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Analyzing Credit Risk Management in Commercial Banks: An Exploratory Research about the Opinions of a Sample of Managers and heads of departments in selected commercial banks in Erbil City (2021)

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Abstract

Section One: - Introduction

1. 1 Preface

Banks are vital to any healthy economy due to their crucial role in society. Nowadays, they provide a wide range of services and products. Their principal function is to transfer surpluses into deficit units by taking deposits from the community and giving them back to the community through lending (Paddy, 2012) as providers of financial resources and information to the economy. They even play a more critical function in developing economies. Borrowers, "individuals and businesses," have no easy access to capital markets. Therefore, well-functioning commercial banks accelerate economic growth, while poorly functioning ones hinder economic development and thus increase poverty (Muye and Muye, 2017).Lending is one of the principal types of banking activity, which is essential for meeting the ever-growing consumer needs and taking part in the production and socio-economic development of the country. Various forms and types of banking credits demonstrate that lending is the core of banking as a source of profit, while there is a constant demand from individuals and business entities (Yanenkova et al., 2021).On the other hand, these banks face different risks that need intervention with various protection ways to decrease these risks. Risk management (RM) is the procedure for identifying, monitoring, and measuring risk (Spucháková & Adamko 2015). One of these risks is CR, which these banks face due to lending and credit processes. CR is associated with the businesses of financial institutions as the financial position of a borrower deteriorates (Afriyie et al., 2018). Banks have developed credit scoring models to

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improve evaluating creditworthiness process during the credit evaluation process to reduce CR and promote lending quality (Paddy, 2012).

1.2 The Importance of the research: - Could be summarized as the following: - Managing CR allows commercial banks to understand the behavior of their customers to pre-assess their degree of the risk

- The research reveals how important CRM is in financial institutions and how they cannot possibly be stable, achieve their future objectives and survive.
- CRM improves the performance of commercial banks and secures a competitive advantage.
- Advanced CRM prevents such banks from losses and the possibility of bankruptcy.

1.3 **Objectives of the research**: - They are explained as follows: -

- To clarify CRM in selected banks.
- The research aims to demonstrate the impacts of various CR policies implemented by such banks in Erbil city.
- To determine whether the policies implemented as precautions contributed to risk reduction.
- To assess the Central Bank's and monitory authorities' roles in controlling banking CR.
- To evaluate the role of these banks' management in CRM.
- To evaluate the CRM technology and software used by these banks.
- To explain whether or not any other related factors affect CR.
- To help researchers and bank decision-makers design and develop a proper, robust, and advanced CRM policy.
- To add additional research in this field for interested people and to know more about CRM.

1.4 Research Problem: -

According to the financial and banking literature, credit risks are the real threat to commercial banks' safety, stability, and survival. As a result, CR issues and the need for research and studies to offer specific ways and tools to mitigate their effects are needed.

On the other hand, mismanagement of risks, particularly credit risks, and an improper study of risks scientifically and realistically have disastrous consequences on commercial banks' safety, stability, and survival.

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Selected commercial banks face struggles in implementing effective and efficient CRM policies and plans, their internal weakness related to procedures and tools implemented for controlling CR is an additional burden for them.

In light of the preceding, the research aims to analyze the credit risk management process in the selected banks by studying their policies and procedures followed, the technology and programs used to manage risks, and the role of their management in this context, analyzing the central banks' role concerning these risks with an indication of the impact of other factors associated with those risks.

1.5 Questions of the research: - The following questions could draw from the hypothesis: -

- What is the current situation related to CRM in selected banks?
- What is the role of the Central Bank and monitory authority in controlling banking CRs?
- What is the function of the management department of selected banks and their CR management department in controlling CR?
- How appropriate are the used technology and software by selected banks for CR management?
- Are there any other factors that affect CR in selected banks?
- Did the selected banks make the right decisions regarding CRM policies?

1.6 Hypothesis of the research: - The research depends on two hypotheses: -

- Selected commercial banks are going through a hard time assessing and managing risks that can damage their business.
- Banks selected need strong and developed RM policies to decrease such risks to the lowest rate.

1.7 The sample of the research: - The research has the following limitation: -

Time frame: 2021

Location: Erbil City

Research Sample: Bank of Beirut and the Arab Countries “BBAC”,Byblios Bank, Middle East Bank, Baghdad Bank, Region Trade Bank and Trade Bank of Iraq.

1.8 Methodology of the research: - The research shows the performance of the selected commercial banks in terms of CRM. The theoretical framework of the research utilizes both deductive and qualitative methods. Qualitative and quantitative methods were utilized for the collected data. The data was obtained from filling out (59) questionnaires by managers and heads of departments in selected banks. In addition, the SPSS software was utilized for data analysis.

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1.9 Obstacles of the research: - Lack of actual and accurate documents and data from the examined institutions. Incorporating the cooperation of the managers in the selected banks made it slower. Banks are usually very busy financial institutions, so the absence of enough time to meet an experienced employee in a particular field is another difficulty.

1.10 Structure of the research: - The research begins with section One, titled Introduction, providing a general overview of the research.

Section Two, with the title Theoretical Outline of CRM, is the theoretical part of the research, containing a literature review, CR management, and CR measurement.

Section three, titled "Practical Outline of CRM in Selected Commercial Banks," is the practical part of the research and is divided into six sub-parts explaining the actual data of selected banks.

Finally, section four contains conclusions and suggestions.

Section Two: - Theoretical outline of credit risk management

2.1. Conceptual backgrounds:Credit is a term used for a contractual agreement that allows a borrower to obtain something of value and agrees to repay the lender later, usually with interest (Afriyie et al., 2018). CR is an apparent risk type that banks and other financial companies must handle. Thus, CR arises when borrowers fail to fulfil the agreed-upon terms the way they promised to pay back the loans with interest to the lender at their mature date (Apanga et al., 2016). External and internal factors are behind this risk. The first is related to the state of the economy, fluctuations in commodity and equity prices, foreign exchange rates, interest rates, and government policies while the second one is related to deficiencies in banking management, a lack of credit limits, inadequately defined instructions for loan officers, an overreliance on collateral, inappropriate risk pricing, a lack of lending review mechanisms, and post-sanction monitoring (Spucháková & Adamko 2015).In the banking sector, CR occurs when payments are either delayed or not made at all, which may cause cash flow problems and can affect banks' liquidity (Ud Dowla, 2010). The essential goal of CRM is to mitigate the effects of risks and reduce them. Generally, lending is the prime and most obvious source of the CR of banks (Brigham et al., 2016). Credits can be financial (loans) or goods and services, such as consumer credit (Tetteh, 2012).However, the credit includes any postponed repayments given out by a lender to a borrower (Afriyie et al., 2018).

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According to previous research by Liberman (2016) and Koulafetis (2017), there are various types of credit, including financial credit, consumer credit, public credit, investment credit, mortgage credit, and international credit. Individuals' motivations for obtaining credits differ between individuals and organizations (Afriyie et al., 2018). The rationale and nature of credits are three time periods: short-term, medium-term, and long-term loans (Sedlak et al., 2016).

Short-term loans are advances, for instance, personal loans, extended to the borrower with a payback period of not more than five years.

Medium-term loans are for financing small and medium-sized enterprises with a repayment period of between five and ten years.

Long-term loans are used for financing large businesses. As the name points out, the repayment period tends to be more than ten years.

2.2. Credit Risk Management:Managing CR in the banking business is of great importance as the role of banks dramatically increases day-to-day economic activities, particularly when it comes to the market economy. The main goal of CRM is to diminish the effects of risk (Afriyie et al., 2018).

CRM essentially contains the procedures implemented by financial institutions intending to mitigate or avoid CR. CRM could be a form of engineering, where its models and structures are avoiding financial failure (Ud Dowla, 2010). According to a study done by Paddy, J. (2012), the origin of CR dates back thousands of years ago, and Krimsky and Plough (1988) date the beginning of risk awareness back to Ancient Mesopotamia.

2.3. Credit Risk Measurement: This process is a crucial part of the banking business, thus the RM process. Quantifying CR could be complicated for several reasons, like the lack of sufficient data, the diversity of involved debtors (borrowers), and the variety of default causes. Indeed, there are three methods for CR measurement in the banking sector: credit rating, credit scoring, and credit modeling (Ud Dowla, 2010). These methods of CR measurement are as follows:

2.3.1. Credit Risk Rating:-This rating aims to improve the creditworthiness assessment of an individual or corporation by foreseeing the probability of default. It depends on the financial history, current assets, and liabilities of the applicant (Spuchľáková & Adamko 2015).

2.3.2. Credit Scoring Systems:-Credit Scoring Systems: a method used by bankers to explain applicants' creditworthiness. Thus, a credit score is a numerical value based on a statistical analysis of the borrower’s credit report

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history. Loan providers use this method to assess the potential risk of lending and minimize losses due to bad debt. Based on this method, banks and financial institutions determine qualified customers for a loan, the interest rate, and the amount (Ud Dowla, 2010; Spuchľáková & Adamko, 2015).

2.3.3. Credit Risk Modelling: - An approach used to aid banks in quantifying, aggregating, and managing CR across different geographical and product lines. Therefore, the outputs can be crucial for banks in designing their RM and economic capital assignment. Those models can predict the probability distribution function of losses that may stem from a bank's credit portfolio and the potential benefits gained from the application of CR models in the banking business. They are responsive and informative tools, offering banks a framework for exploring CR at the time (Nikcevic, 2005, Dowla, 2010 Yanenkova et al., 2021). Due to the lack of transparency in most developing countries, there is always a need for more studies using different methods of conducting them to find out the problems associated with risks and thus how to hedge and mitigate.

Section Three: - Practical outline of CRM in selected commercial banks

3.1. Preface: The chapter examines CRM from six different perspectives. (59) Questionnaires distributed to managers and heads of departments in selected banks aiming to clarify the current state of CR and present a detailed view of the strengths that enhance these banks' capabilities and the weaknesses that limit their ability to face it.

3.2. Analyzing Descriptive Statistics about managers and heads of departments.Table 3.1 presents the following information about the selected sample:

Table: 3.1: - Descriptive Statistics about managers and heads of departments

Gender	F	%	Age	F	%	Years of Experience	F	%	Scientific Certificate	F	%	working in specification field	F	%
Male	29	49.2	20-30	22	37.3	1-5	18	30.5	Preparatory	0	0	Yes	52	88.1
Female	30	50.8	31-40	10	16.9	6-10	14	23.7	Diploma	10	16.9	No	7	11.9
			41-50	14	23.7	11-15	12	20.3	Bachelor	48	81.4			
			51-60	5	8.5	16-20	9	15.3	H. diploma	1	1.7			
			61-70	6	10.2	21-25	1	1.7	Master	0	0			
			+70	2	3.4	+26	5	8.5	PhD	0	0			

Resources: - Prepared by researchers from questionnaire and SPSS program

Regarding the gender of the selected sample, Table 3.1 shows a balance between both genders. The male frequency is (29) at 49.2%, while the female is (30) at 50.8%, representing a balance between women and men related to work.

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The age of the sample is six groups. The first is (20–30) years with (22) frequencies and 37.8%, which is the biggest group, while the smallest one is the last age group with (2) frequencies and 3.40%, while the other high groups are (41-50) and (31-40), with (14) and (10) frequencies consecutively.

The samples' years of experience are six groups. The biggest group is (1–5), with (18) frequencies and 30.5% as less experienced managers and heads. Then groups of (6–10(, (11–15), and (16–20) were analyzed with (14), (12), and (9) frequencies consecutively, and 23.7%, 20.3%, and 15.3% consecutively as medium-to-high-experienced managers and heads. The smallest group is 21–25, with (1) frequency of 1.7%.

In the same context, the scientific certification in the sample contains five degrees, from diploma to Ph.D., and the results show that managers and heads with bachelor's degrees have the highest frequency, with (48) frequencies and 81.4%, which is the majority of the sample. The Diploma degree is in the second rank with (10) frequencies and 16.9%, followed by the third degree with (1) frequency and 1.7%. Finally, the master's and Ph.D. degrees had a 0% frequency of occurrence.Finally, when it comes to working in a specialized field, most managers and heads work in their fields with (52) frequency at 88.1%, while (7) of them, or 11.9%, are not working in their fields.

The overall judgment about the selected banks related to their manager and head's nature and structure reveals their success benefit from them. They depend on young managers and heads with low-to-intermediate experience. Such policies give youth better opportunities for promotions while simultaneously having positive impacts on such banks' performance. The older workforce with more experience comes at a higher cost and a shorter investment lifetime. This situation refers to the fast expansion of such banks in the Kurdistan region in a short time, and the domestic labor market could not compete with it. But when planning for sustained balanced growth, such banks must consider an equilibrium between depending on the young labor force and experienced and highly certified ones.

3.3. Analyzing the role of the Central Bank of Iraq and monitory authority in controlling banking CRs

Table 3.2 represents finding data related to the role of the Central Bank of Iraq and monitory authorities in controlling banking CRs under six different perspectives as questions.

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Table 3.2: - Analyzing the functions of the Central Bank of Iraq and monitory authorities in controlling banking CRs

Questions	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	SD "σ"
	F	%	F	%	F	%	F	%	F	%		
The Central bank and the monitory authority are implementing effective policies, laws, and legislation for decreasing banking CRs.	0	0	0	0.0	9	15.3	33	55.9	17	28.8	4.136	0.655
The Central bank applies principles of risk management issued by the Basel committee.	0	0	2	3.4	16	27.1	32	54.2	9	15.3	3.814	0.730
The Central bank and monitory authorities make a seasonal and annual follow-up for CRs of commercial banks.	0	0	0	0.0	14	23.7	29	49.2	16	27.1	4.034	0.718
The Central bank and monitory authorities ask for actual conditions of financial position, reports, and other related data from banks.	0	0	1	1.7	11	18.6	29	49.2	18	30.5	4.085	0.749
The supervisory and monetary authorities intervene early to prevent a decrease or decline in the capital.	0	0	0	0.0	13	22.0	31	52.5	15	25.4	4.034	0.694
The Central Bank and its supervisory institutions conduct field checks and assessments for commercial banks	0	0	1	1.7	9	15.3	29	49.2	20	33.9	4.153	0.738
Total											4.042	0.714

Resources: - Prepared by researchers from questionnaire and SPSS program

For the first question. 28.8% strongly agree with such interventions (17 frequencies), and (33) frequencies agree with these interventions (55.9%). However, (9) frequencies (15.3%) chose neutral.

Related to the second question disagree option has (2) frequencies at 3.4%. The neutral option has 16 frequencies at 27.1%, followed by agreeing (32) frequencies at 54.2%, and finally, the strongly agreeing with (9) frequencies at 15.3%.For the third question, the neutral option has (14) frequencies at 23.7%, while the agreeing with (29) frequencies at 49.2%, and finally, the strongly agreeing with (16) frequencies at 27.1%.

On the other hand, the fourth question: Disagree option has (1) frequency at 1.7%, while the neutral option has (11) frequencies at 18.6%, followed by

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agreeing with, which is the biggest one, has (29) frequencies at 49.2%, and finally, strongly agree has (18) frequencies at 30.5%.

About the fifth question, the neutral option has (13) frequencies at 22%, the agree option has (31) frequencies at 52.5%, and finally, the strongly agree option has (15) frequencies at 25.4%.Finally, the results of the sixth question, disagree participated by (1) frequency, at 1.7%. The neutral option has (9) frequencies at 15.3%, the agree-with, as the highest option, has (29) frequencies at 49.2%, and the strongly agree option has (20) frequencies at 33.9%.

The average mean is (4.042) because the majority of the selected banks agree with the functions of the Central Bank of Iraq and monitoring authorities in limiting banking CRs, showing the overall weight of the responses. The standard deviation is (0.714) because some do not agree or choose neutrality.

Few observations and reservations by these banks require the Central Bank and the supervisory authorities to develop their performance, the foundations of their work, and their laws towards best practices because a category within those banks chose neutrality in such evaluations. On the other hand, neutrality refers to uncertain opinions or a lack of experience.

3.4. Analyzing CR policies as precautions in the Bank: Table 3.3 represents finding data related to the existence and applying CR policies as precautions to the bank from six different perspectives as questions. The data was obtained from selected banks through questionnaire forms and analyzed by the SPSS program.

Table 3.4: - Analyzing CR policies as precautions in the Bank

Questions	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	SD "σ"
	F	%	F	%	F	%	F	%	F	%		
Availability of risk management standards in the bank.	0	0	0	0	14	23.7	32	54.2	13	22.0	3.983	0.682
Presence of adequate and proper credit management policies in the bank	0	0	1	1.7	13	22.0	28	47.5	17	28.8	4.034	0.765
CR management strategies and policies applied by the bank are adopted from central bank laws and legislation.	0	0	1	1.7	8	13.6	34	57.6	16	27.1	4.102	0.687
Making seasonal and annual follow-ups for credit by the bank	0	0	0	0	8	13.6	37	62.7	14	23.7	4.102	0.607
Ensuring the existence of adequate capital to meet the risks that the bank may be exposed.	0	0	0	0	8	13.6	31	52.5	20	33.9	4.203	0.664
The bank has its vision and unique risk management strategy.	0	0	3	5.1	6	10.2	29	49.2	21	35.6	4.153	0.805
Total											4.096	0.702

Resources: - Prepared by researchers from questionnaire and SPSS program

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For the first question. 23.7% are neutral (17 frequencies), and (32) frequencies agree (54.2%), (13 frequencies) at 22% strongly agree with the availability of RM standards in selected banks.

Concerning the second question, 1.7% disagree (1 frequency), and 22% are neutral (13 frequencies). While (28) frequencies at 47.5% agree and (17) frequencies at 28.8% strongly agree with having proper credit management strategies and policies in these banks.

For the third question, 1.7% disagree (1 frequency), and (8 frequencies) at 13.6% are neutral. But (34 frequencies) 57.6% agree, and 27.1% (16 frequencies) strongly agree that CR management policies applied by selected banks are from the central bank's laws and legislation.

According to the findings for the fourth question, (8) frequencies at 13.6% are neutral. While (37) frequencies at 62.7% agree and 23.7% (14 frequencies) strongly agree with making seasonal and annual follow-ups for credit by the selected sample.

Related to the fifth question, (8) Frequencies at 13.6% are neutral. (31) Frequencies at 52.5% agree and (20 frequencies) at 33.9% of the sample strongly agree that selected banks are ensuring the existence of adequate capital to meet the risks that the bank may be exposed.

Finally, the sixth question findings reveal that (3) frequencies at 5.1% disagree. (6) Frequencies at 10.2% are neutral. 49.2% as (29) frequencies agree, and (21) frequencies at 35.6% strongly agree that selected banks have their vision and unique RM strategy.

The average mean is (4.096) because the vast majority of the sample agrees with these CR policies and precautions, showing the overall weight of the responses. The standard deviation is (0.702) because some do not agree or are neutral.

According to the finding data, the overall judgment in this context is good, representing implementing proper CR policies as precautions for managing risks with noticing a weakness in provided answers. There are some reasons behind such evaluations, such as the weakness or inexistence of one or some of the mentioned elements in the previous table, besides uncertainty and lack of experience by some of those who filled out the questionnaire.

3.5. Analyzing the role of the management of the bank in CR management

Table 3.5 represents finding data related to the existence of the department of RM in selected banks. The results reveal that such a department exists in (50) frequencies at 84.7% and does not exist in (9) frequencies at 15.3%. This inexistence is a dangerous indicator that threatens the activities of such banks

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due to their disability to detect, measure, and assess the risks, and design policies as precaution and control tools in facing this risk and may lead to losses and bankruptcy.

Table 3.5: - Availability of a department of RM in the banks

Question	Yes		No	
	F	%	F	%
The existence of a department of risk management in the bank	50	84.7	9	15.3

Resources: - Prepared by researchers from questionnaire and SPSS program

Table 3.6 represents finding data related to the management of selected banks and CR management from five different perspectives as questions. The data has been obtained from selected banks through questionnaire forms and analyzed by the SPSS program.

Table 3.6: - Analyzing the role of the management of the bank in CR management

Questions	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	SD "σ"
	F	%	F	%	F	%	F	%	F	%		
The bank has human capacities specialized in risk management	0	0	0	0	18	30.5	28	47.5	13	22.0	3.915	0.726
In-charge managers and employees work to limit possible CRs and losses by mutual understanding between the bank and its customers	0	0	1	1.7	16	27.1	28	47.5	14	23.7	3.932	0.763
Mismanaging risk threatens the existence of the bank	0	0	0	0	16	27.1	25	42.4	18	30.5	4.034	0.765
The risk management department provides reports and data to management and the board of directors about the risks and how to manage them	0	0	1	1.7	8	13.6	36	61.0	14	23.7	4.068	0.666
The bank responds to the recommendations and laws of The Central Bank	0	0	0	0	7	11.9	26	44.1	26	44.1	4.322	0.681
Total											4.054	0.702

Resources: - Prepared by researchers from questionnaire and SPSS program

About the first question: 30.5% are neutral (18 frequencies), while (28 frequencies) at 47.5% agree. However, (13) frequencies (22%) strongly agree with the availability of human capacities specialized in RM in selected banks.
For the second question, 1.7% disagree (1 frequency), and 27.1% are neutral (16 frequencies). While (28) frequencies at 47.5% agree and (14 frequencies) at 23.7% strongly agree that in-charge managers and employees limit potential CRs

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and losses by creating an environment that fosters mutual understanding between the bank and its customers,

Concerning the third question, (16 frequencies) at 27.1% are neutral. (25 frequencies) 42.4% agree, and 30.5% (18 frequencies) strongly agree that mismanaging risks threaten the existence of the selected banks.

The findings for the fourth question show that (1) frequency at 1.7% disagrees and that 13.6% (8 frequencies) are neutral. While (36) frequencies agree at 61%, 23.7% (14 frequencies) strongly agree that the RM department provides reports and data to management and the board of directors about the risks and provides sufficient tools and policies for managing them.

Related to the fifth question, (7) frequencies at 11.9% are neutral. (26) Frequencies at 44.1% agree and (26 frequencies) at 44.1% strongly agree that selected banks are responding to the recommendations and laws of the Central Bank.The average mean is (4.054) because the majority of the sample agrees with the actions and policies of the management of selected banks related to CR management, showing the overall weight of the responses. The standard deviation is (0.702) because some do not agree or choose neutrality.

According to the results, the overall judgment in this context is good (agreement), indicating that the management of selected banks functions well related to the variables mentioned in table 3.6. There are some notes about the results because there are neutral answers with few disagreements, revealing that selected banks need to work on improving such variables or a lack of knowledge in evaluating the actual condition of these banks by some of those who filled out the questionnaire.

3.6. Analyzing the technology and software used in CR management Table 3.7 presents related data to assess the technology and software used by the bank for CR management. A questionnaire was used to collect data from selected banks.

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Table 3.7: - Analyzing the technology and software used for CR management

Questions	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	SD "σ"
	F	%	F	%	F	%	F	%	F	%		
Adopting an early warning system for anticipating current and future risks	0	0	1	1.7	21	35.6	26	44.1	11	18.6	3.797	0.761
Providing software and systems to monitor and measure CR	0	0	0	0	14	23.7	34	57.6	11	18.6	3.949	0.655
Enabling the improvement of CR management processes by the use of big data database technologies and Business Intelligence analytics	0	0	1	1.7	16	27.1	32	54.2	10	16.9	3.864	0.706
The existence of experienced employees in the field of using new and advanced technologies and software used in the risk management process	0	0	0	0	9	15.3	32	54.2	18	30.5	4.153	0.665
Using up to date and advanced technology and software for risk management	0	0	1	1.7	6	10.2	36	61.0	16	27.1	4.136	0.655
Availability of automatic systems for determining returns and risk management	0	0	0	0	12	20.3	30	50.8	17	28.8	4.085	0.702
Total											3.997	0.691

Resources: - Prepared by researchers from questionnaire and SPSS program

Let's start with the first question. 1.7% disagree (1 frequency), 35.6% are neutral (21 frequencies), and 44.1 % agree on 26 frequencies. However, (11 frequencies) 18.6% strongly agree with adopting an early warning system for anticipating current and future risks.

For the second question, 23.7% are neutral (14 frequencies). While (34) frequencies (57.6%) agree and (11) frequencies (18.6% strongly agree that these banks have adequate and proper credit management strategies and policies,

Concerning the third question, 1.7% disagree (1 frequency), and (16 frequencies) at 27.1% are neutral. But (32 frequencies) 54.2% agree, and 16.9% (10 frequencies) strongly agree that the sample improves CR management processes depending on using big data database technologies and business intelligence analytics.

For the fourth question, (9) frequencies at 15.3% are neutral. While (32) frequencies agree (54.2%), 30.5% (18 frequencies) strongly agree with the availability of experienced employees using new and advanced technologies and software used in the RM process by selected banks.

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Related to the fifth question, (1 frequency) at 1.7% disagrees, (6) Frequencies at 10.2% are neutral. (36) Frequencies (61% agree) and (16 frequencies) (27.1% strongly agree) that selected banks use cutting-edge technology and software for RM.Finally, the sixth question findings reveal that (12) Frequencies at 20.3% are neutral. 50.8% as (30) frequencies agree, and (17) frequencies at 28.8% strongly agree with the availability of automatic systems for determining returns and RM in the sample banks.

The average mean is (3.997) because the vast majority of the sample agrees with the quality of technology and software used for CR management, showing the overall weight of the responses. The standard deviation is (0.691) and accepted after viewing the actual condition of the found data.

According to the finding data, the overall judgment is good (an agreement) that the technology and software used by these banks for CR management is considered good quality, with a noticeable weakness and a need for more improvements. The reason is that a specific layer of the sample choice neutrality in giving positive feedback is related to such technologies and software.

3.7. Analyzing other related factors to CR management: Table 3.8 presents related data to analyze other related data to CR management. A questionnaire was used to collect data from selected banks.

Table 3.8: - Analyzing other related factors to CR management

Questions	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	SD "σ"
	F	%	F	%	F	%	F	%	F	%		
Financial analytics helps analyze non-paid credit.	0	0	0	0	16	27.1	25	42.4	18	30.5	4.034	0.765
Financial analytics helps choose specific methods of granting credit	0	0	0	0	10	16.9	35	59.3	14	23.7	4.068	0.640
The bank pays attention to market risks	0	0	0	0	13	22	30	50.8	16	27.1	4.051	0.705
The bank can measure and control the degree of exposure to risk	0	0	0	0	9	15.3	30	50.8	20	33.9	4.186	0.682
Adequate flexibility of the budget structure in the face of market risks	0	0	2	3.4	11	18.6	29	49.2	17	28.8	4.034	0.787
Monitoring the changes in the competitive banking environment by the bank to set appropriate and developed marketing and credit policies	0	0	1	1.7	14	23.7	27	45.8	17	28.8	4.017	0.777
Total											4.065	0.726

Resources: - Prepared by researchers from questionnaire and SPSS program

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Concerning the first question, 27.1% are neutral (16 frequencies), while 42.4% agree (25 frequencies). However, (18) frequencies (30.5%) strongly agree that financial analytics helps selected banks analyze non-paid credit.

For the second question, 16.9% are neutral (10 frequencies). While (35) frequencies at (59.3%) agree, and (14 frequencies) strongly agree at (23.7%) that financial analytics helps such banks choose specific methods for granting loans.

Regarding the third question, (13 frequencies) at 22% are neutral. (30 frequencies) 50.8% agree, and 27.1% (16 frequencies) strongly agree that these banks pay attention to market risks.

The findings for the fourth question show that (9) frequencies at 15.3% are neutral. While (30) frequencies agree at 50.8% and 33.9% (20 frequencies), they strongly agree that the banks under study can measure and control the degree of risk exposure.

Related to the fifth question, (2) frequencies at 3.4% disagree, and (11) frequencies at 18.6% are neutral. (29) Frequencies at 49.2% agree and (17 frequencies) at 28.8% strongly agree with the role of adequate budget structure flexibility in the face of market risk.

Finally, the sixth question findings reveal that (1) frequency at 1.7% disagrees, and (14 frequencies) at 23.7% are neutral. 45.8% agree as (27) frequencies agree, and (17) frequencies agree at 28.8% strongly agree with selected banks monitoring changes in the competitive banking environment to set appropriate and developed marketing and credit policies.

The average mean is (4.065) because the vast majority of the sample agrees with the impacts of these related factors on CR management in selected banks, showing the overall weight of the responses. For the finding data, the standard deviation is (0.726) and represents the actual condition of the finding data related to the sample.

According to the results, the overall judgment is good (agree and strongly agree), revealing the impact of these factors on CR in selected banks. There are notes about the finding data because there are neutral answers with few disagreements, meaning that some of those who filled out the questionnaire are not giving importance to the impact of these factors on CR in selected banks or have a lack of knowledge in evaluating these factors.

Section Four: - Conclusions, Suggestions, and references

4.1. Preface: The chapter includes the most important conclusions and suggestions related to the research, with the used references in this research.

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1. Conclusions: Banks are vital to any healthy economy due to their crucial role in society by transferring surpluses into deficit units mainly through lending, accelerating economic growth. Various types of risks are linked to lending and need intervention with different protection ways to decrease these risks, especially CR. Such banks have developed credit scoring models to improve the evaluation of creditworthiness during the credit evaluation process to reduce CR and promote lending quality.
2. Managing and measuring CR in banking is of great importance as its role dramatically increases day-to-day economic activities to diminish the effects of risk. Generally, selected banks have RM policies to assess and manage the risk that enhances their position in the competitive banking market.
3. The employee nature and structure of the selected banks reveal their success in benefiting from their employees. They depend on young employees with low-to-intermediate experience. This situation refers to the fast expansion of such banks in the Kurdistan region in a short period due to the shortage of a domestic labor market competing with it.
4. The performance of the Central Bank of Iraq and monitoring authorities was successful in limiting and controlling banking CRs in the research period.
5. CR policies and precautions in selected banks are of good quality and developed, representing their good practices in implementing proper CRM policies as precautions. There are notes about selected banks regarding CR policies as precautions that refer to the weakness or inexistence of one or some of the mentioned elements used for assessing CR policies as precautions in these banks.
6. There is a category of selected banks that do not have the department of RM. This inexistence is a dangerous indicator that threatens the activities of such banks due to their disability to detect, measure, and assess the risks and design policies as precautionary and controlling tools to face this risk, which may lead to losses and bankruptcy.
7. The management of selected banks' actions, policies, and strategies related to CRM indicates their good performance.
8. The quality of technology and software used for CRM is good and developed after noticing a weakness regarding the used technology and software in selected banks.
9. Other related factors that affect the CRM process in selected banks are vital when managing CR because they affect it.

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10. The overall assessment of selected banks related to CRM shows the success of these banks in controlling such risk by containing and dealing with it properly, thus showing their strong position in the banking industry. These findings are opposite to the hypotheses of the research.

4.2. Suggestions

1. When planning for sustained balanced growth, such banks must consider an equilibrium between depending on the young labor force and experienced and highly certified ones.
2. Few observations and reservations by these banks require the Central Bank and the supervisory authorities to develop their performance, the foundations of their work, and laws towards best practices in controlling CRs.
3. The notes about selected banks regarding CR policies as precautions necessitate immediate intervention by these institutions to study weak points and take appropriate actions to improve these policies and reduce such risk.
4. All commercial banks must have an RM department by law because its inexistence is brutal and may result in losses and bankruptcy, as well as their existence.
5. The management of selected banks' actions, policies, and strategies related to CRM need to work on improving such variables to make the best available choices in this context.
6. The quality of technology and software used for CRM needs continuous improvements by adopting advanced and updated technologies used in this field.
7. Other factors which affect the CRM process in selected banks need more assessments and studies to know the relationship between these factors and CRM.
8. Finally, commercial banks must know that they face daily challenges related to risks, especially CR needs continuous updating, actions, and policymaking to enhance their overall position in the competitive banking market.

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4.4. Appendix

Salahaddin University
College of Administration and Economy
Banking and Finance Department

Dear respondents,

This questionnaire form is to conduct academic research entitled (**An Analysis of Credit Risk Management in Commercial Banks: An Exploratory Research of the Opinions of a Sample of Managers and heads of departments in the City of Erbil (2021)**), and it is used for purely academic purposes. So, please don't hesitate to express your opinion by filling it out, without the need to mention your name, with high appreciation for your time and effort.

Researchers

1: - Personal information

- Sex □ Male □ Female
- Age: -
- Years of experience:
- Scientific certification:
- Do you work in the specification field? □ Yes □ No

2: - The functions of the Central Bank and the monitory authorities in controlling banking credit risks

- The Central bank of Iraq and the monitory authority are implementing effective policies, laws, and legislation for decreasing banking credit risks.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The Central bank of Iraq applies principles of risk management issued by the Basel committee.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

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- The Central bank of Iraq and monitory authorities make a seasonal and annual follow-up for credit risks of commercial banks.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The Central bank of Iraq and monitory authorities ask for the actual conditions of financial position, reports, and other related data from banks.
- □ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree
- The supervisory and monetary authorities intervene early to prevent any decrease or decline in the capital.
- □ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree
- The Central Bank and its supervisory institutions conduct field checks and assessments for commercial banks.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

3: - Credit risk policies and precautions in the Bank.

- Availability of risk management standards in your bank.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- Presence of adequate and proper credit management strategies and policies in the bank.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- Credit risk management strategies and policies applied by the bank are adopted from central bank laws and legislation.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The bank makes seasonal and annual follow-ups for credit.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- Ensuring the existence of adequate capital to meet the risks that the bank may be exposed.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The bank has its vision and unique risk management strategy.

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□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

4: - Management of the bank and credit risk management.

- The bank has a department for risk management.□Yes □No
- The bank has human capacities specialized in risk management.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- In-charge managers and employees of the bank work to limit possible credit risks and losses by mutual understanding between the bank and its customers.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- Mismanaging risk threatens the existence of the bank.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- Risk management department of the bank provides reports and data to management and the board of directors about the risks and how to manage them?

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The bank responds to the recommendations and laws of the Central Bank.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

5: - Technology and software used by the bank for credit risk management.

- The bank adopts an early warning system for anticipating current and future risks.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The bank provides' software and systems that monitor and measure credit risk.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The use of big data database technologies and Business Intelligence analytics enable the improvement of credit risk management processes.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The bank has experienced employees in the field of using new and advanced technologies and software used in the risk management process.

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□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The technology and software used by banks for risk management are up to date and advanced.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The bank has an automatic system for determining returns and risk management.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

6:- Other related factors.

- Financial analytics helps analyze non-paid credit.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- Financial analysis helps choose specific methods of granting credit.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The bank pays attention to market risks.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- The bank can measure and control the degree of exposure to risk.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- Adequate flexibility of the budget structure in the face of market risks.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree

- Monitoring the changes in the competitive banking environment by the bank to set appropriate and developed marketing and credit policies.

□ Strongly Agree □ Agree □Neutral □ Disagree □ Strongly Disagree