory tests were used; the purpose of conducting the explanatory test is to examine the respondent's profile, reliability and validity of the used model, several tests such as normality test, reliability test, and convergent validity. And finally, the correlation test was employed.

5.1 Respondents Profile

The profiles of respondents are tests that are used to make sure that all the respondents were selected randomly. This test was also used to identify the background of the respondents. For this reason, the profiles of respondents contained five criteria's, which are gender, age, education level, bank type, and bank tenure. According to the following table 1, the research respondents had two gender categories, which are male and female. The male category had a 60.3% with n = 187 from the total 310 respondents. At the same time, the female category had a 39.7% with n = 123 from the total 310 respondents. It is confirmed that most of the respondents were males. According to the following table 1, the research respondents were divided into several age groups, which are 18-25 years old, 26-34 years old, 35-44 years old, and above 45 years old. The first group is 18-25 years old, with 9.03% and n = 28 from 310 respondents. The second group falls between 26 and 34 years old, with 29.03% and n = 90 from 310 respondents. The third group is between 35 and 44 years old and has 43.23% and n = 134 from 310 respondents. The last group, 45 years old and above, has 18.71%, with n = 58 from 310 respondents. There was a variety in the different age categories for the participants in this study, with a small majority for the age level from 26 to 34 years old. As shown in Table 1, the research respondents had several education levels: diploma, bachelor, master, and PhD. Following (Coppolaro), the first education level shows 15.8% from 49 observations based on 310 respondents.

The second education level is bachelor's degree holders showing 58.7% with n = 182 from 310 respondents. The third education level is master's degree holders with 20.3% and n = 63 from 310 respondents. The last education level PhD holders account for 5.2% of the total 310 respondents with n =16. Based on table 1, the research respondents have two bank categories, which are private and public. The private bank category had a 59% with n = 183 from the total 310 respondents. At the same time, the public bank category had a 41% with n = 127 from the total 310 respondents. It is confirmed that most of the respondents were working in private banks. As of the public bank works, a controller for the implementation of Basel III code. The bank tenure refers to the working experience within the same bank. Based on table 1, the research respondents were divided into several years of experience groups, from 1 to 5 years, from 6 to 10 years, from 11 to 15 years, and above 16 years. The first group from 1 to 5 years has 34.2% with n = 106 from 310 respondents. The second group from 6 to 10 years provides 40.3% with n = 125 from 310 respondents. The third group from 11 to 15

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years has 14.8%, with n = 46 from 310 respondents. The last group falls above 16 years and has 10.6% with n = 33 from 310 respondents. It is confirmed that most of the respondents were having experience between 1-10 years old.

Table: 1 Respondent's profile

Gender	Frequency	%	Education level	Frequency	%
Male	187	60.30%	Diploma	49	15.80%
Female	123	39.70%	Bachelor	182	58.70%
Total	310	100	Master	63	20.30%
Age	Frequency	%	PhD	16	5.20%
18-25	28	9.03%	Total	310	100
26-34 years	90	29.03%	Bank tenure	Frequency	%
35-44 years	134	43.23%	1-5 years	106	34.20%
45 and above	58	18.71%	6-10 years	125	40.30%
Total	310	100	11-15 years	46	14.80%
Bank type	Frequency	%	above 16 years	33	10.60%
Private	183	59.00%	Total	310	100
Public	127	41.00%			
Total	310	100			

5.2 Normality Test

The normality test has been used to ensure that the questionnaires had a normal distribution of the data. This test has used the Skewness and Kurtosis values to determine the normality. According to (Hair, Sarstedt, Ringle, & Mena, 2012), the accepted values for Skewness are to be between -1 and 1, while the accepted values for Kurtosis are between -2 and 2.

According to Table 2, the variables risk management and implementation of Basel III had an acceptable range of Skewness and Kurtosis values, where the Skewness values ranged between -0.663 and -0.456. In the same line, the Kurtosis values were ranged between 1.233 and 2.762.

Table: 2 Results of Skewness and Kurtosis for Normality Test

Constructs	Skewness	Kurtosis Statistic
Risk management	- 0.663	1.233
Implementation of Basel III	- 0.456	2.762

5.3 Construct Reliability

The construct reliability test has been used in the study to find out the variables' items internal consistency. This test has used two main factors to determine the internal consistency: Cronbach alpha and composite reliability; these two factors should be greater than 0.7 to be acceptable. The conclusion was drawn based on the results from table 3:

- Risk management items have shown great internal consistency with Cronbach alpha and composite reliability = 0.898 and 0.921, respectively.
- Implementation of Basel III items has shown great internal consistency with Cronbach alpha and composite reliability = 0.922 and 0.937, respectively.

To ensure the reliability and valid the data is, convergent validity is another test to ensure data validity. This test uses the average variance extracted (AVE) values. According to Anderson (2017), the AVE should be greater than 0.5. Based on table 3, the variables (risk management and implementation of Basel III) have acceptable AVE values, ranging between 0.664 and 0.681.

Table: 3 Reliability and convergent validity

Constructs	Cronbach's alpha	Composite Reliability	Average Variance Extracted (AVE) (> 0.5)
	(> 0.7)	(> 0.7)	
Risk management	0.898	0.921	0.664
Implementation of Basel III	0.922	0.937	0.681

5.4 Descriptive Statistics

As the name implies, the descriptive analysis consists of describing the key trends in the existing data and observing situations that lead to new facts. This analysis is based on one or several research questions and does not have hypotheses. In addition, it includes the collection of related data, then organizes, tabulates, and describes the results.

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A basic descriptive analysis involves calculating the simple measures of composition and distribution of variables. Depending on the type of data, they can be proportions, rates, ratios, or averages. In addition, when necessary, as in the case of surveys, association measures between variables can be used to decide whether the observed differences between women and men are statistically significant or not.

As shown in table 4, the minimum measurement scale was 1, while the maximum measurement scale was 5. The mean scores for the variable, i.e., for risk management and implementation of Basel III, = 3.708 and 3.778, respectively. These results confirm that most respondents were in average agreement with the items stated in the questionnaire. Also, these results confirm the essential role of risk management in the implementation of Basel III. Furthermore, the standard deviations for the variable were 0.558 and 0.688, respectively.

Table: 4 Descriptive Statistics for Study Variables

	N	Minimum	Maximum	Mean	Std. Deviation
RM	310	1.00	5.00	3.708	0.558
IB	310	1.00	5.00	3.778	0.688

RM: risk management; IB: implementation of Basel III

5.5 Direct Effect Test

The direct effect test is employed in the study to examine the correlation between two variables by a correlation coefficient, whose value oscillates between -1 and +1. If the correlation coefficient is towards +1, a positive relationship between the variables and -1 indicates a negative relationship between the two variables. This test aims to identify the relationship between the independent variable (risk management) and the dependent variable (implementation of Basel III in the Libyan banking industry). The following conclusion was drawn based on the results on the following table 5:

- There is a positive and significant relationship between risk management and the implementation of Basel III Cord in the Libyan banking industry with r = 0.198, t-value = 4.613, and a significant level of 0.000.

Table: 5 Summary of the Direct Effect

Hypothesis	Relationship	Std Beta	Std Error	t-value	p-value	Decision
H1	RM -> IB	0.198	0.043	4.613	0.000	Supported

6. Discussion and Implications

The discussion section is the last step in the process of the findings. This section presents the results related to the research hypothesis and compares them with the results and findings of the previous studies. The most important result of this research can be seen in the result of the direct effect test, which was risk management and the implementation of Basel III Cord in the Libyan banking industry with r = 0.198, t-value = 4.613, and a significant level of 0.000.

This result is supported by the previous studies, where Mignola, Ugoccioni and Cope (2016) state that this was the basis of the Dodd-Frank Act or even sees it as the basis of the same. Following Wicks et al. (2017), it can be said that in December 2009, the most radical changes were enacted in the financial sector, approving the proposal above that would create a Financial Stability Board and a Financial Consumer Protection Agency. Finally, in July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act were approved. Chockalingam, Dabadghao and Soetekouw (2018) speak of a global reform that touches all the critical points from the crisis. Its main characteristics are raising the capital and liquidity requirements, increasing regulation in those entities that suppose a systemic risk, establishing a resolution authority for those intermediaries with difficulties with new rules for the degrees and derivatives, protecting the consumer, and achieving greater international protection. Figuet, Leonida and Muzzupappa (2018) underscore the most forceful aspects of this law. They talk about a redesign of the institutional framework. This is based on some of the events in the crisis, where financial stability or consumer protection was diluted in the different agencies. This is why one of the main changes introduced is the competence of the regulatory and supervisory agencies to be clear about who is responsible for what. Thus, two new regulatory bodies are created, the Financial Stability Board (CEF) and the Consumer Protection Agency (CFP, for its acronym in English Bureau of Consumer Financial Protection). The CEF was created to identify and respond to emerging risks throughout the financial system, advising the Federal Reserve (FED) to identify those entities that pose a high systemic risk and facilitate the exchange of information and coordination. Abdul Rahim et al. (2019) emphasized the importance of risk management in banking in their study. In the study, risk management was examined, and information was given about the relationship between credit risk and credit risk measurement methods and capital adequacy.

7. Conclusion

The completion of Basel III in December 2017 was an important milestone: the culmination of the global reform of the regulatory framework that began after the financial crisis. This package of reforms has made it possible to increase the

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quality and quantity of entities' capital significantly and to respond to a greater variety of banking risks; In addition, it has been reinforced with the inclusion of macro-prudential elements and multiple support measures aimed at mitigating excessive leverage and liquidity risks. However, the full, timely and consistent implementation of Basel III remains essential to build a resilient financial system, maintain public confidence in regulatory ratios, and provide fair, competitive conditions for internationally active banks. Therefore, for supervisors, the completion of Basel III is just the starting gun in the long race to ensure effective implementation and effective supervision in the post-Basel III context.

The current research has used the quantitative approach to collect primary data from the research sample. This research has used the questionnaire to be the collection tool for the data. The required data for this study was collected from the banking industry in Libya. The study population was all the banking employees dealing with the Basel cord in the Libyan banking industry. Therefore, all the involved staff dealing with the Basel cord implementation forms the population of this study. For the current research, the unit of analysis was 310 employees that are dealing with Basel III from 10 banks.

This study found a positive and significant relationship between risk management and the implementation of Basel III Cord in the Libyan banking industry. Basel III recommends that the authorities monitor the growth of bank credit and other indicators to assess whether excessive risks are being generated in the system financially. Based on this assessment, the authorities would decide when to activate the countercyclical capital to contain excessive credit expansion and, therefore, minimize the probability of severe banking problems.

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