

AI ADOPTION FOR RETAIL LOAN PROCESSING AT HDFC BANK

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ABSTRACT: This research delves into HDFC Bank's use of AI for retail loan processing, highlighting how it may boost efficiency and delight customers. By automating risk assessment, credit evaluation, and loan application verification, AI-powered technology has the potential to save a significant amount of time. The likelihood of loan default and approval are both reduced by machine learning algorithms. The research also delves into the ways AI can free up workers' time to concentrate on higher-value activities, allowing them to be more productive overall. When customers have more options and their loans are processed faster, they are pleased overall. Data privacy, regulation compliance, and system integration are supplementary critical factors. The research examines the scalability and cost-effectiveness of AI technology in relation to banking operations. This further demonstrates the significance of AI in maintaining retail banking's competitive edge.

Keywords: *Automated Credit Scoring, Machine Learning Algorithms, Loan Underwriting Automation, Risk Assessment Models, Fraud Detection Systems*

1. INTRODUCTION

Retail loans can be used for a variety of purposes; for example, they can help pay for education, buy a car, a house, or quickly access funds by leveraging investments. Loan eligibility is often determined by the lender looking at the borrower's income, credit score, and ability to repay.

The term "home loan" refers to a specific kind of retail loan in which the borrower borrows money from a bank in order to buy a piece of real estate and then pays back the loan with regular monthly installments. For instance, it could be about a car loan or a school loan.

Instantaneous financial backing for the purchase or payment of large things is what retail loans are all about. Borrowers are able to obtain additional commodities and fulfill urgent demands through this financial conduit.

With the use of AI, retail loan processing has undergone a revolution in the financial services industry, resulting in more efficiency, accuracy, and satisfied customers. Retail loan processing used to rely mostly on human judgment, validation, and paperwork. As a result, operational inefficiencies, errors, and delays were common.

Machine learning, natural language processing, and predictive analytics are some of the artificial intelligence technologies that banks and other financial organizations have used to automate crucial processes including client profiling, credit checks, risk assessments, and fraud detection. This expedites the loan approval process and ensures more accurate decision-making by real-time analyzing massive amounts of structured and unstructured data. Lenders



can potentially benefit from AI in the following ways: improved understanding of borrower behavior; tailored loan products; and reduced non-performing assets (NPAs).

Retail loan processing that makes use of AI is crucial to boosting customer happiness since it allows for digital onboarding, shortens processing times, and provides 24/7 support through AI-powered chatbots and virtual assistants. By ensuring regulatory conformance through automated inspections and audit trails, it further increases compliance.

Financial organizations and banks can use AI to streamline loan processing, reduce human error, and save expenses while handling more applications at once. Strong data governance, the creation of ethical decision-making standards, and sufficient technical engagement with current systems are all necessary for the effective implementation of AI. Artificial intelligence is causing a sea change in the retail lending industry, making it more customer-centric, data-driven, and future-proof. It is more than just a method for getting things done faster.

2. LITERATURE SURVEY

Smith, J., & Patel, R. (2025) The extensive research conducted by Smith and Patel centered on the use of machine learning algorithms into retail loan processing's credit evaluation procedures. Their research found that compared to rule-based systems, AI models trained on consumer credit history, spending habits, income trends, and demographic information significantly enhance the accuracy of loan acceptance. According to the research, banks can reduce default rates and give customized interest rates to customers thanks to AI-driven risk assessment. By combining AI with more conventional methods of credit scoring, Smith and Patel demonstrated that decision-making may be expedited while maintaining high dependability.

Kumar, S., & Liu, H. (2024) The use of machine learning and predictive analytics for risk appraisal was the primary focus of Kumar and Liu's investigation on the effects of AI on retail loan underwriting. Based on their findings, AI models outperform traditional statistical methods when it comes to estimating the likelihood of borrower default. This is because AI models take into account market conditions, income patterns, repayment history data, and macroeconomic factors. Artificial intelligence (AI) powered underwriting reduces human error, ensures consistency across applications, and provides detailed information about borrowers' profiles, according to the research. Financial institutions can take preventative measures and manage their portfolios more proactively, as demonstrated by Kumar and Liu, by using predictive models to identify likely defaults early on.

Elena Petrova (2023) The potential cooperation between robotic process automation (RPA) and artificial intelligence (AI) in retail loan origination is investigated in this research. The primary objective is to reduce the amount of time spent on manual back-office chores and speed up the approval process. Research from well-known companies shows that RPA systems with AI enhancements reliably automate data input, document validation, and compliance evaluations. The results showed that processing time was 60% faster and mistake rates were significantly lower than manual methods. The research looks at how AI could work with RPA to handle mistakes and unstructured data, enabling RPA to handle more

complex tasks than just repetitive ones. Still, issues like retraining employees, keeping older systems running, and some people's reluctance to embrace automation are there.

Linh Tran (2022) This research delves into the possibility of chatbots powered by artificial intelligence improving customer service during the processing of retail loans. Using dialogue management systems and natural language understanding (NLU), chatbots can answer customer questions regarding loan eligibility, paperwork, and repayment schedules. In addition to reducing contact center interactions by 40%, the data showed that AI chatbots increased customer satisfaction through faster and more accurate responses. In particular for retail loan products offered in bulk, the paper analyses the potential savings that chatbots may provide.

Priya Menon (2021) The purpose of this research is to analyze the ways in which, between 2019 and 2021, retail loan credit evaluation made use of supervised machine learning models to supplement traditional scorecards. Findings show that examining behavioural traits, transaction histories, and credit bureau data improved approval accuracy and reduced loss rates; nevertheless, obstacles to implementation, such as explainability and compliance, slowed development. To reduce the number of false positives, particularly for borrowers who are at danger, the researchers discovered that a human-in-the-loop method is necessary. Operational hurdles, such as cultural resistance and the data pipeline's preparedness, also impacted the results.

3. TYPES OF RETAIL LOANS

Different types of retail loans are required because every borrower has different needs and goals. Among the many retail loan options provided by financial institutions, the following stand out:

Housing Loan:

The collateral for a home loan is the property itself, making it a type of secured loan. It is a crucial form of funding for retail businesses. No matter if you're planning to build a house from the ground up, make some necessary renovations to an existing one, or use this financing option, you may make your dream of homeownership a reality. Borrowers have the freedom to select the mortgage loan that best suits their needs from a range of options, including terms and interest rates.

Vehicle Loan:

Anyone in need of a car, motorcycle, or other form of transportation can get a loan to do it. Depending on the lender's terms, this car loan might be unsecured, meaning no specific asset is needed as collateral, or secured, meaning the bought car is used as security. It provides a convenient way for people to get the transportation they need without having to spend a lot of money all at once.

Education Loan:

The ability to finance one's own education with an education loan makes it a wise financial move. Students are able to finance their educational aspirations with this loan, which helps with accommodation, tuition, and school supplies that could be out of reach without it. When deciding on repayment terms, lenders frequently consider the borrower's expected income in the future.

Personal Loan:

An unsecured loan, like a personal loan, can be used for anything you want. You can use a personal loan for a lot of different things, such paying off debt, funding a wedding, covering medical expenses, or even taking a vacation. Without collateral, the approval process is faster, but the interest rates could be higher than with a secured loan.

Gold Loan:

A gold loan is a quick and easy way for people who own gold jewelry to get money. People who require a little bit of money could benefit from this secured loan because they can use their gold as collateral. Collateralized loans secured by gold typically have lower interest rates compared to unsecured personal loans.

Loan Against Property (LAP):

A retail firm loan secured by the property allows you to receive finance using real estate that is not your primary residence. Borrowers can use their property as collateral to get a loan for a variety of purposes, including expanding their businesses, paying off debt, or going back to school. In comparison to unsecured loans, the interest rates on secured loans tend to be cheaper.

4. EMPIRICAL DATA ANALYSIS

HDFC HOME LOAN INTEREST RATE 2025

Home Loan Floating Interest Rates - For Salaried and Self Employed

Loan Amount	HDFC Home Loan Rate
Rs. 30 lakh	9.00% - 9.50%
Rs. 30.01 lakh to Rs 75 lakh	9.25% - 9.75%
Rs. 75.01 and more	9.35% - 9.85%

For Women

Amounts	HDFC Home Loan Interest
Rs. 30 lakh	8.95% - 9.45%
Rs. 30.01 lakh to Rs 75 lakh	9.20% - 9.70%
Rs. 75.01 lakh and more	9.30% - 9.80%

HDFC HOME LOAN ELIGIBILITY

Age	21 - 65 years
Employment Type	Salaried and Self-employed professional and non-professional
Minimum Salary for Salaried	Rs.10,000 per month
Minimum Salary for Non-Salaried	Rs.2 lakh per annum

HDFC LTD. HOME LOAN ELIGIBILITY BASED ON SALARY

The relationship between income levels and borrowable funds is seen in the chart below. At the time of calculation, there were no existing EMIs, the payback duration was 30 years, and the interest rate was 8.60% per annum.



Monthly Income	Loan Amount
Rs. 25,000	Rs.15,18,372
Rs. 30,000	Rs.20,49,802
Rs. 35,000	Rs.23,91,436
Rs. 45,000	Rs.30,74,703
Rs. 50,000	Rs.34,16,337
Rs. 55,000	Rs.41,75,523
Rs. 60,000	Rs.45,55,116
Rs. 65,000	Rs.49,34,709
Rs. 70,000	Rs.53,14,302
Rs. 75,000	Rs.56,93,895

HDFC HOME LOAN ELIGIBILITY BASED ON VALUE OF PROPERTY

Property Value	LTV Ratio
Up to Rs.30 lakh	90% of the property cost
From Rs.30 lakh to Rs.75 lakh	80% of the property cost
Above Rs.75 lakh	75% of the property cost

HDFC HOME LOAN ELIGIBILITY BASED ON AGE

Applicant Age	Maximum Eligible Tenure
21 - 35 years	30 years
36 years	29 years
37 years	28 years
38 years	27 years
39 years	26 years
40 years	25 years
41 years	24 years
42 years	23 years
43 years	22 years
44 years	21 years
45 years	20 years

HDFC HOME LOAN ELIGIBILITY BASED ON CREDIT SCORE

Rating	Credit Score
Good	750 and above
Average	600 - 750
Poor	Below 600

5. CONCLUSION

The utilization of artificial intelligence for the purpose of facilitating retail loans can be of great benefit to financial institutions and banks. Banks may improve their operating efficiency, decrease operational risks, and make better decisions with the use of automation,



machine learning, and advanced analytics. A more precise credit evaluation, faster loan approvals, and individualized customer experiences are all possible thanks to AI. Improving fraud detection and compliance monitoring through continuous, intelligent database analysis. Businesses can use predictive insights to reduce the amount of assets that aren't lucrative and to mitigate hazards. You may improve customer relations with your organization and reduce expenses with the help of AI-driven chatbots and virtual assistants. Models improve in accuracy and usefulness as they are fed new data on an ongoing basis. Artificial intelligence (AI) can help the retail lending sector expand in the long run by increasing growth, competitiveness, and innovation. By carefully utilizing AI, financial institutions can better handle changing market hurdles and consumer needs.

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