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Loan Origination Automation for High Risk and High-Volume Loan

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Abstract: ***With the rapid shift to digitalization through automation, adopting a digital platform by the lending sector becomes crucial. Historically, lending institutions have been using primitive practices in their day-to-day operations, which involve a lot of manual processes thereby increasing operational costs as well as turnaround time for a loan origination process. This is mainly due to the high risks and security involved in dealing with huge sum of money. This paper highlights the importance of the adoption of automation technologies and artificial intelligence to improve on the operational efficiency of lenders as well as enhance customer experience. In addition, it deals with the future scope of the lending sector and how further improvements can be achieved.***

Keywords: automation, lending, operational efficiency, reduced turnaround time, artificial intelligence, customer experience, effectiveness.

I. INTRODUCTION

Loan origination is a process in which a borrower takes a new loan from a lender (a bank or a nonbanking financial institution). The process involves everything from loan application right till the disbursal of the loan. Traditional methods of lending include a lot of paperwork, starting from the borrower filling out an application form, submitting required documents to the lender doing necessary credit assessments. The loan origination process includes numerous types of different technologies essentially leading to higher maintenance costs as these technologies become old and redundant. Integrating the whole process as well poses a serious challenge to the operational efficiency of lending institutions. A McKinsey report refers to automation in the banking sector as a "transformative power" for the industry [2]. This paper deals with the automation of a loan origination process and its impact on operational efficiency.

II. EFFECTIVENESS AND EFFICIENCY IN BANKS

Effectiveness in banks can be defined as the attainment of goals and objectives of the banking institution, these goals can also include value creation for customers, whereas efficiency would be the proper utilization of resources. In a banking scenario resources could include the banks lending capability, their employees, policies enforced [8].

In efficiency-challenged banks Middle management roles expand, with organizations having more layers and managers smaller "spans of control." This slows decision-making, creates unnecessary work, and distances top executives from customers and the front line. Winning banks however take a different approach. These banks seek agreement on the starting point and obtain clear buy-in from stakeholders. They go after the spans and layers opportunity, reducing the number of layers of hierarchy and creating flat hierarchies with broader spans of control. But they rightly spend most of the exercise concentrating on "rewiring the organization" to run with a smaller managerial workforce. This means understanding the root causes that initially led to imbalances and correcting those as well as the way work gets done. This is crucial so that costs do not creep back. Reducing managers' spans to reflect the work done improves efficiency and delayering. This empowers employees and facilitates faster decision-making. Banks have found significant and sustainable managerial headcount savings of 10 to 25 percent through this approach. Successful banks do four things. They start shifting the mix of capabilities that they have, so that tomorrow's work can be done more effectively. This means developing a clear, data-rich view of the new mix of skills and capabilities they will require as a first step, building a strategic workforce plan. This will almost certainly mean a combination of reskilling, upskilling, hiring, and renting of capabilities. A European bank reskilled and redeployed some 9,500 employees over three years, and at the same time achieved a 70 to 80 percent increase in employee satisfaction. Secondly, they improve the speed and quality of decision-making. Fast, high-quality decision-making matters—while 54 percent of executives say they spend more than a third of their time on decisions, 61 percent go on to say most of the time spent on decisions is ineffective. Eighty percent say their organizations do not excel at decision-making.

Leading banks distinguish different types of decisions. Big bet decisions are infrequent, high-stakes decisions made by senior executives that affect the organization broadly. Examples are large acquisitions, large capital investments, and large allocations to

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research and development. Cross-cutting decisions are frequent, often a series of smaller decisions across a process, typically made by executives that involve multiple areas across the organization. Examples include budgeting, pricing, and operations planning. Delegated decisions are smaller, day-to-day decisions typically made by individuals (for example mid-level/frontline managers) or working teams within the organization. The journey to improved decision-making often begins with an immersive simulation to help executives' pinpoint challenges and identify improvements. Some banks go further, concluding that the best way to pursue efficiency and effectiveness together is to move to a fully agile operating model. This means creating a series of high-performing, dynamic tribes and squads that "own" a mission or customer and business outcome, and have the end-to-end resources, capabilities, and accountability to deliver them. This improves customer focus, increases efficiency by 20 to 30 percent, improves pace of delivery by 2 to 5 times, creates more accountability at the front line, and increases workforce engagement.

Thirdly, leading banks make sure that performance management helps rather than hinders performance. This means emphasizing conversations over documentation, making sure that individual goals are aligned to the bank's priorities, and creating differentiated consequences for very high and low performance. We typically find that simplifying and focusing performance management on this way boosts both productivity and employee engagement. Finally, leading banks are increasingly improving their organization by simplifying grading and job families to support a new way of working. Focusing employees on development within bands, rather than upgrading, reduces a hierarchical culture. This also provides more flexibility to pay differently for different role types within broader bands, while remaining internally consistent, leading to more effective attraction and retention of top talent in manager and expert paths [9]. In another study by Vetrova Tatyana Nikolaevna the following conclusions were drawn: The main reasons of an X-inefficiency (X-efficiency is defined as the ratio of the minimum costs that could have been expended to produce a given output bundle to the actual costs expended) of commercial banks include:

1) Low level of bank management.
2) Inefficient using of employees' potential, their insufficient qualification.
3) Discrepancy between information systems, technological infrastructure, and requirements of business.
4) Losses because of low-quality servicing clients.
5) Losses owing to non-optimal technological chains.

Bank executives of financial institutions planning to survive and even thrive in today's unpredictable economy must find new ways in order to improve efficiency. According to the FIS™'s research there are several actions that should be taken:

a) Rationalize branches and optimize delivery channels.
b) Initiate business process improvements aligned with enabling technologies.
c) Align sales resources with market opportunities.
d) Evaluate strategic sourcing opportunities.
e) Evaluate selective outsourcing alternatives [10]

Thus, it can be seen, technological infrastructure also hinders the efficiency of banking institutions. From the above work, the insights drawn include faster decisions can be made if real time information is available throughout and there are no discrepancies, efficiency increases with a more flatter hierarchy system with speedy flow of information. If the banking system incorporates a single platform where all its functions could be performed and there is smooth flow of information with all its departments integrated, then this can help increase the efficiency and effectiveness. This paper discusses how that is achieved.

III. LOAN ORIGINATION PROCESS

Any basic loan origination process starts off with a pre- qualification, where the borrower enters basic details like his personal, employment and loan details after which an eligibility check is done, and the borrower is told how much he/she is eligible for. Post this, the borrower fills in an application form along with submission of all necessary documents for example, bank statements, income statements, address proof, etc. The complete application form is then submitted to the institution for verification and completeness of the form for further processing. This step is called application processing. Post this a credit assessment takes place to check the credit worthiness of the borrower and to assess risks involved with lending to this borrower by an underwriter. After the completion of underwriting process, a credit decision takes place where the loan amount is decided and negotiations with the borrower take place. Quality control includes a final verification and check with the regulations of the financial institution of the loan application and signed loan agreement post which the loan is disbursed to the borrower either by bank transfer or cash. [1] Figure 1 depicts the steps involved in loan origination process. The whole loan origination process takes about 3-5 weeks and time to cash can take up to 3 months. However, with automation of the process it can be brought down to 5 minutes to less than 24 hours [2].

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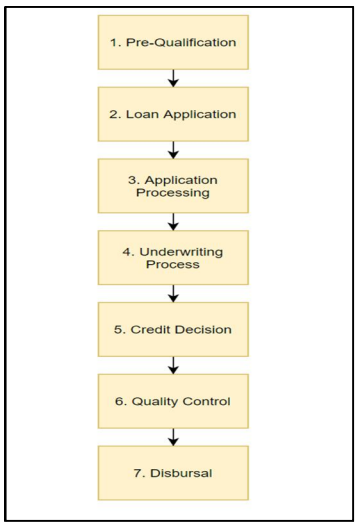


Figure 1: Process flow of Loan origination

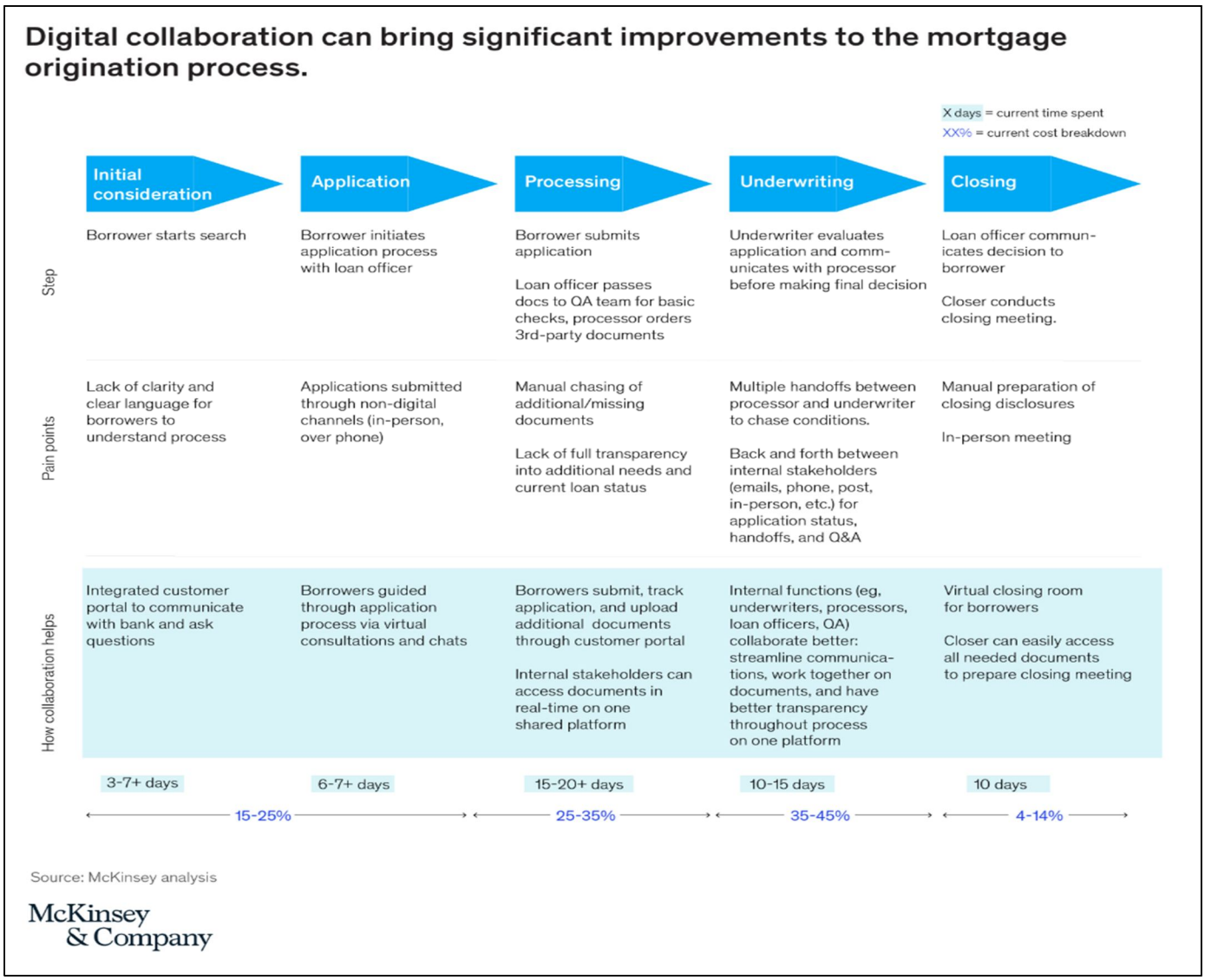


Figure 2: Mortgage Origination Process [11]

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In the figure shown above from a study conducted by McKinsey & Company, a mortgage origination process is shown along with the time taken for each step. Currently the total time taken could be anywhere ranging from 44-54 days for a mortgage loan origination process. This is due to the manual practices still used despite the availability of technologies. This includes the manual collection and processing of documents, paper driven operations in banks leading to multiple handoffs between processor and underwriter, manual preparation of documents, in person meetings. All these processes not only lead to an increase in the time taken, but even an increase in cost. For example, keeping a customer's record virtually is far cheaper than having physical records. Now if a single unified platform is used by both the customer and the bank employees, this can lead to a 75% decrease in development costs, reduction of time taken to as low as 15 minutes and a 50% productivity gains [12]. Automation of loan origination is discussed in more depth in the following parts.

IV. AUTOMATION AND OPERATIONAL EEFECIENCY

For lenders using multiple platforms to manage various loan products lead to numerous challenges like integration of these systems, aging of technology which leads to higher maintenance and IT costs, redundancy of technologies.

Three views on operational efficiency can be with respect to the borrower, the lender and the technology. The very first step of any lending institution is to be able to rightly identify their customer's needs and expectations. For a borrower the time taken for them to receive their loan is a very important factor. Lesser the time better the satisfaction of the borrower which leads to higher customers for the lender. For the lender, of course profit is number one priority. This can be achieved through automating which leads to increase in efficiency. How? This is because processing time reduces, integrating the all platforms onto one platform eases processes making them faster and flexible as well, and finally lesser processing time for a loan means more customers. Just having technology won't make the lender's operations efficient, having the right technology and knowing how to implement it is of utmost importance for the best results. It should be flexible to changes and new developments as well as have agility. Seamless process flows should be possible from the technologies used for automation of a loan origination process. Having a single platform would offer a competitive advantage as well over other lending institutions.

Following technologies for automation can be implemented: incorporating rule engines to make credit decisions in a loan origination process leads to lesser time taken for decisions, a single platform for the borrower as well as the lender to ensure data integrity and data quality, configurable platform and compatibility with other existing software and fintech services. Ensuring the above, will lead to increase in operational efficiency [3].

Automation of loan origination process includes the following modules:

A. Workflow engine
B. Rule engine
C. Integration broker
D. Identity and access management system
E. Rendering engine
F. Cognitive data hub

A workflow engine is one which allows the lender to build all their process flows. This module is used to develop the flows related to each user, the borrower and the lender. All third-party integrations required can be incorporated on the workflow engine, for example: an application program interface (API) call for verification of Identity proof uploaded by the borrower.

A rule engine is used for faster decision making. Logical rules according to the lender's needs are entered and the rules are executed as and when required in the process flow (for decision making). For example rule engines can be used for credit assessments, where in rules are inputted into the system according to the existing lending institution's policies and thus an automated faster decision can be taken the output of which would be a loan offer for the borrower.

Integration broker is used to allow seamless communication with other fintech services or applications used in the process.
For example, APIs for KYC checks could be used.

A rendering engine is used to take care of the user interface and user experience of the platform. For example, how an online application form would look to a borrower all depends on the rendering engine.

Identity and access management is used to control which user has access to what information. For a lending institution this is of primary importance as they deal with huge sum of money and security becomes a huge concern.

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Finally, a cognitive data hub where all this data starting from the borrower to the lender's operations, every request, every change, every customer file, all possible data flowing in and out of the system, interactions with other systems, is all stored in a cognitive data hub. This excessive amount of data can be exploited for insights and continuous improvements to the system can be achieved [4]. Figure 2 gives a visual depiction of the modules.

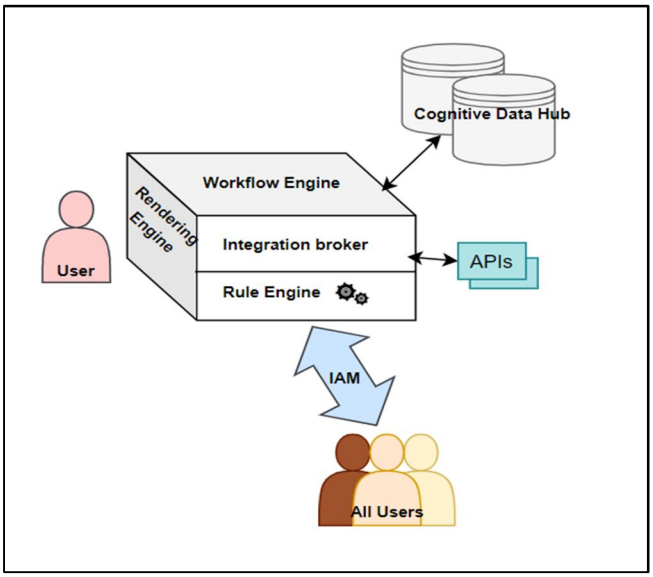


Figure 3: Modules of Automated loan origination process

V. FUTURE SCOPE – ARTIFICIAL INTELLIGENCE (AI) IN LENDING

The process of lending generates tremendous amounts of data and therefore machine learning is suited for this business.

Even after automating a loan process, there is still scope for further improvement. Automating would help reduce Turnaround Time (TAT) by a huge fold however by implementing AI tools, the huge database can be exploited, and it can help attract the right kind of customers with a more optimized pricing [6]. For example, AI tools can be used to assess the credit worthiness of a borrower. In this case, Machine Learning model could be trained to give credit scores by using thousands of data variables from customer information such as their social media, browsing habits, etc. By exploiting these data points, their tendency to default could be calculated. This would be a more robust way to generate a credit score for any borrower as it uses more data points and a more detailed analysis is done about the borrower's habits and tendencies. It would be helpful especially for use cases where the borrower has less credit history (for e.g.: Millennials) [5].

AI tools could also help lenders identify the right customers. For example, some software uses unsupervised machine learning to cluster large amounts of customer information into meaningful segments that lenders can use to target the right customers or AI software can be fed with customer information who have repaid loans before and then trained to identify which new customers fit a profile that is similar [6]. By harnessing ML and AI tools the data can be used to derive value from it which in turn adds value to the lending business. Even though AI tools can be effective and helpful in many ways, it is still a challenge on how to incorporate these tools into the existing automated software. Many questions need to be answered first, like how it is to be integrated, how it would remain secure and compliant with the existing regulations of the financial institution. The second question is more challenging as AI tools can be used to identify the right customers, but for that to happen the prices need to be optimized and for it to be optimized changes in policies are a given. However, all said and done the future of the lending business is a shift towards the use of artificial intelligence to make smarted business decisions, attract the right customers and enhance customer experience [7].

VI. CONCLUSION

As discussed throughout the course of this paper, it is now very evident that automation of a loan origination process can help lenders to reduce their turn around time, which in turn would assist in reducing costs and lead to higher operational efficiency. This would also improve and enhance the customer experience and if customers are satisfied then there are higher chances of increase in customers and thus it would mean an increase in revenue for lenders. With a shift towards digitalization, if lenders want to gain a competitive edge and remain in the market then automating smartly would be the right strategic move for an increase in productivity levels.

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VII. ACKNOWLEDGEMENT

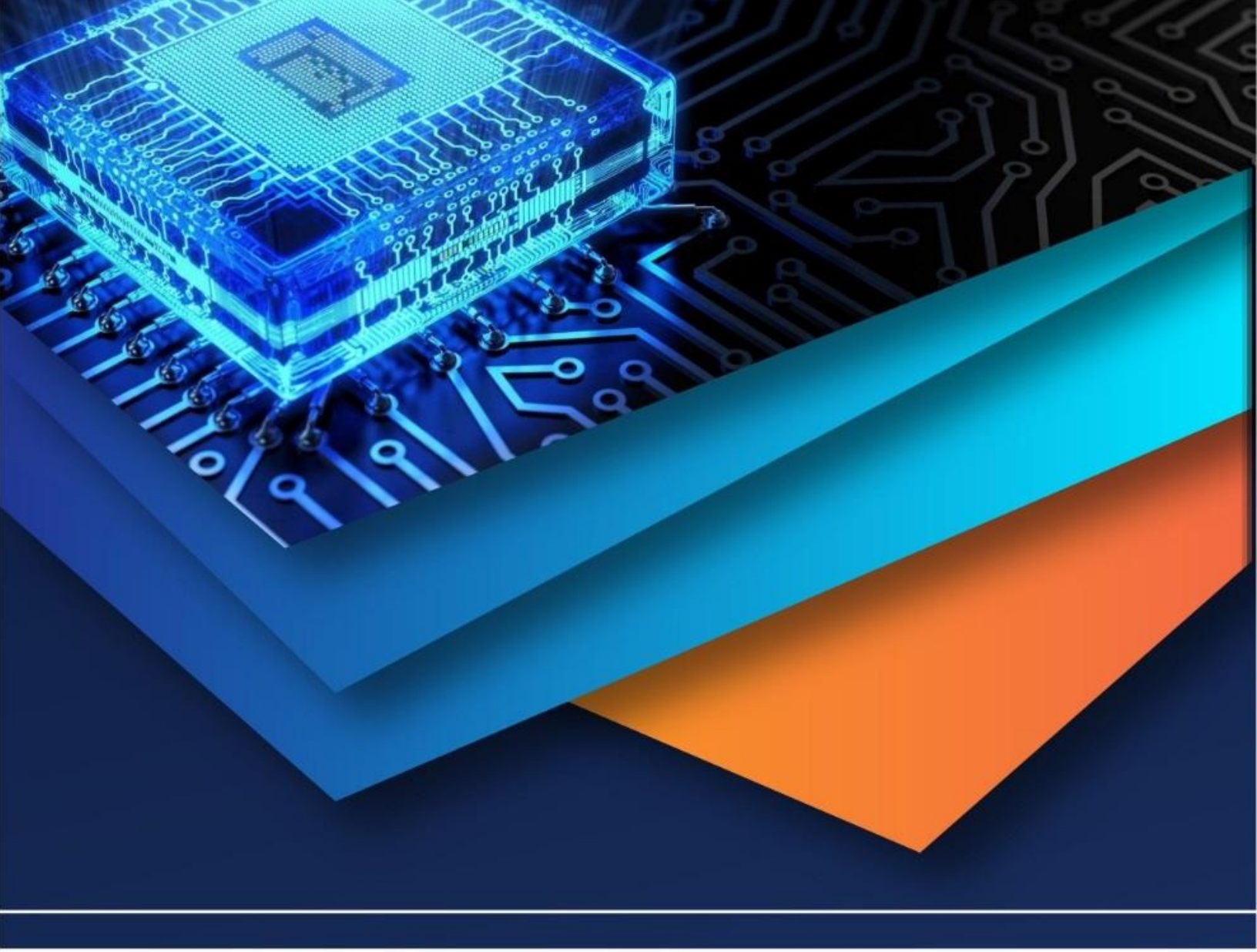
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REFERENCES

[1] Andrew MacDowell, "7 Stages in loan origination", July 26, 2018.
[2] Gerald Chappell, Holger Harreis, András Havas, Andrea Nuzzo, Theo Pepanides, and Kayvaun Rowshankish, "The lending revolution: How digital credit is changing banks from the inside", August 2018.
[3] Fiserv, "Loan Origination Automation and its Impact on Operational Efficiency", March 2015.
[4] Doug Peterson, "Maximize Efficiency: How Automation Can Improve Your Loan Origination Process", November 2018.
[5] Raghav Bharadwaj, "Automated Loan Processing and Underwriting – What's Possible Today?", January 27, 2020.
[6] Daniel Faggella, "Artificial Intelligence Applications for Lending and Loan Management", April 3, 2020.
[7] Robert Greenberg, "The Future of Lending is Through Automation and AI", August 14, 2018.
[8] Parastoo Roghaniana, Amran Raslia, Hamed Gheysaria a, "Productivity Through Effectiveness and Efficiency in the Banking Industry", 2012.
[9] Ashwin Adarkar, Owain Williams, Zubin Taraporevala, Gregor Jost, "Organizational Efficiency and Effectiveness: The Winning Bank's Secret Weapons", October 3, 2019.
[10] Vetrova Tatyana Nikolaevna, "Effectiveness of Banking: Evaluation and Measuring", 2017
[11] Rahul Mangla, Rohit Singh, Kartik Trehan, Marcy Williams, "How Digital Collaboration Helps Banks Serve Customers Better", May 14, 2020.
[12] Kuliza Tech Pvt Ltd, ".https://getlend.in/overview"

Future scope: For the process flow shown in figure 1, there are numerous third party digital technologies that are available. A reliability score for each of these technologies can be done to make the entire automation process foolproof which is beneficial in order to reduce bad debts.

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