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A STUDY ON CREDIT RISK MANAGEMENT IN HDFC BANK

Dr. Geeta Mulabagula,
Associate professor, Koneru Lakshmaiah Education Fund, KLHGBS,Hyderabad.
Sai Chaitanya,
VADDE
Student, MBA 20 batch,Koneru Lakshmaiah Education Fund,KLHGBS,Hyderabad.
Dr. C. Naga Sivanand,
Entrepreneur and Management consultant, Hyderabad.

ABSTRACT:

Background: Credit risk managementis composed of credit risk policies and procedures for managing credit risk.Non-performing assets have become a big issue for the banks in India. Due to this issue lot of mergers have taken place in the Indian banking system. To review the credit risk management process, in Indian banks, HDFC Bank is selected.HDFC Bank is a private bank, digitalized in 2014, with advanced loan management software and other Information communication technology support. Even with this advanced digitalization and technology, GNPA's were found from 2016 to 2023. A need arose to make a review of the credit management process of HDFC.

Objective: The study's main objective is to review the Credit risk management process in HDFC bank, by analyzing the changes inGNPA from 2016 to 2023.The study also tries to find the relationship and proportion of GNPA's with advances.The study also tries to understand the demand and relationship between credits and deposits for HDFC after covid 19.

Methodology and results: The growth rate of NPA's is calculated through geometric mean. The regression analysis technique is used for finding both relationships between GNPA and Advances and Deposits to credit ratio. The study enables HDFC Bankto review its current credit policy and lending process. The results were,that there is a positive relationship between advances and GNPA's and also credit and deposits. The geometric mean of GNPA's is 11784.28894

Conclusion: Even with a vigorous credit policy and huge spending on ICT and hiring technology-based employees, the HDFC's GNPA is increasing. However, the proportion of GNPAsis considerably low,But with the kind of investment in ICT, The Gross non-performing assets should be almost nill. From this, itcan be concluded that the credit appraisal system can be improvised. The bank has to train the employees to implement the technology while appraising a credit for an individual or an entity.Proper implementation of loan management software and technology may be put together and GNPA's can be made zero further.

Keywords: Credit risk management, HDFC, Gross NPA's, Geometric mean, regression analysis.

INTRODUCTION

Credit risk management is a systematic process of identification, analysis, and measurement, relating to factors of credit risk in respect of loan portfolio. Credit Risk Management is composed of credit risk policies and procedures for managing credit risk. It establishes risk limits and conducts periodic portfolio reviews and stress tests. It exercises oversight on the strategy and underwriting functions of the Credit group managed by the Chief Credit Officer.

Credit risk management prevents the probable risk or reduces the chances of occurrence of the risk. Credit risk management helps bankers protect the valued treasure from unreliable customers, who may defalcate the hard-earned money of depositors. Credit risk involved in the process of lending affects the profits of banks.

Nonperforming assets (NPAs) are recorded on a bank's balance sheet after a prolonged period of non-payment by the borrower. NPAs place a financial burden on the lender; a significant number of NPAs over a while may indicate to regulators that the financial fitness of the bank is in jeopardy.

Definition of NPA

Individuals, corporations, companies, and industrial concerns benefit greatly from commercial bank loans and advances. Bank funding plays a significant role in the expansion and diversification of corporate activity. Bank loans and advances assist businesses in satisfying their short-term and long-term financial needs. Banks' primary responsibility is to provide loans and advances to promote economic growth. Lending by the banking sector is generally favored since it facilitates the transfer of funds from the system to productive uses, resulting in economic growth.

However, the process of lending entails a risk known as credit risk, which emerges from a borrower's failure. Loans that are at risk of default are referred to as non-performing assets. The loan amount is termed a "non-performing asset" if the borrower has missed 90 days of interest or principal payments. Because financial institutions rely on interest payments for income, non-performing assets (NPAs) are an issue and a danger.

Non-performing assets must be classified further into one of three categories based on the length of time the asset has been non-performing and the realizability of the dues: 1. Sub-standard Assets (assets that have been non-performing for less than or equal to 12 months), 2. Doubtful Assets (assets that have been non-performing for more than 12 months as of March 31, 2005), and 3. Loss Assets (assets that are considered uncollectible).

The current study focuses on the management of nonperforming assets (NPAs) of HDFC. If a borrower fails to pay dues in the form of principal and interest for 180 days, the asset is designated as a non-performing asset (NPA). However, beginning in March 2004, if a borrower's dues are not paid for 90 days, the borrower will be placed in default. A non-performing asset (NPA) is a loan or advance for which the primary or first installment has been late for 90 days or more.

Portrayal:

A non-performing asset (NPA) is a loan or advance for which the primary or first installment has been late for 90 days or more. NPAs must classify NPAs as substandard, doubtful, or loss assets.

1. **Inadequate assets:** Assets that have remained non-performing for a period that is not exactly equal to a year.

2. **Suspicious assets:** If an asset has been in the unsatisfactory category for more than a year, it will be delegated to far-fetched.

3. **Misfortune assets:** "A misfortune asset is recognized as uncollectible and of such low value that its duration as a bankable asset isn't justified, notwithstanding the possibility of any rescue or recovery," according to RBI.

Credit and deposit ratio – Relationship and significance.

The credit and deposit ratio is the ratio of assets of banks to liabilities of banks. The ratio helps to assess the liquidity position of the bank and also financial health. It indicates the ratio of core funds utilized for banks' main activity i.e., lending. A high credit-to-deposit ratio indicates liquidity risk and credit risk for the banks. It is an indication that the bank's deposits are not growing to the level of the loans and advances of the bank.

Credit Appraisal system of HDFC bank.

HDFC Loan Management System.

Oracles Loan Management software is used to maintain and provide customer service.

According to “Software suggests’ There are 20 loan management system soft wares. They are, Finn Craft, Finn One Neo, Cloud Bank in, the mortgage office, Autopal software, etc., The recent trends in loan management software are

Complete Digitilization, helps the banks to improve the lending function, including collection of KYC, and the customer's credit analysis.

Unified microservices permit banks to incorporate cloud-based microservices modules like CIBIL, statement analyzer, and net banking that work as a one-stop solution to disburse loans at a fast rate and also adapt to regulatory requirements.

Facilitating multiple channels so that customers can access and apply for loans to disbursement of loans by sitting at home.

Artificial intelligence and machine learning should be incorporated into the loan lending process by financial institutions. The banks like HDFC, Axis, etc., have automated some of the complex processes like credit score retrieval, fraud checking, loan application underwriting, and loan offer generation.

Recent development, Blockchain technology may help banks to make their processes more efficient and endless.

Some of the benefits of loan management software are, removing human error, saving time, digital report generation, and making lending easy etc., (Sudeep Srivastava 2023)

Benefits of Loan Management software:

The advantages of loan management software are:

Elimination of Human error: In the lending ecosystem lot of calculations are involved, which are EMI, loan duration, etc., If it is done manually more errors may occur. The loan management software may avoid calculation errors.

Makes lending Easy:

Through loan management software the lenders may make the application process easy, automate the credibility check, and automate the loan generation system.

Saves time:

The loan management software eases all the paperwork activities through digitalization.

Report Generation:

Generating the report has become easy after installing the loan management software.

HDFC's digitalization and expenditure on ICT:

HDFC's digitalization journey started in 2014. HDFC has been using emerging technologies like AI, Fintech, Blockchain, and cyber security.HDFC spent $ 847 million in 2022 on Information and communication technology. HDFC has increased the Information and communication technologyspending by 8-9% in the total expenditure by the end of 2023(Shashank Didmishe, Dec 23, Financial Express).

HDFC is leveraging the technology to automate the risk management processes, bring in more efficiency, and improve accuracy in the lending process. The credit-to-depositratio is 80% and above for all the selected years for analysis. An increase in spending on ICT can be considered a more accurate credit risk analysis of individuals who borrow loans.

Literature Review:

There is a positive relationship between credit risk management and the financial performance of the banks.**Ndyagyenda Catherine** (2020), The banks should aim to identify the risk management strategies undertaken by commercial banks (Zia Ur Rehman, Noor Muhammad, Bilal Sarwar &Muhammad Asif Raz 2019), otherwise, a negative impactwill be there on the performance and implementation of credit risk management system ofa particular bank. Identification of credit risks will affect the credit risk management process. (Sirus Sharifi, Arunima Haldar, SWD Nageswara Rao, 2016), It is also emphasizing, to study the risk levels of different customers. Credit risk components, examined harm the performance of credit risk management policy andthe result is, the growth of NPAs in commercial banks. Different models were created for internal credit ratings of customers. Ineta Kristovska, Marina Kudinska(2016), It is found that examination in credit risk administration has extensivelymoved from the estimation of credit score risk to the evaluation of savings, which isa more pivotal system for the bank. Ijaz & Maha (2015). Assessing the credit score, threat administrationand execution of micro-scale banks demonstrated a wonderful connection between credit score terms and execution of banks. (Ahmed,SufiFizan,Malik&Qaisar Ali 2015)Whereas in Islamic banksin Brunei Darussalam are fairly efficient in dealing with the credit threat. Control strategies and change management practices have efficiently managed specific risks like forex and credit risk. (Abul Hassan 2009) The credit risk of crucial banks in the Euro area was a threat to the performance of the banks. By using a one-degree parametric stochastic technique and a cautious length of evaluation resulted from the adjustments for credit risk. (Jose M Pastor & Lorenzo Serrano 2006). Apart from this (ARORA 1997) has reviewed the financial risk management techniques in the bank business in India. The shortcomings in present contemporary techniques have become a threat to adequately evaluating the customer. The ongoing practices and strategies for managing the credit risk in the financial institutions face counterparty migration risk (Ali Fatemi; IrajFooladi 2006) The credit score and market fluctuations on their own cannot explain the income volatility of a customer. Hence financial institutions have to concentrate more on operations which leads to profits. (Parsley & Mark 1996) There is a nice relationship between credit score threat control customer satisfaction and borrower's pride. The result is banks do not need to control the other elements that contribute to granting the loan. (Danjuman, Ibrahim, Kola, Ibrahim Abdullateef, Magaji, Badiya Yusuf, Kumshe&HauwaModu 2016) The combination of environmental risks with credit score management. The quantitative and qualitative analysis shows that Canadian business banks, credit unions, and export development Canada, need to manipulate environmental dangers in credit score management so that you can avoid the monetary threat. (Olaf Weber 2012) (Evan Gatev, Tilschuermann; Philip E Strahan 2007) analyzed the liquidity hazard that the banks are dealing with which is attributed to transaction deposits and their potential to spark runs. The Asset and Legal Responsibility Administration has extended to include financing activity price risk, liquidity danger, and operational risk. It is required for all banks to limit their credit lending so that they can eliminate credit risk. (Gupta P K 1991).

OBJECTIVES OF THE STUDY:

To analyze the growth rate of GNPA from 2016-2023 of HDFC bank,through geometric mean, and a review of the credit appraisal system of HDFC.

To study the relationship and ratio of GNPA's withadvances through regression analysis.

Tostudy the demand and relationship between credit-to-deposit ratios of the HDFC bank through regression analysis.

Research questions.

Why there is a need to review the credit risk management system of HDFC Bank?

What is the relationship between GNPA and the Advances of HDFC banks?

What is the relationship of credits to deposits of the said bank?

The main goal of this paper is to review the credit risk management system of HDFC through the calculation of the growth rate of GNPAs,and the relationships between GNPAs and advances. And also, between credit and deposit ratios.

The banks after a few years of business cycle want to make profits by investing in risky assets. The paper concentrates to know whether HDFC, the top private bank in India is moving towards earning more profits by risking its investments.

Justification of research:

Default loans are considered non-performing assets. Nonperforming assets (NPAs) are recorded on a bank's balance sheet after a prolonged period of non-payment by the borrower. The Non-performing Assets of the banks are increasing year by year because of customer defaults. There is a need to understand the growth factor of GNPAs. HDFC, Being a top bank, rated by Forbes,digitilised in 2014, despite that the HDFC bank also has encountered GNPAs. HDFC Bank has implemented Oracle loan management software and hired technology-based employees by spending a huge amount.Sothere is a need to reviewthe credit appraisal process of HDFC, hence, the process of credit appraisal of individuals, involved must be studied to reduce the default and enablebanks to invest wisely and safely. The relationship between advances and GNPA is found to check and examine the proportional change of GNPA in advances of the said bank. After covid 19 demand for credit has increased enormously. To study the demand for credit, the credit-to-deposit ratio of the bank has been analyzed,asa relationship between credit and deposit. The credit-to-deposit ratio provides the liquidity of the bank for other expenses.

RESEARCH METHODOLOGY:

By considering the annual report provided by the HDFC, the Analytical Research method was used in the study. The activity includes the examination of the data collected and critical skills are adopted & applied for decision-making. It provides an outline for the study. The secondary data used in the study were collected from the annual report of HDFC Bank, Research articles published in journals, and from blogs and websites. The techniques used in analyzing the changes and relationship were Geometric mean, and regression analysis using Excel.

LIMITATIONS:

The study is limited to the extent of available data.

An in-depth study cannot be done because of time constraints.

Owing to the confidentially enforced by the bank, all the data could not be obtained.

DATA ANALYSIS AND INTERPRETATION:

To analyze the Percentage changes of GNPA from 2016-2023 of HDFC, through geometricmean. Calculation of percentage changes and the growth factor of GNPA’s throughExcel.

Years	GNPAS (Rs)	% changes	growth factor
2016-2017	5885.66		
2017-2018	8606.97	0.46236276	1.304078
2018-2019	11224.16	0.304077974	1.12703
2019-2020	12649.97	0.127030441	1.192572
2020-2021	15086	0.192571998	1.06993
2021-2022	16,140.96	0.069929736	1.116354
2022-2023	18,019.03	0.116354294	1

Geometric Mean 11784.28894

Interpretation:

The HDFC has a vigorous credit policy, loan management software, technology-based employees, and an excellent monitoring system of post-disbursement, and remedial measures for default loans are very stringent. Even then, the GNPA's are in increasing manner. The geometric mean is calculated to find the growth of GNPA of HDFC Bank. There is a constant increase in GNPA from 2017 to 2023.

To study the relationship and ratio between Advances and GNPAs.

Table showing Advances and GNPA's.

Years	Advances(Rs)	Gross NPA(Rs)	Gross NPA % in loans & advances
2016-2017	554568.20	5885.66	1.05
2017-2018	658333.09	8606.97	1.30
2018-2019	819401.22	11224.16	1.36
2019-2020	993702.88	12649.97	1.26
2020-2021	1132836.63	15086.00	1.32
2021-2022	1,368,820.93	16,140.96	1.18
2022-2023	1,600,585.90	18,019.03	1.13

Source: HDFC financial reports.

Gross GNPA % has increased up to 2019, reduced in 2020, and again increased in 2023.The GNPA's percentage in advances is considerably low. But with the amount spent on ICT and loan management software, GNPA's should be almost nil.Hence, we can interpret that the credit appraisal policy of HDFC can be improvised and implemented in a better way.

To study the relationship between advances and GNPAs, regression analysis in Excel has been done

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.973102246							
R Square	0.94692798							
Adjusted R Square	0.936313576							
Standard Error	1085.239866							
Observations	7							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	1.05E+08	1.05E+08	89.2116	0.000225			
Residual	5	5888728	1177746					
Total	6	1.11E+08						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*

Intercept	1259.304736	1260.414	0.99912	0.363604	-1980.69	4499.302	-1980.69	4499.301711
X Variable 1	0.011054274	0.00117	9.445189	0.000225	0.008046	0.014063	0.008046	0.014062781

Interpretation: From the above Regression calculation through Excel, it was found that as advances increaseGNPAs also are increasing. Since the R square value is 0.946, the regression analysis is considered as best fit. Only 0.054 is not explained by the regression analysis. There is a positive relationshipbetween advances and GNPAs.

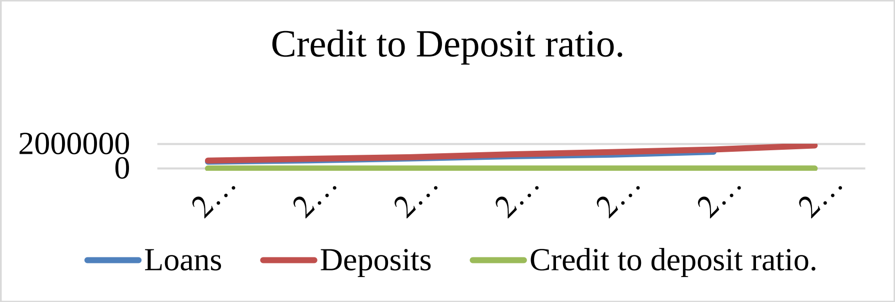
To study the relationship between the credit-to-deposit ratio of the HDFC bank.Table showing the credit-to-deposit Ratio of HDFC Bank from 2016-21

(Amt. in Rs.)

Year	Loans	Deposits	Credit to Deposit Ratio
2016-17	554568.20	643639.66	86.1
2017-18	658333.09	788770.64	83.4
2018-19	819401.22	923140.93	88.7
2019-20	993702.88	1147502.29	86.5
2020-21	1132836.63	1335060.22	84.8
2021-22	1,368,820.93	1,559,217.44	87.8
2022-23	1,600,585.90	1,883,394.65	84.98

Researchers own creation.

Interpretation: The credit-to-deposit ratio in 16-17, 18-19,19-20, and 21-22 is increasing. Whereas in 17-18, 20-21 and 22-23 it has decreased. The ideal credit-to-deposit ratio is 80% in the West. The ideal credit deposit ratio in India is 65% to 75%.There is no stipulation from the RBI for credit to deposit ratio as minimum and maximum.The above table shows that HDFC maintains an ideal 80% ratio in Advances from deposits. The deposits are increasing year by year. But at the same time, the level ofloans and advances by the HDFC bank is also increasing, resulting in liquidity risk and credit risk.



To study the relationship between credits to deposit ratio, regression analysis has been done in Excel.

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.998574							
R Square	0.997149							
Adjusted R Square	0.996579							
Standard Error	22141.45							
Observations	7							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	8.57E+11	8.57E+11	1748.882	1.47E-07			
Residual	5	2.45E+09	4.9E+08					
Total	6	8.6E+11						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*

Intercept	5802.997	25617.07	0.2265 29	0.8297 6	-60047.8	71653. 76	-60047.8	71653.76
X Variable 1	0.855919	0.020467	41.819 64	1.47E-07	0.803307	0.9085 31	0.803307	0.908531

Since R square value is 0.99 i.e., 99% it is considered as best fit for the data. Only 0.01ie., 1% is not explained in the regression analysis. The result shows that there is a positive relationship between credit and deposit. If deposits increase then credits also will increase.

Findings and Discussion:

As per the calculation from the growth rateof GNPA through Excel are is not in a uniform manner.Through this calculation, the Suitability of the current credit policy and lending process of HDFC can be reviewed.The GNPA's ratios in advances arenot constant and the percentage of GNPA's are very low in advances. Digitalization of the banks started in the 1990s. HDFC's digital transformation journey started in 2014. And a huge investment of $841 million in ICT in 2022, and an 8 to 9% increase in ICT in 2023, Hence, we can say that the credit risk management system of HDFC can be improvised and implemented in a better way. The credit-to-deposit ratio is80% of the Deposits. The level of loans and advances is increasing with the level of deposits. This may lead to liquidity risk and credit risk for the bank. The ideal credit-to-deposit ratio for banks in India is 65% to 75%. From this, we can interpret that HDFC's lending percentage is higher. To find the relationship between GNPAs and advances and credit-to-deposit ratios,a regression analysis technique was followed. The values of R square are 0.99 and 0.97. This interprets that regression analysis has explained almost all the data and is considered as befit for finding relationships.

Conclusion:

HDFC Bank has been digitalized since 2014. HDFC has been awarded as a best-in-class digital banking initiative. Oracle's Loan Management Solution (LMS) is used to maintain and service, from end to end, all the retail loans at HDFC Bank. The current credit policy of HDFChas vigorous policies and processes for managing credit risk in retail business. Their Credit approval process, Post disbursement monitoring, and Remedial management procedures are stringent. HDFC's loan review department notifies the clients about their EMI and identifies the borrowers likely to become nonperforming loan accounts. The Main Strategy of HDFC is maintaining healthy asset quality with optimal risk-reward considerations. From the analysis, it has been proved that GNPA's ratio in Advances is considerably less. But a huge amount of $847 million is spent on Information communication and technology for better credit appraisal and banking processes. The growth rate of GNPA's is also not constant. Based on the analysis of the credit-to-deposit ratio the lending percentage of HDFC is more than 80%. The HDFC's credit appraisal system should be more accurate otherwise HDFC may face liquidity crunch. This paper can conclude that the HDFC credit risk management system can be improved with the existing technology to avoid Gross Non-performing assets.

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