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RPA-DRIVEN CUSTOMER EXPERIENCE TRANSFORMATION IN RETAIL BANKING: AUTOMATING SERVICE DELIVERY FOR 24/7 AVAILABILITY

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Abstract

The focus of this paper is on the importance of Robotic Process Automation (RPA) in transforming customer experience in U.S. retail banking by providing access around-the-clock. With U.S. consumers growing accustomed to digital experiences akin to services provided by top technology companies, retail banks need to find ways to meet customer expectations. RPA is the new commercially-viable automation tool that performs repetitive, rules-based processes, which results in automated routine service delivery, lower operational costs, and better efficiencies.
It is shown that, in 2020, AI's integration with RPA paved the way for intelligent automation, where service delivery became predictive, fraud detection more resilient, and customer engagement hyper-personalized. The study includes practical U.S. examples, such as Bank of America and JPMorgan Chase, that used RPA successfully for operational efficiency and customer satisfaction. It identifies the issues of legacy integration, customer readiness, and data privacy compliance, together with constructive solutions for effective adoption. In sum, the paper explains RPA's role in customer-led transformation in the American retail bank until 2020.

Keywords: RPA, Customer Experience, Retail Banking, Automation, 24/7 Availability, AI Integration, Digital Transformation, Operational Efficiency

I. INTRODUCTION

By 2020, consumer behavior was reshaped by the digital transformation . Customer demands in the U.S. retail banking environment reflected convenience, fast and consistently operational across all channels. The perceived service responsiveness from companies such as Amazon and Uber also become the standard for banks, where customer interaction channels mandated a rethink on the contact model. Amid such expectations, banks felt the heat to digitize matters that typically required human interaction and adhered to specific business hours.
Inevitably, the creation of Robotic Process Automation (RPA) service was aimed to fill this service gap and it made it possible to automate the significant number of back-office and front-office processes. The banks' software bots were executing the structured processes like transaction verification, documents review, and customers' requests, and the banks could work 24/7 without the need for increasing the number of human employees.

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At the end of 2020, Robotic Process Automation (RPA) used in the retail banking system in the United States formed a smart interconnected system in the banking system, where integration with artificial intelligence (AI), Natural Language Processing (NLP) and data analysis allowed banks to automate their processes and make intelligent decisions for changing services offered by banks based on customer behavior analysis and current market data. This article aims to analyze RPA's impact on the retail banking system in the United States at the end of 2020, with in-depth implications regarding its applications, benefits, challenges, and prospects.

Fig 1: RPA-Driven Customer Experience

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II. ROLE OF RPA IN RETAIL BANKING

2.1 Enhancing Customer Experience

RPA revolutionized customer engagement in U.S. Banks' operations by automating low-complexity interactions and managing continuous 24/7 availability of service. Customers were never locked out of any point of the process that required assistance, which had been facilitated by chatbots using RPA. These bots were addressing millions of customer requests every day, which included standard processes such as password reset requests, account balance inquiries, transaction alerts, etc. It allowed the banks to dramatically improve both the speed and the quality of responsiveness. It also freed human responders to engage in complicated issues requiring deeper exploration and nuanced understanding. Banks had better control over resources', time and delivery focus that ultimately led to improved customer satisfaction and retention.

This allowed AI-RPA systems to predict customer needs more accurately and provide more effective proactive support to customers by 2020. For instance, an RPA bot could analyze customer account activity patterns and automatically identify a customer regularly transferring funds on the last day of the month. The bot could suggest executing automatic transfers at the end of each month, saving the customer and the bank time and minimizing errors. According to Deloitte report published in 2019, 58% of banks in the United States have already deployed or are planning to deploy predictive automation in the near future [16]. This statistic sheds light on the growing awareness among banking service providers of the importance, strength, and efficiency of predictive automation in this sector.

The first reason for trust was due to consistency and reliability. Human agents can be fallible and human error is always a possibility. Human behaviours, such as tiredness or distraction, also results in varying performance. However, the RPA bot was never tired, it always provided consistent and high-quality responses and services. Such consistency and reliability would have been a major factor in nurturing trust among the users. The automation efficiencies seen here are also in line with the study conducted in the U.S. banking market. In a 2020 study of U.S. banks, mobile and online channels were responsible for 71% of all transactions [5]. The shift towards digitalizing banking transactions from traditional mediators, such as other humans, is evident and signals the necessity of automated systems for further development of trust, both existing and potential, among users.

2.2 Automating Service Delivery

Typical service models in U.S. banks have a high number of low-value transactions ideal for RPA tools to be integrated into the model. This included account openings, KYC transactions, transaction logging, loan processing, compliance checks, etc. Automation was possible for the traditional banking service models through the development of smart workflows that could replicate the human activity in accessing software already been used by the banks. This resulted in lower turnaround times, improved accuracy and consistency, and allowed humans to concentrate on more complex or value-added tasks that required elements such as critical thinking and client interaction. The resultant higher compliance and security levels ensured that

the effect was passed to the client resulting in improved customer experience.
Automation also contributes to faster processing. The average credit card application which is a lending application and underwent a manual verification process of 48 hours, was reduced to a 30-minute process using a robot under RPA technology. The time savings accounted for by a solution under RPA technology is indicative of the efficiency brought by automation. The solution implemented by Bank of America under RPA technology was in the loan processing activities of the bank. Loan processing cycles were also reduced from days to hours, which previously where the bank had a solution deployed prior to the RPA solution, the bank was able to accommodate and process the applications increased by 30% in the existing time window of operations [11]. Productivity was achieved through greater efficiency and the loan processing activities, resulting to improved customer service immediately [11].
Also, compatibility with legacy systems played a key role for the U.S. banks, most of which used the out-of-date core banking systems from the 1990s, which made it impossible or difficult to change them. RPA provided a unique non-intrusive solution because it could work on top of the core systems. Therefore, it was much easier to align it with modern digital platforms. It also improved the banks' capability and supported them in becoming more efficient without a significant change of workflow, risking the existing processes or infrastructure investments. Therefore, it connected the legacy systems with the new technologies [9].

III. BENEFITS OF 24/7 AUTOMATED SERVICES

3.1 Efficiency and Cost Reduction

RPA responded optimally to labor cost problems in the United States, a market wherein continuing business hours with human agents already proved too expensive and increasingly difficult to sustain. Its ability to run 24/7 is but one of its attractive features. A bot can perform well over a thousand tasks a day without any idle time and, more importantly, without commit any mistakes. As such, it simply cannot be beaten by the best and most dedicated of human workers in terms of sheer efficiency. RPA outputs are thus characterized by extreme reliability – the design ensures that it can execute a large volume of routine and labor-intensive actions without error. It ensures that human agents are no longer burdened by repetitive tasks, and can devote their energies to more complex, creative, and strategic endeavors that demands human insight and intelligence.
Besides that, reduction of labor cost was not the only advantage. According to a PwC report in 2020, banks that deployed RPA in customer operation was estimated to received between 25%–40% operational cost reduction [17]. Additionally, operational simulation reduce energy consumption and positive impact of leaving physical branches for environmental sustainability as banks had increasingly gone digital-first [13].
In addition, error rates were considerably lower providing evidence of a positive trend in overall processes. According to an in-depth analysis carried out by the U.S. Treasury in 2020, transaction processing done manually had a historical error rate around 3.2%. However, with the implementation of RPA bots, the error rates reduced to below 0.5% [10]. The increase in error reductions translated to better compliance towards the industry as opportunities for

breaches and penalties were reduced. There were also fewer complaints from customers as transaction error rates were significantly lower leading to the achievement of better customer satisfaction levels. Reduction in errors has also contributed in the lowering of reputational risk as fewer impacts that could have affected the reputation of the company occurred thereby increasing their public reliability and trust.

Table 4.1: Efficiency Gains with RPA

Aspect	Manual Process	RPA Process
Time per Task	5–10 minutes	10–20 seconds
Daily Capacity	50–100 tasks	1,000+ tasks
Error Rate	2–5%	<1%

3.2 Boosting Customer Satisfaction

At the end of 2020, U.S. consumers preferred speedy and seamless delivery. Banks were able to deliver on these metrics without a cost increase using RPA-enabled chatbots, mobile notifications and workflow automations. The ability to provide real-time fraud alerts, auto-payment approval and loan status were all 24/7 automation offerings.

As automation maturity increased, so did customer satisfaction scores. The Federal Reserve reported in a 2020 survey that banks with mature RPA adoption had Net Promoter Scores (NPS) elevated by 20–30 points compared to non-adopters [5]. This uplift was largely attributed the consistency in service delivery and diminutive customer queue times.

Graph 4.1: Customer Satisfaction Trends

- Before RPA: 70% satisfaction
- After RPA: 90% satisfaction

IV. RPA IMPLEMENTATION EXAMPLES

4.1 Successful Case Studies

By 2020, Bank of America had deployed over 50 RPA bots on customer support, fraud detection, and transaction confirmation workflows. The RPA bots processed more than 25 million transactions each year and decreased 30% human effort and reduced the time taken to resolve the service by almost 50% [11][12]. The Bank's AI and RPA-based virtual assistant "Erica" managed to process 100 million interactions in 2019, indicating the extent of automation reach.

A second major milestone in innovation was JPMorgan Chase's COIN platform, which applied RPA to read and harvest data from 12,000 commercial credit agreements every year. The bot delivered the same output in seconds for a job that otherwise consumed 360,000 hours of legal work [7]. The bank devoted the savings to building capabilities, which included investments into cybersecurity and artificial intelligence research, further strengthening its fintech innovation leadership.

4.2 Lessons Learned from Early Adopters

RPA was not simply a tool for a successful deployment, it was a method for change management. The banks which actively encouraged and trained their employees to adapt with the bots experienced greater success. An example of this includes the Bank of America, who are known to have prioritised upskilling programmes and change communications campaigns for the better [11].

Phased rollout was a successful strategy's implementation. The firm was able to test system solution with backend contract analysis and, after the successful implementation, move to the customer-facing processes. It allowed the company to have enough time, when needed, to address system bugs or integration issues [7]. The monitoring of the result—AHT and FCR decrease—was critical for making further improvements.

V. CHALLENGES AND SOLUTIONS IN RPA ADOPTION

5.1 Overcoming Integration Hurdles

Most banks in the U.S. used mainframe technologies which were outdated and were not built to communicate with new applications. While RPA provided a temporary solution, data translation and error handling were complex needs for integration.

APIs gateways and RPA compatible ETL tools were among the trends in middleware solutions. The Bank of America leveraged the middleware to map and standardize data formats between its legacy systems and the new digital front-end solutions [11]. Concurrently, data security frameworks were strengthened since bot credentials and workflows were new attack surfaces [14][15].

5.2 Ensuring Smooth Customer Transition

Some U.S. customers, particularly the older ones, valued human experience. Fast-paced automation could lose their interest. Banks operated hybrid systems; bots and humans worked together to introduce customers gradually into digital processes.

Educational Outreach through tutorials, webinars, and mobile application guidelines shall be established to encourage digital literacy. Furthermore, in 2019, JPMorgan designed a mobile user interface (UI) for elderlies with voice command functionality. The redesigned mobile UI increased the usage rate by 15% in persons aged 60years and above [7].

VI. CONCLUSION

The use of Robotic Process Automation in U.S. retail banking in 2020 changed the landscape of customer engagement and operational efficiency. The technology used in automating repetitive tasks allowed banks to provide around-the-clock availability of services to their customers who demanded immediate and dependable banking functionality. Such change delivered improved customer experience and considerable cost savings and operational resilience.

Banks implemented RPA for process automation of account inquiry, transaction processing, customer support services that used to involve human resources and were offered during

business hours. RPA transformed these processes to operate 24/7, and the convenience aligned with banking customers' digital expectations. In addition, AI integration into the RPA brought improvements into customer support service through the opportunity to personalize advertisements, offers, and services and optimize customer experience.

Despite the considerable benefits of RPA, a number of challenges were encountered during its implementation. Banks experienced various issues concerning system integration, data security, and employee resistance to new technology. When integrating RPA software with legacy systems, compatibility issues were sometimes present. This required planning and the utilization of middleware solutions for smooth integration. Data security issues also arose where there was a need for authentication mechanisms and encryption to safeguard client information. Employee resistance to the automation of certain tasks was dealt with through training and sensitization on the benefits of RPA to the institution and individual job functions

The case studies conducted on some of the top banks such as Bank of America, JPMorgan Chase, etc. delivered some insights regarding how the implementation of RPA delivered results. The results showed the reduction of manual effort, responsiveness, and an increase in customer satisfaction. Learning from their case studies explained best practices for RPA implementation such as initiating a pilot project, executive sponsorship, and aligning RPA project with business goals

In the future, the growth of RPA solutions will help change the banking industry even more, especially with significant progress of AI technologies used in these solutions. With the growth of customer expectations, those banks that are willing to adopt RPA solutions and invest in digital transformation will ultimately benefit, establishing more reliable customer trust and becoming more competitive in the increasingly digital world.

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