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Customer Feedback System & Businesses

Jinal Momaya ¹, Dr. Kirti Muley ²

Student ¹, Assistant Professor ²

Bharati Vidyapeeth ¹, Bharati Vidyapeeth ²

Navi Mumbai ¹, Navi Mumbai ²

Abstract - Many businesses have long struggled to retain current customers while also attracting new ones. In this regard, online client feedback collection and tracking have enabled businesses to evaluate and upgrade their services and product capabilities as needed to maintain and improve competitiveness. This system not only assists businesses in better understanding their customers, but it also encourages them to provide feedback on a product or service. Feedback systems can identify dissatisfied customers and clients. We hope to learn more about how this system works and what its implications are for the business as a result of this research. We'll go over everything from how the system worked before the technology to how it now helps businesses.

1. Introduction

Customer satisfaction is one of the most important issues concerning business organizations of all types, which is justified by the customer orientation Philosophy and the main principles of continuous improvement of modern enterprises. Customer is an individual or business that purchases the goods or services produced by a business. The client is the end goal of businesses, since it is the customer who pays for supply and creates demand. Businesses often follow the adage that "the customer is always right" because happy customers will continue to buy goods and services [1]. In today's competitive business environment, customer satisfaction is an increasingly important component of an effective organization. Customer satisfaction is a key component of a successful and prosperous organization. It has been linked to higher profit margins and greater employee satisfaction, customer loyalty, customer retention, and repeat purchases. When measured in financial terms, it is easy to see why customer satisfaction should become the foundation to all other measures of business performance. Satisfied customers will return to buy more, recommend you to others, cost less to sell to, and cost less to service. In short, organizations that actively manage customer satisfaction are actively managing their ongoing profitability. Building customer relationships is one of the customer retention strategies used to improve customer service and reduce customer churn. [3] Many organizations simply categorize customer satisfaction measurement as a form of "marketing intelligence" instead of using it as a management tool to build the customer into their quality improvement processes and increase profit. As a result, companies often know the cost of

providing good service, but they rarely know the cost of providing bad service. Many market research companies agree that even "satisfied customers" will defect. Therefore, this study is concerned with customer satisfaction to meet customer needs to make customers loyal and retain them for better profit in today's modern market. Customer feedback is critical for determining a customer's requirements and preferences, especially when a company launches new products. Focus groups, in-person research, and customer phone surveys are examples of customer feedback strategies used to identify what product features, flavors, or styles people prefer. [5] Customer feedback assists organizations in determining what is important to their customers; without it, a company would be unable to meet the consumer's product needs. As a result, its items are likely to fail in the market. Customer feedback can be used to assess how staff at a company handle customers. A typical sort of marketing research is customer service satisfaction surveys. Companies can use surveys to see if customers are getting answers to their inquiries and if problems are being fixed.

Section 2 gives a comprehensive summary of previous research on a topic. In section 3, a brief intro for the specific procedures or techniques used to identify, select, process, and analyze information about this topic is given. Conclusion of this paper is mentioned in section 4. Section 5 is a list of references used to gather information regarding this topic.

2. Literature Review

When customers had problems or were dissatisfied with a product or service, they had to go through the time-consuming process of calling customer service, where they had to explain their complaint each time they called because the person answering the phone was not the same every time.

When new technology was first introduced, there were only forms to collect feedback and keep records, and users had to contact customer support and provide all relevant information. Furthermore, because of these surveys, no proper insights were developed, and firms were forced to make assumptions based on the average data they had gathered.

[4]Because of technological advancements, all these things can now be created and viewed on a single platform.

And, with the right system, you can put your customers at the center of your business decisions, making it easier to keep current customers and gain new ones.

We will also be able to outperform competitors who are less concerned with customer satisfaction. This system assists users in meeting their needs while also growing itself in all aspects.

3. Research Methodology

To obtain the information, there are various websites and online blogs which were referred to. The Fig.1 represents how the growing companies prioritize customer feedback:

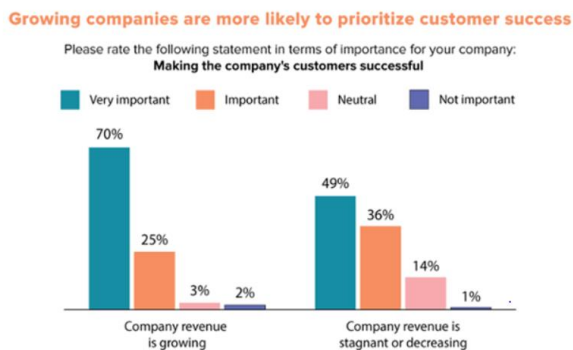


Fig.1 Companies likely to prioritize customer success

According to results from a recent survey by Fan & Fuel, 92% of consumers will hesitate to make a purchase if they don't see a customer review [2]. And not just any old review will do. Those filled in stars under a product might look nice but 34% want to see a detailed written review before making a buying decision. [7]If potential customers don't trust the reviews on your website, chances are they won't make a purchase. Adding customer reviews to marketing strategy can help build a positive reputation for a company. Reviews acts as a place for interaction.

WHAT IS THE ONE MOST IMPORTANT ELEMENT THAT MAKES YOU BELIEVE THAT THE SITE'S CUSTOMER REVIEWS ARE RELEVANT/USEFUL?

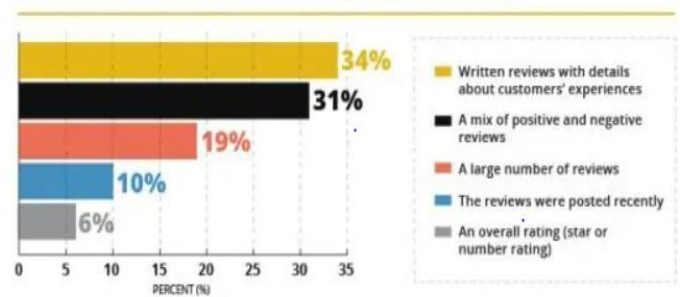


Fig.2 Types of customer reviews efficient over online platforms.

A methodology starting from feedback gathering to the use of evaluation results in the design office is presented in Fig.3. The proposed methodology consists of three steps namely (i) Gather, (ii) Analyze and Evaluate, and (iii) Utilize feedback which are described in following sub-sections.

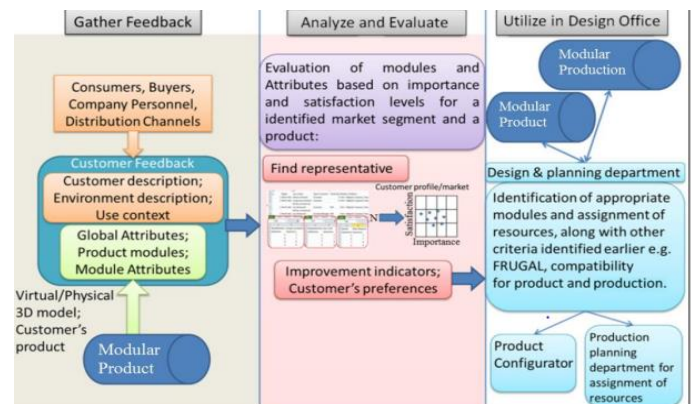


Fig.3 Process of feedback gathering

i) Gather- Customer feedback is initially acquired, and data on all elements such as satisfaction, likelihood to recommend, and personal information is gathered and kept for future reference.

ii) Analyze and Evaluate This information is then utilized to determine if the consumer is satisfied or unsatisfied with the product or service. For the comments, more advanced techniques such as Text Analytics can be automated.

iii) Utilize feedback - The information gathered can be used to improve the product or service if necessary, or it can be used to work with customers to meet their needs and improve things in every way.

4. Result & Conclusion

[6] Customer satisfaction has a positive impact on an organization's profitability; happy customers are the foundation of any successful business because they lead to repeat purchases, brand loyalty, and positive word of mouth. Customers who are pleased with their purchases are more likely to tell five or six other people about their purchases. Dissatisfied customers, on the other hand, are more likely to tell ten other people about their bad experience. According to research, even a difference between a completely satisfied customer and a somewhat satisfied customer can result in a factor 2.6 increase in revenue contribution

Customer satisfaction is one of the most important issues that every service provider monitors. The managing level of a business can ensure a way of knowing what the customer thinks about their service and what needs to be changed to gain positive customer satisfaction through customer satisfaction and loyalty surveys.

It is critical for a business to know what their customers think about their service, how satisfied they are with what the company offers, or how loyal their customers are to their company, whether through a questionnaire, a mail-in survey, or an internet survey, or a poll. Customer satisfaction is viewed as a strategic tool for business development.

Collecting customer feedback and responding to this type of information is one of the effective ways to assess the quality of your product or service, your performance in the industry, and how you handle different types of customers. It is used as an instrument to grow and improve the overall aspect of the business for the greater good of the customers.

5. References

[1] Evaluation and management of customer feedback to include market dynamics into product development by - Gupta, Ravi Kumar; Belkadi, Farouk; Bernard, Alain , dt: 21-25 August, 2017.

[2] Research Study - A study on customer satisfaction by - Mr. Gowtham Aashirwad Kumar

[3] Exploring the impact of customer feedback on the well-being of service entities: A TSR perspective

[4] <http://www.diva-portal.org/smash/get/diva2:1020372/FULLTEXT01.pdf>

[5] <https://getthematic.com/insights/customer-feedback-analysis/>

[6] <https://outrankco.sg/blog/how-customer-feedback-impacts-a-business/>

[7] <https://www.qualitylogoproducts.com/blog/how-can-customer-reviews-impact-your-business/>



Tackling Banking Sector Fraud FRM (Fraud Risk Management)

Tanmay Vidyadhar Mhatre¹, Prof. Shubhangi Mahadik²

^{1,2}Master of Computer Application, Bharti Vidapeeth Institute of Management and Information Technology, University of Mumbai

ABSTRACT

The impact of COVID-19 has resulted in organizations and regulators across the world operative in an entirely new environment. While we tend to accommodate the new traditional, can be people who will look to exploit gaps and weaknesses within the systems. Financial crime across the world is anticipated to rise in response to the uncertainty within the business landscape. For banks, the economic lag has solely heightened the risk of fraud and money laundering. Banking sector regulators are at the forefront of fraud mitigation methods, prescribing frameworks that banks got to adopt to spot and mitigate fraud risks.

As new risks begin to emerge, banks need to remain vigilant to ensure they continue to effectively mitigate them. Banks which will or which may apply technology to reinforce their operations can remain high of preventive, detective, and social control measures, thereby effectively guarding themselves against progressively advanced financial crimes.

With this backdrop, the Tackling Banking sector fraud attempts to understand banks mechanisms to tackle fraud risks, the impact of new operational models on fraud risk management, and perspectives on making strategic investments for the future. We tend to hope that the report can influence discussion or debate amongst banks, regulators, and practitioners on a way to tackle (and improve) fraud and compliance risks being faced these days. In any situation, the trade should harden successive traditional to be terribly totally different from that of the past 10 years, for which, this report is meant to supply strategic direction.

Keywords—Banking Sector, Financial Analysis, Fraudulent, Risk, KYC, Internet / Mobile Banking, Tackling frauds, Cybercrime, Data theft, ATM Skimming, Identity theft, Cybersecurity, Artificial Intelligence, Machine Learning, Monitoring Systems.

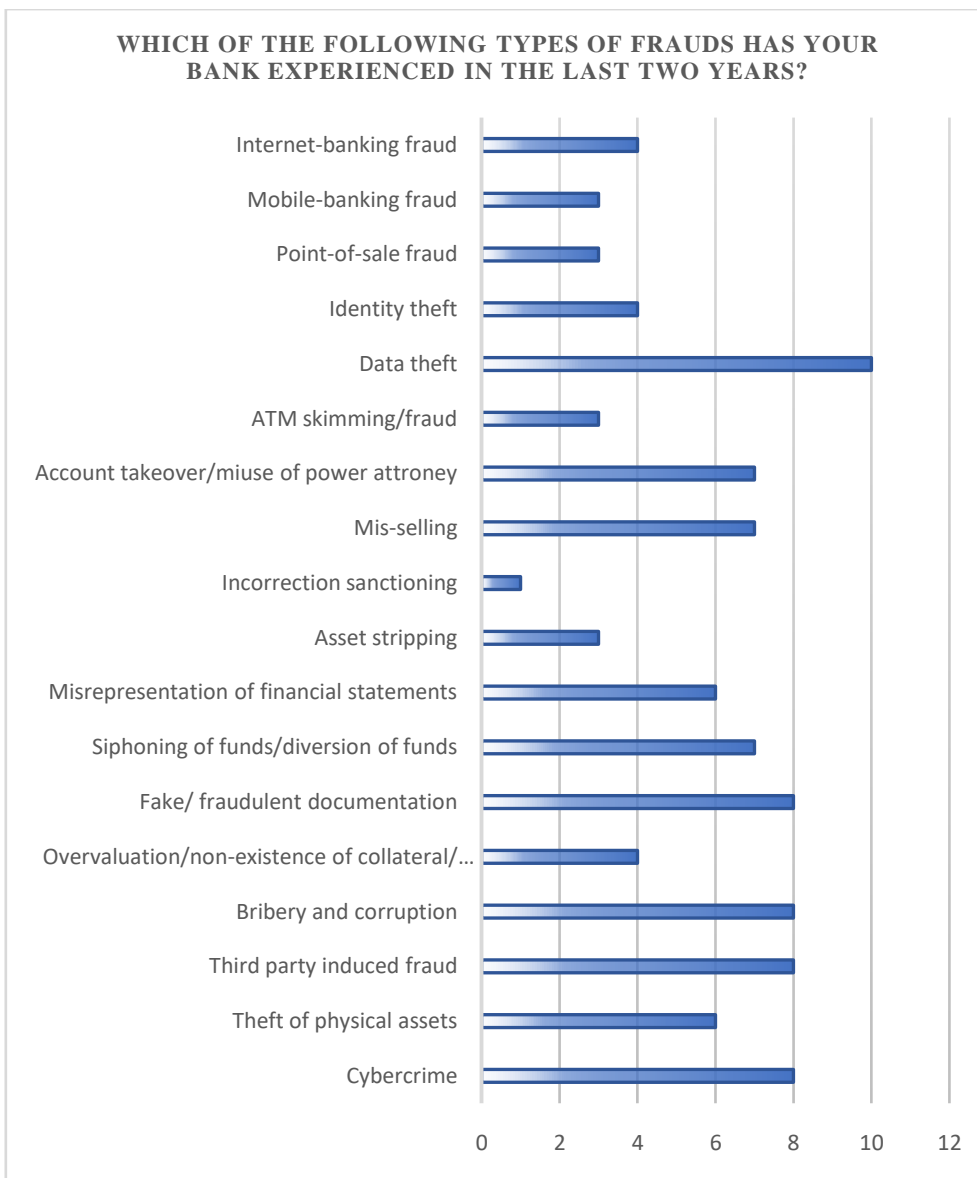
1. INTRODUCTION

A comparison of a number of the key findings indicates that whereas technology (if within the wrong hands) can be accustomed to circumvent bank systems, it can even be a good tool to stay sooner than and identify/detect fraud risks. **78% respondents believe that frauds in the banking sector will increase over the next two years.**

I. Understanding the present fraud setting within the banking sector.

a) Trend Analysis: Does one believe that the present business disruption thanks to the pandemic will spur banking sector frauds over consecutive 2 years?

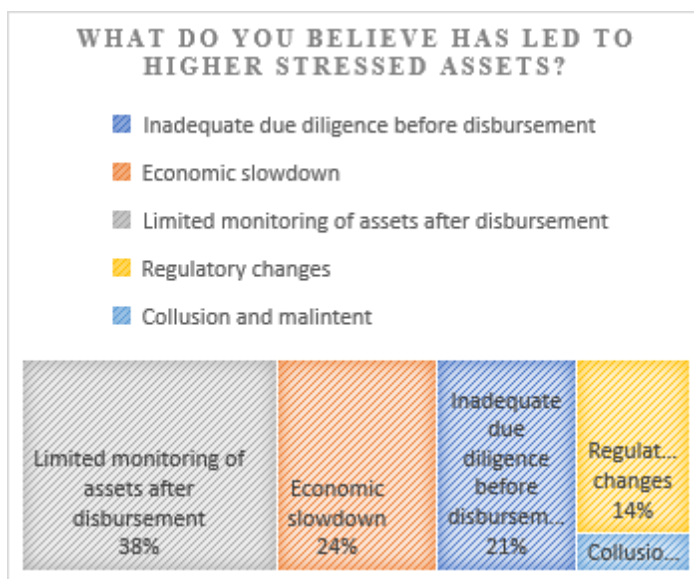
COVID-19 came at a time once banks were troubled to upset an increasing variety of fraud incidents. Banks were facing a three-pronged “attack” in combatting money crime: Growth in digital transactions, often evolving restrictive tips, and new fraud trends. Whereas banks area unit however to completely perceive the implications and impact of the present setting on fraud-related matters, there seems to be acceptance on a part of the banks that the pandemic could result in an increase in frauds with 78% respondents stating that frauds might increase over consecutive 2 years.



Over the course of the previous few years, there has been a significant push towards money inclusion and digitization, creating each shopper and banks trust heavily on electronic channels for banking. This has solely additional intense throughout the pandemic and should seemingly still increase. No doubt, the recent changes/ technological advancements led to by the pandemic can have an enduring impact on the banking system. additionally, it's extremely seemingly that additional changes could also be secured within the future within the approach the banking system operates. In line with these trends, data theft, cybercrime, third-party evoked fraud, graft and corruption, and deceitful documentation are known because the prime 5 considerations with over 42% of respondents (cumulative) coverage to be victims of those. Risks like knowledge thievery and graft and corruption have currently come back to the forefront. there's an obvious increase in these fraud varieties. With a shift in these trends, banks ought to create a cooperative effort to proactively establish the foundation reason for these fraud risks to be higher ready within the future. Increasing instances of knowledge thievery and crime can be particularly horrible for banks, as this might have a negative impact on shopper confidence and trust.

b) Impact of COVID-19: COVID-19 forced each and every run batted in the RBI and financial establishments to require measures to counter its unquiet effects. In response to the pandemic and to assist rejuvenate the economy, the run batted in and also the Government of Republic of India declared a good style of initiatives. Amongst these were the moratorium on loan re-payments, the interim freeze on economic condition and Bankruptcy Code (IBC) cases, and loan restructuring to call a couple of Banks too had to adapt to the restrictions that resulted from the covid-19 pandemic. Lockdowns and social distancing norms restricted the quality of bank workers and customers, thereby increasing the reliance on digital channels and alternative varieties of non-face-to-face banking services. With a major variety of bank workers performing from home, banks had to supply their workers remote access to their organisation's network and data. This forced banks to enact vital organisational and operational changes at intervals a brief timeframe to avoid

service interruptions; move a worrying question—have all such changes been assessed for his or her vulnerability to fraud? With myriad changes being deployed at the front-end however processes and systems probably remaining untouched, have banks been exposed to unknown vulnerabilities? thanks to the arrival of recent digital touchpoints between banks and their customers for numerous contactless banking and alternative services, banks should take the mandatory steps to grasp however these changes can impact their fraud readiness. consistent with business specialists, new loans and loan extensions area unit expected as a results of the government’s input package for MSMEs further because the run batted in moratorium. Banks can ought to be further argus-eyed whereas granting facilities or invigorating existing facilities, taking into thought the strain within the account and viability of the business amidst the modified state of affairs. With changes caused by the pandemic continued to continue loads of how during which than one, banks will need to be loads of agile in implementing modification swiftly whereas not comprising on risk management.

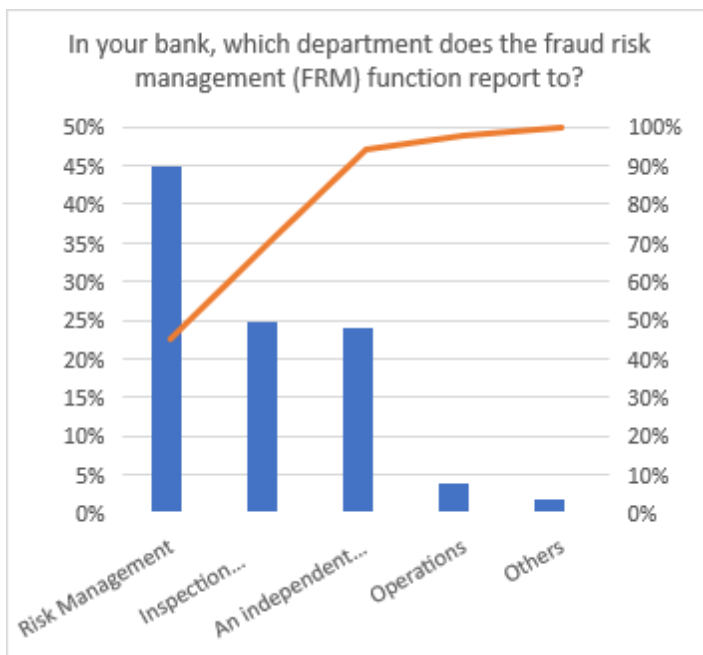


c) Stressed assets: Stressed assets continue to be an area of concern for banks, with the pandemic adversely impacting specific industries. Respondents have cited limited asset monitoring after disbursement 38%, the economic slowdown 24%, and insufficient due diligence prior to disbursement 21% as the top three factors leading to higher stressed assets. These recommend that banks may have to overhaul their due-diligence and watching frameworks. For the effectiveness of plus watching frameworks, banks ought to think about an integrated approach that applies the findings of pre-disbursement due diligence to on-going watching and identifies anomalies and red flags. during this approach, it's important that the extent of due diligence conducted has correct, extensive, and unjust intelligence. within the post-disbursement part, watching must be sturdy and across-the-board of EWS, new fraud situations, and desegregation intelligence gathered from internal and external information sources.

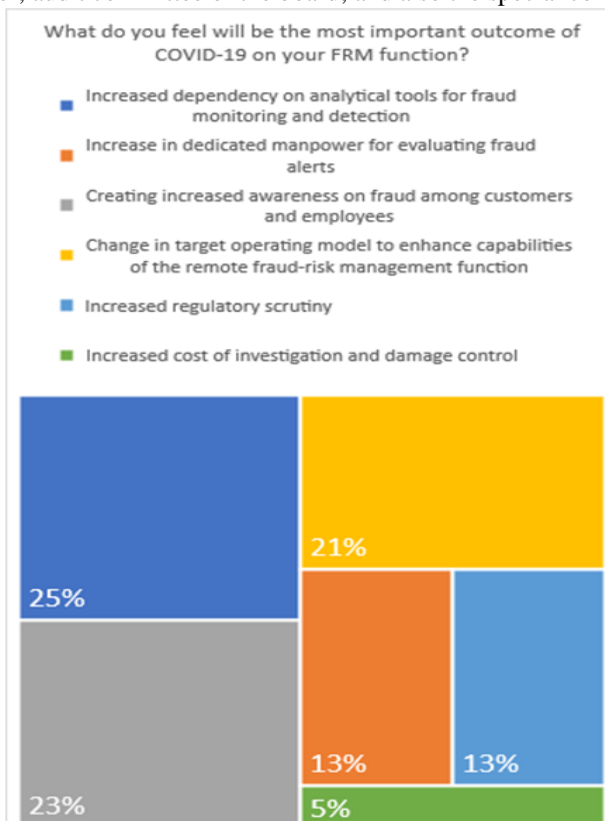
II. Fraud risk management and continuous monitoring at banks.

a) Current FRM governance and structure: Positioning the FRM operate at intervals a bank’s organisational structure solely pure gold respondents mentioned that their FRM department reports on to the disfunction and MD. to boot, concerning forty fifth and twenty fifth respondents expressed that the FRM department was a vicinity of the danger Management and Internal Audit/Inspection functions of the bank, severally.

For Associate in Nursinging FRM operate to be effective, additionally to robust Enterprise Fraud Risk Management (EFRM) resolution, a bank ought to have a zealous and freelance team with a powerful compliance culture. The FRM department ought to look to manage 3 pillars viz., governance, prevention/ detection/ investigation, and coverage. This includes having Associate in Nursinging economical fraud observance system that takes into thought inputs from examination, credit observance, business, etc. teams; having a talented pool of fraud risk management officers; coverage fraud and enhancing policies, procedures, and change risk registers on a timely basis to avoid reoccurrence. a powerful fraud risk management/fraud observance operate will facilitate banks minimise the impact of fraud, thereby reducing losses and safeguarding their name. It ought to be ready to prevent/ detect/ investigate multiple varieties of fraud risks, whereas having the power to arrange for brand new rules still as tackle rising fraud risks.



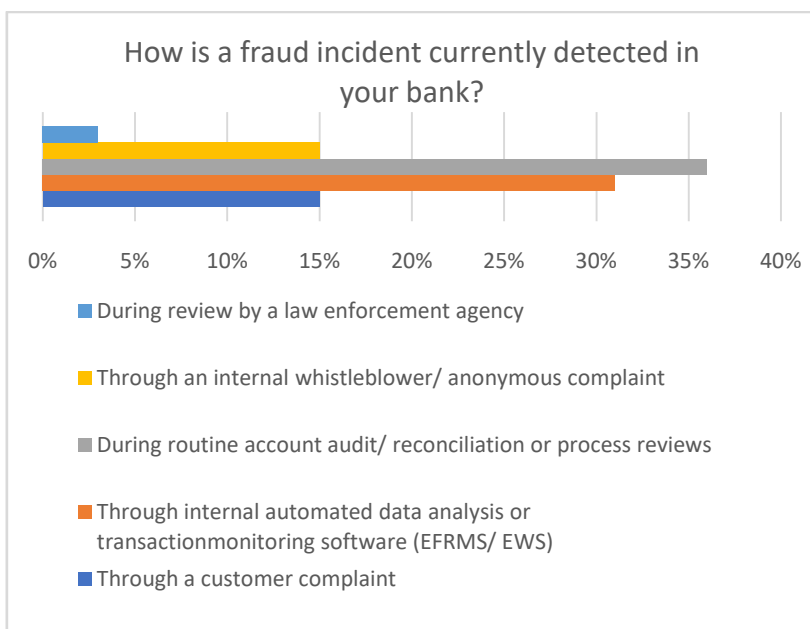
The need for an independent FRM Unit: Having an independent FRM department reporting directly to the ED/MD/CEO of the bank has many advantages, the most important being communicating the importance that the senior management places on the FRM function. A second benefit is the conflict-of-interest avoidance when performing FRM functions. It contributes to the development of new products/ services, process optimisation, skill development, etc., by bringing in aptly skilled resources in an independent FRM unit. An FRM unit may facilitate avoid delays in deciding, particularly in massive worth frauds, and promptly conveyance it to the senior management’s notice. However, with the exception of positioning the FRM unit, it’s vital to form and reinforce a culture with intolerance for fraud at intervals the organisation’s DNA. Active involvement and oversight by the senior management/board will facilitate set the correct tone at the highest. making a zero-tolerance culture conjointly involves human action this message and demonstrating the main focus needed from senior management. additionally, in line with the tally,1 the fraud risk management, fraud observance, and fraud investigation operate should be closely-held by the bank's chief operating officer, audit committee of the board, and also the special committee of the board.



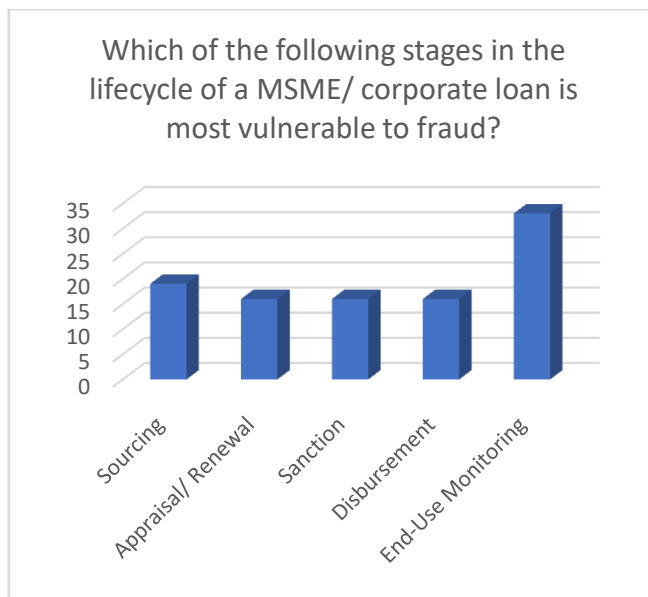
b) Current status of the implementation of anti-fraud programmes:

According to 25% respondents, the foremost necessary impact of the pandemic on fraud risk management functions has been exaggerated dependency on analytical tools for fraud observance and detection. victimisation information analytics as a part of fraud risk management could also be indicative of a shift within the industry. The pandemic has resulted in employee’s shortage, increase in contact-less operations and services, and remote operations increasing the necessity for information analytics-oriented fraud risk management solutions. this is often evident by 21% respondents’ lightness those changes in their target operational model to reinforce capabilities of the remote fraud-risk management operate also will be Associate in Nursing outcome of the pandemic. in line with 35 and 30% respondents, severally, a fraud incident was detected either throughout a routine account audit/ reconciliation/process review or through an enclosed machine-driven information analysis or group action observance computer code (EFRMS/EWS). This represents a major improvement, compared with our previous edition, whereby solely 26 and 20% respondents severally attributed fraud detection to constant factors. This conjointly ties in with our expertise over the course of the last 2 years wherever banks, having completed its effectiveness, have currently started victimisation technology, together with information analytics to proactively establish frauds.

A majority of the respondents 33% cited end-use observance because the most vulnerable stage at intervals the corporate/MSME loan cycle, movement the best fraud risk; with sourcing nineteen hierarchal as second. Results of this survey affirm the importance and criticality of optimising and making certain the effectiveness of the post disbursement and continuous observance framework. The key to establishing an efficient continuous observance framework is to induce varied enablers right, Early Warning System (EWS), market intelligence, and info analysis, and synchronise their output.

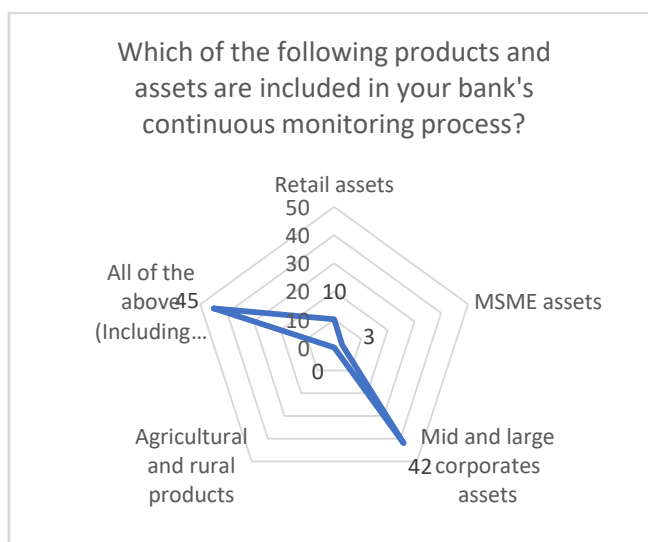


45% respondents conduct fraud risk assessments and update the fraud risk registers once in two/three years. Given the dynamic nature of the banking atmosphere, conducting fraud risk assessments each two/three years might not be prudent. Recent years has seen the introduction of latest technology enabled product and digital payment channels serving to scale back face-to-face touchpoints between banks and their customers. This exaggerated reliance on remote and electronic channels may presumably have given rise to fraud risks that previously might not have secure the maximum amount attention. The amendment within the banking atmosphere has been combined by the pandemic-induced disruption, leading to a larger degree of uncertainty. Conducting fraud risk assessments with larger frequency is Associate in Nursing absolute necessity in current times to know the impact of those changes on fraud, still on proactively establish new fraud risks/trends. prime challenges featured by banks in playing a rhetorical audit in-house embrace technological limitations to scan and analyse the borrower’s accounting records 25%, lack of knowledge analytics capabilities 21%, and lack of requisite talent sets 20%. In addition, the lack of a dedicated team, according to 17% respondents, is another major impediment. To address these issues, banks should ideally establish a dedicated team to address such requirements and hire external experts to provide necessary training on the necessary skillsets, tools, and technology.



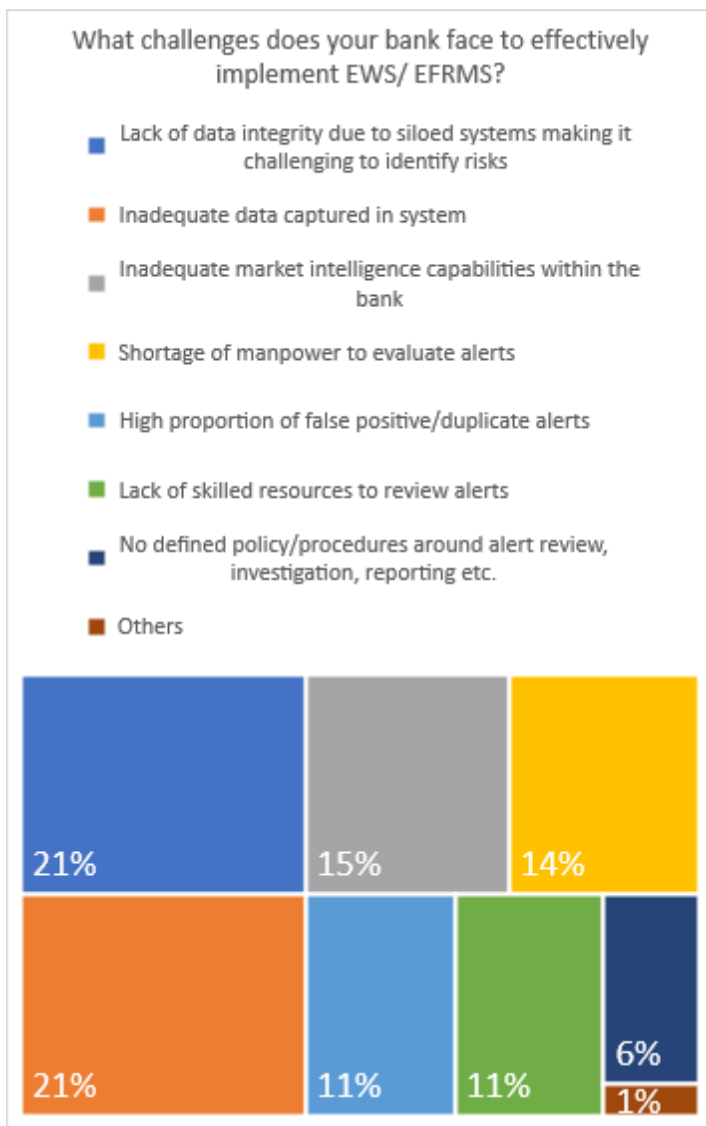
c) Proactive approach in strengthening fraud risk management: A majority of the investment in fraud mitigation measures has been in optimising existing EWS and fraud monitoring systems using AI/ML 22%, enhancing case management solutions to better respond to frauds 17%, and providing training/workshops to upskill team members as part of the FRM function 17%. Considering that a majority of respondents indicated end-use monitoring as the most vulnerable stage of the loan lifecycle (to fraud), investments in optimising the monitoring system is to be expected.

As an approach to continuous monitoring of assets, it's encouraging to see that banks have allocated their resources across a combination of methods. This includes 21% of respondents relying on a dedicated team with FRM experience to handle high value credits, supported by 15% of respondents that highlighted their reliance on data analytics tools such as EWS. Other approaches adopted by survey respondents include a dedicated market intelligence unit attached to the FRM team 12% and use of external sources of information 11%. Considering the increase in volume and complexity of transactions enabled by new technologies, the low percentage of respondents opting for data analytics tools for asset monitoring poses a bit of a concern. Ideally a continuous monitoring mechanism should include all aforesaid approaches operating in unison for an all-encompassing view of assets. Such a mechanism would aggregate outputs from all the approaches/processes mentioned above, providing more actionable and consolidated intelligence. Reliance on only one or some of these approaches in isolation will not yield effective results.



About 51% respondents indicated that they do not include MSME assets in their continuous monitoring process, which may be a potential area of concern. To counter the pandemic's disruptive effects, stimulus packages were announced to help support the MSME sector. It is anticipated that the stimulus will lead to a high volume of activity in the sector in new loans and loan extensions. This increase in demand/activity would invariably be accompanied by parties attempting to profit illegally. In this regard, banks should also monitor their MSME assets as part of their ongoing monitoring process.

III. capabilities to ensure continuous monitoring Insights | Investing for greater resilience and accelerating efficiency in fraud risk management



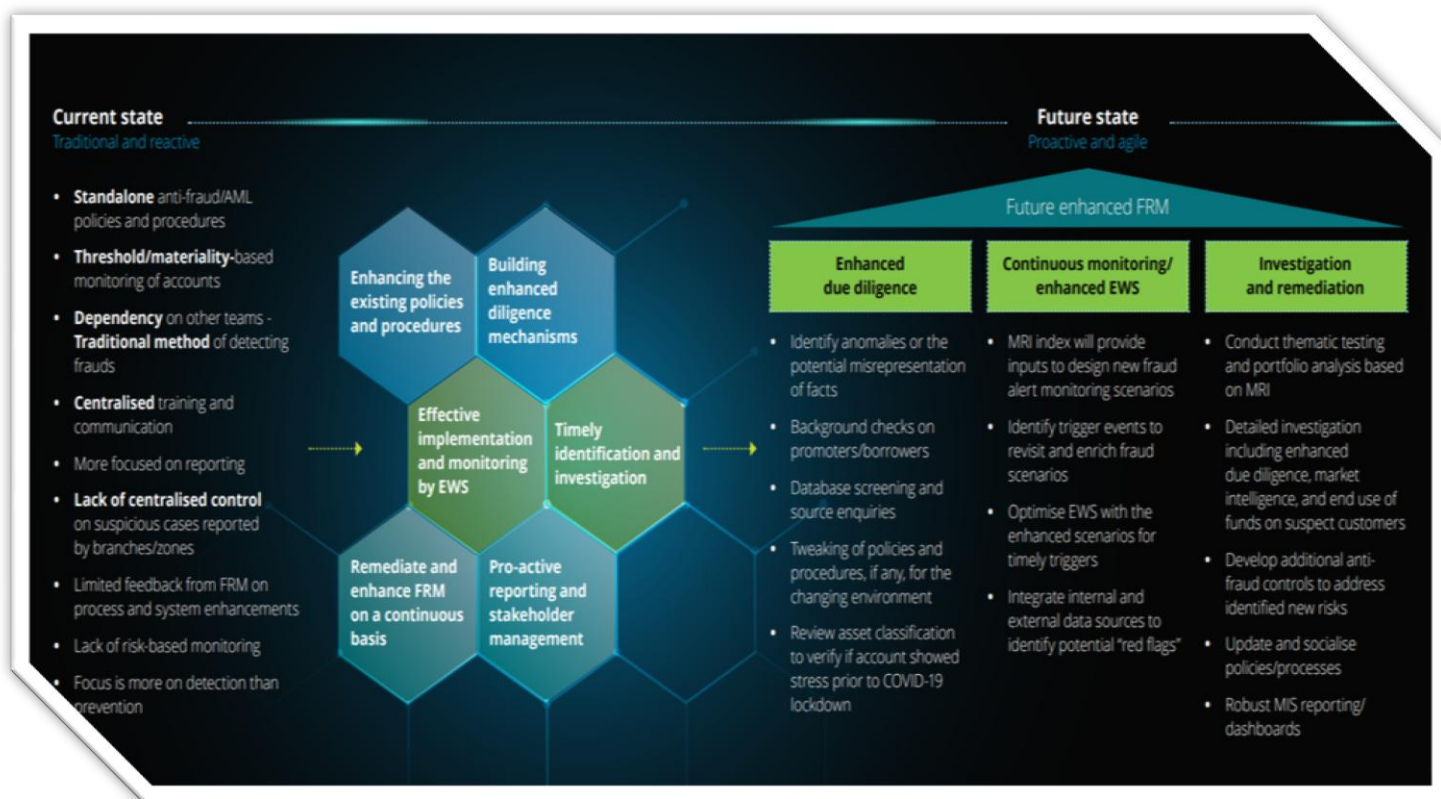
The Indian banking industry, over the last few years, has emphasised on the significance of establishing anti-fraud cells or fraud monitoring departments to perform investigations and also focus on prevention and the timely detection of potential fraud activities through fraud monitoring systems, etc. However, considering the increasing value and incidents of frauds, as published in RBI's Annual Report for FY 2020-21, there appears to be significant scope to improve the prevention and detection capabilities of fraud monitoring units to make them more comprehensive, and proactive in nature. The recommendations include setting up a Market Intelligence Unit (MIU) to support fraud risk management, as well as the inclusion of a credit monitoring team in the bank to provide inputs/insights at the time of appraisal/sanctioning/during monitoring of customer activities. Currently, the alert definitions configured for EWS and fraud monitoring systems are primarily based on a customer's transaction in the bank and financial statements. However, inputs from MIU will help identify and highlight red flags such as the presence of shell companies, feedback from top vendors/customers, reason for change in promoters/management, progress on construction sites, and activity levels in a factory. To receive timely and relevant results from the MIU, it is important to ensure that the feed provided by the monitoring team to MIU is accurate and current. For example, the feed given to MIU to perform checks on suspicious parties who have received payments from borrowers out of the bank loan should be based on the current information available with the bank. This is where data analytics can play a key role to detect potential fraud cases sooner and reduce financial loss, as opposed to the incident being discovered at a later stage. Data analytics does not only mean configuring pre-defined rules for alert generation but also identifying ever-changing anomalous activity patterns. This dynamism can only be brought about by the use of AI and ML tools. Over the coming years, banks will need to adopt a more sophisticated approach to fraud risk management by integrating state-of-the-art fraud detection tools, as well as by combining Big Data analytics with AI to generate more meaningful and accurate alerts. Integrating

these features with the fraud risk management approach will allow banks/FIs to monitor customers across all stages of their lifecycle, from onboarding to settlement.

Enhancing the existing FRM function:

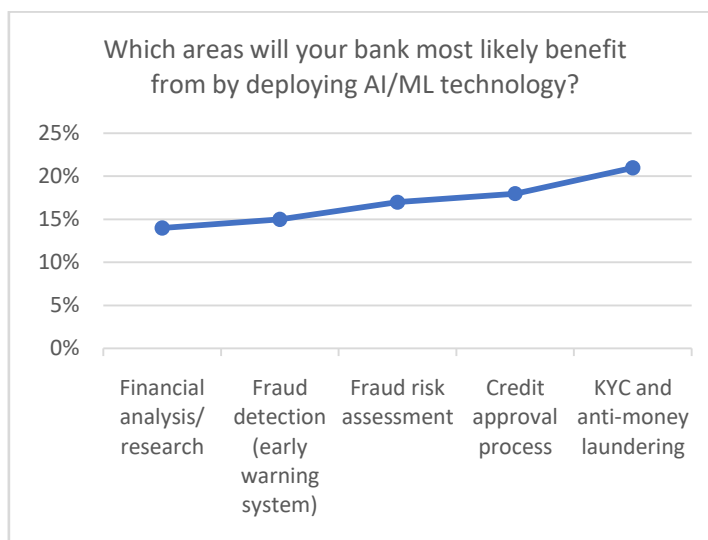
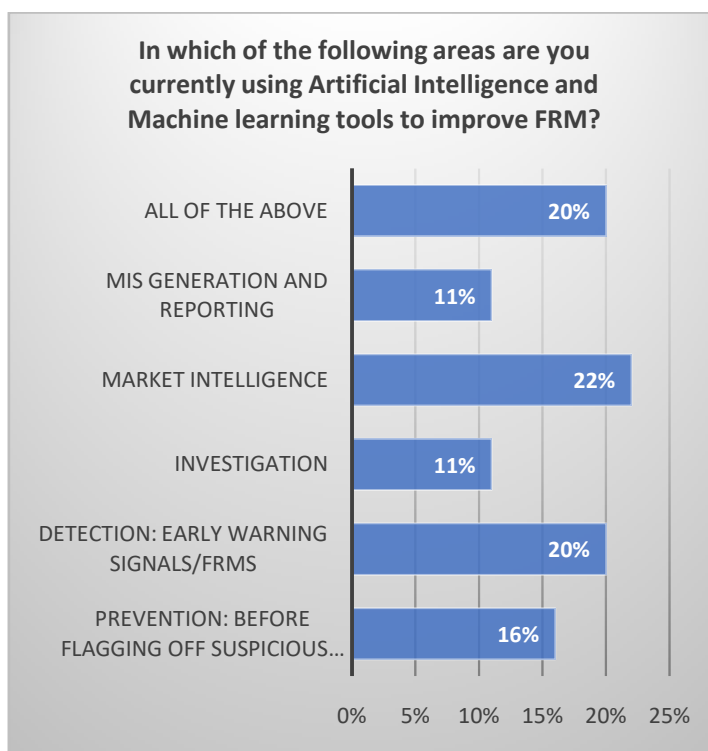
The current traditional methods of fraud detection are plagued with the lack of centralised control, limited feedback from FRM processes, lack of risk-based monitoring, focus on detection than prevention, etc. To transform to a proactive, agile future and achieve a robust and comprehensive system, EWS and FRM needs to be integrated.

Bringing synergism across numerous fraud risk watching tools: Industry-wide banks area unit victimisation numerous systems that run pre-defined eventualities and generate alerts, which can be within the variety of early warning signals, potential fraud alerts or suspicious alerts, indicating concealing activities. However, most banks still monitor these alerts in isolation. many banks have begun to integrate numerous alerts watching tools to bring synergism and acquire a comprehensive read of consumers and their transactions. Integration of alerts doesn't essentially mean that one team reviews all alerts generated by numerous tools deployed by banks. transportation additional synergism might entail revisiting the alert eventualities outlined in numerous systems, alignment between the FRM and EWS groups, knowledge sharing between the FRM and credit monitoring/inspection departments to proactively establish red flags, providing purposeful insights to the AML dealing watching team for review, and news to FIU, if needed, etc. For banks, this combined effort can facilitate bring home the bacon the final word common objective of protective its customers from potential loss and enhancing trust amongst customers and also the banks' stakeholders.



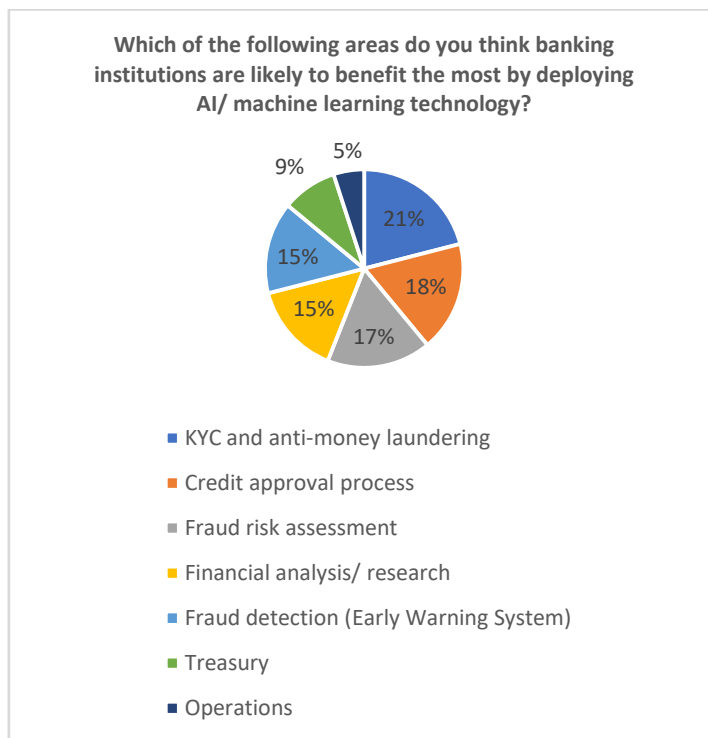
Upscaling resources in FRM: restricted watching when disbursement of assets has been known as a serious contributor to stressed assets by over 38% respondents. This seems to possess evoked AN applicable response from the banking sector within the variety of inflated reliance on measures like EWS and knowledge analytics. The survey additionally indicates banks' significant reliance on FRM human resources for effective continuous watching of assets, with 20% respondents choosing a passionate team of tough FRM professionals to handle high-value credits. Upscaling resources in FRM The business appears to possess reached an agreement on the necessity of continuous watching and effectiveness of tools, like EWS and knowledge analytics; but there seems to be many challenges within the effective implementation of those tools/ measures. The survey cites factors like lack of information integrity thanks to siloed systems, lack of dedicated groups and also the absence of the general ability sets needed in market intelligence, rhetorical audits, and EWS alert reviews and analytics, as impediments to operationalise an efficient fraud watching framework. The criticality of getting an efficient fraud watching framework has been amplified thanks to AN upward trend in frauds since our previous survey. considerations area unit heightened by expectations that the dealing volume can rise as a results of government stimulation and 78% survey respondents stating that banking frauds might increase over succeeding 2 years. during this regard, upscaling FRM resources is critical, each in terms of their strength and

ability sets. The banking system has to establish resources with applicable ability sets and skill to workers its FRM operate and make sure that knowledge analytics capabilities in essential areas like market intelligence, rhetorical audits, and EWS alert reviews area unit developed. This calls upon the banking system to form strategic investments in areas of coaching and ability development.



Need to enhance EWS and FRM victimisation AI/ML: the rise within the use of digital channels for transactions by customers, on one hand, has contributed to the convenience and speed of transactions. On the opposite hand, with evolving business models and inflated technology use, fraud risk management frameworks are introduced to newer and additional complicated challenges. This ever-evolving technology across banking channels means human decision-making and ancient dealing alert systems aren't any longer effective within the timely detection of frauds. digitalization of business transactions has semiconductor diode to a vast increase in transactions a day, that successively, has chop-chop inflated the quantity of bank dealing datasets. apparently, this knowledge holds many valuable insights that may establish fallacious behaviour or patterns within the dealing activities of a specific client at AN early stage. AN intelligent knowledge analytics tool will mine through Brobdingnagian volumes of information, gather and analyse intelligence from external sources, and establish hidden relationships and red flags. this may alter banks to proactively establish potential fallacious transactions before they manifest themselves. Through human higher cognitive process, together with machine learning algorithms (that will learn from these datasets), fraud risk identification and detection is a lot of quicker and additional economical. Currently, most early-warning and dealing watching systems that generate

fraud alerts area unit rule-based. once a precise threshold exceeds/certain conditions area unit met/recurrence is known, the dealing is marked for more investigation. One operational challenge of such ancient EWS and fraud alert watching systems, with predefined thresholds/ parameters, is that the range of “false positives”— transactions that area unit flagged as suspicious, however that end up to be regular. Following up and investigation such false positives is a really long and cost-intensive activity for banks. However, by playing periodic reviews of check results and incorporating learnings into watching systems, the prevailing system will learn to discover true anomalies additional expeditiously, with lower warning levels.



To obtain higher results, AI techniques is wont to scale back false positives and spot true positives and discover new patterns. Anomaly discovering algorithms area unit customized to detect fallacious transactions by analytic exceptional things supported variables noted to the model. The input from risk, compliance, and business groups complemented with intelligence gathered through external sources is important to implement this use case. additionally, banks will use knowledge segmentation, in addition to applied math analyses to spot characteristics specific to every generation and build custom thresholds. for instance, high net-worth customers tend to be related to massive dealing amounts and should so need totally different parameters than lower financial gain shoppers. Banks will then perform a sensitivity analysis to assist confirm whether or not threshold levels ought to be inflated if too several false alerts area unit generated or decreased if suspicious activity is being incomprehensible, a method called alert standardisation There are a unit many advantages to utilising cubic centimetre in fraud watching and detection: 1. Works with giant datasets – metric capacity unit is best than humans at process giant datasets and its prediction results improve as datasets grow. 2. Reduces operational value – It eliminates the necessity to pay the maximum amount time and resources on reviewing each alert group action because of higher accuracy and automatic predictions. 3. Detects and prevents fraud a lot of effectively – metric capacity unit will quickly adapt to new behaviours of dishonest transactions and helps improve reactions to suspicious outliers. 4. Reduces false positives and prevents frauds with a lot of effectualness. Advanced analytics will facilitate reshape the means banks conduct fraud tests and monitor their operations. In fact, while not victimization correct information interrogation techniques, with efficiency and effectively victimization all the sources of data available—both internal and external—the method of uncovering dishonest behaviours might not be as correct as desired and may take longer and energy, given the massive volumes of knowledge generated by banks.

Conclusion: Closing thoughts

The banking business has ne'er been while not risk; but, given the present rise in fraud trends, there's a right away want for banks to implement strong, effective, and economical management frameworks. Over the past few years, we've witnessed numerous banks increase their investments in enhancing their FRM frameworks and observation systems and controls; but it seems that these efforts haven't been adequate. the present siloed approach to fraud risk management cannot be effective. while banks navigate through these new times, there square measure variety of actions that ought to be thought of once protective their business from fraudsters United Nations agency wish to use the pandemic for his or

her own gain. the style within which banks favour to answer challenges can still be the main focus of the general public, regulators, and investors, and can position them well to address any future crises that comes their means.

- ✚ Review scenarios/rules to replicate the “new normal”. this may guarantee banks square measure neither being inundated by alerts of consumers United Nations agency have deviated considerably in behaviour, like payment flows being modified considerably because of re-configured provide chains, nor square measure new patterns/ fraud trends left out on.
- ✚ With several regulators across the world emotional tips, banks got to take the time to live the effectiveness, appropriateness, And potency of existing controls against an updated risk assessment. Regular/timely and updated risk assessments will facilitate banks make sure that their square measure linkages between risk typologies and also the management framework.
- ✚ Replicate on the technology used/strategy to forestall, monitor, and observe monetary crime. A key challenge for banks managing their restrictive obligations is finding the balance between risk management and efficiency/effectiveness through innovation victimization AI and metric capacity unit.

The manner within which banks favour to answer challenges can still be the main focus of the general public, regulators, and investors, and can position them well to address any future crises that comes their means.

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Search Engine Optimization : An overview

Owesh Khatri¹ and Dr. Kirti Muley²

Student, Department of MCA¹

Professor, Department of MCA²

Bharati Vidyapeeth Institute of Management and Information Technology, Navi Mumbai, India

Abstract: In today's world internet is growing with each passing day. Data is very huge and complex. To sort and manage this huge amount of data over large database search engine plays a very important role. Google is the basic and most widely used search engine through which we can optimize the website. With the help of search engine, we can actively gather the visitors to our site. Search engine is the most common part of our daily life. Because of this reason, a search engine plays a very important role as people can search and explore or find according to their needs.

Keywords: Search engine optimization, seo, off-page optimization, on-page optimization, meta tags, google, search engine.

I. INTRODUCTION

Users use most of the queries by searching on the web. according to most of the users they prefer results of top most pages with high rank. if the company website is not listing on the first page then it will be less productive for the business. for successful business the website of company should be listed on the first page or first 3 ranks.

There are millions of search per day. For example, if someone wants to buy a goods in unknown place in that case he uses search engine to search particular goods. With the help of search engine, it will show the top ten results and top links [3]

II. DESCRIPTION – SEO

SEO stands for Search Engine Optimization, which is the action in which it will increase the quantity and quality of traffic to your site through organic search engine results. SEO is the process in which we try to rank our website at the top position.

Ranking is the process in which our website is ranked according to our keywords, it depends upon various factors like our website is updated or not, website should be always updated for proper ranking. There should be proper links are linked to the site.

Links provide various ways to connect our website and brings the traffic towards our website. keywords play an important role in the SEO. Proper keywords are the best match for best ranking. optimized website is always best for high ranking and high traffic.



Fig. 1 Search Engine Optimization

2.1 Search Engine and how it works?

Search engine is the action in which we can search the desired information which we want. Google search engine is the most used one. It is most secure and scalable. It uses various algorithms to give results and performs various actions. Like crawling, indexing, processing. Crawling is the process in which it crawls the whole page for the information. Indexing indexes the information and processing processes the information.

2.2 Page Rank

Page rank is the algorithm which is developed by Google to rank search engine results. Page rank is the measure through which we can measure the importance of web page. Page rank depends on various factors like links to a page. It is an algorithm used by Google [3]. The numerical weight that it E is referred to as the PageRank of E and express by PR (E).

$$PR(A)=(1-d) + d (PR(T1)/C(T1) + \dots + PR(Tn)/C(Tn))[3].$$

III. METHODOLOGY

There are various methodologies using which one can optimize their page and searches, but mainly the most common types of optimization are, On Page Optimization and Off Page Optimization.

3.1 On Page Optimization

Following are the process involved in On page optimization to have enhanced rankings and appearance of page in the search engine.

1. **Page Title:** Title tag is the HTML element that specifies the title of a web page. Example: Title tag used to increase the rank by highlighting the website. [5]

Example:

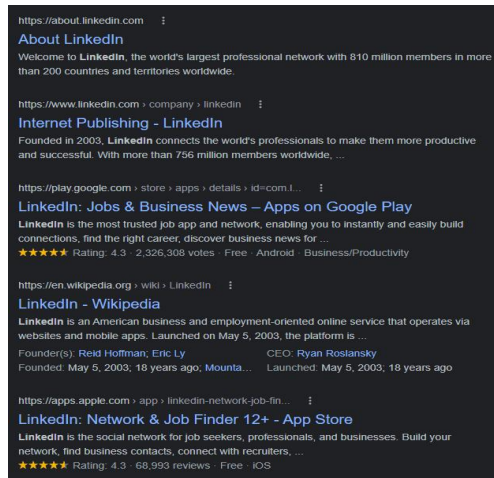


Fig. 2 Meta Description

2. **Meta Keyword:** Meta Keyword is the information which is required to tell the content information in your page. words and phrases that describe what your content is about. [7] It is present in the HTML code. meta keywords provide the actual volume of the keywords and their position among the others, it gives approximately estimated visits and cpc like cost per click. paid difficulty provides the ratio of that keyword to be in favorite to be paid. Search difficulty also provides the comparison between different keywords to be searched. [9]



Fig. 3 Meta Keyword
DOI: 10.48175/IJARSCT-5401

3. **Heading tag:** It is the most important tag for search engine optimization .it uses HTML, CSS to handle the process. Heading tags are <h1>to<h6>are used to define heading on a web document. <h1>is the bold and <h6> is the smallest. Heading tags are used to make website readable and attractive. It shows the structure of the website.[10]

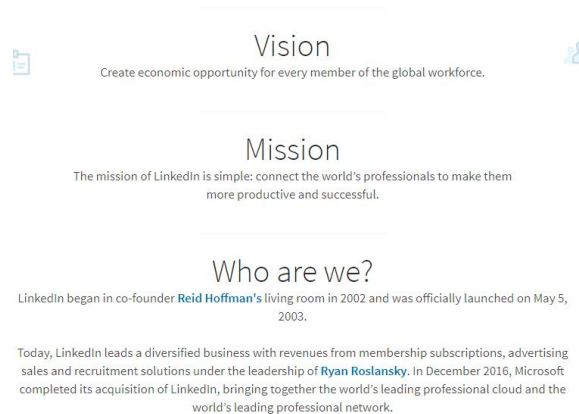


Fig. 4 Heading Tag

3.2 Off Page Optimization

Off page optimization uses the strategy where it not connected directly to the webpage. It is the action where we make a social submission to increase the rank of our site. It is used to improve the performance of our site and keyword research. [11]

1. **Social Submission:** Social Submission is the process in which we submit our website link to different social networking sites. With the help of this our ranking of page is increases as the person visits our site. Quora is the best platform for social activities. It is the platform where we can ask questions and can also give the best answers. Here we can choose the relevant questions and give the answer with our company website for linking. Blog posting is also a very important aspect where we post our blogs to different sites with website url so people can visit our site for reading the blogs.[11]
2. **Link Building:** It is the process in which we tried to link other website links to our site by linking links to their sites. Because of this all the traffic will be directed to our site. [12]

IV. PROS AND CONS

4.1 Advantages of SEO

- Can rank among the top 10 sites
- It will increase the traffic and sales of our business.
- ROI increases as the rank of our site increases.
- It is very cost effective and it increases the marketing ROI. [3]

4.2 Disadvantages of SEO

- SEO process is very much time taking.
- Need to update the information always.
- Over Success-As much as every business wants to be a success there is a real danger of too much and too fast. [3]

4.3 How to increase rank of a website?

- Use proper title tag so it can visible over the other tags.
- Use proper keywords so that people can easily search the desired results.

- The most important is the content. Content should be accurate and correct.
- To improve the rank of site we can post a blogs and new content to improve visibility.
- We can update our site regularly.
- Links plays a very important role to rank high. Try to link sites to our site.
- Use advance tools to tune up the sites.

V. FUTURE SCOPE

In future one can implement the advance tools and techniques to obtain high ranking and performance of the site. Furthermore many different enhancement can be made to made the process of SEO easy and free from black SEO techniques.

VI. CONCLUSION

At last, giving my opinion on search engine optimization that it is the most important and most advance process through which we can find what we want. With the help of SEO more optimized websites are created. Because of this we can rank our website very high. I suggest that every organization will opt for SEO for their sites to improve their ranking.

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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CHATBOT ADOPTION IN TRAVEL AND TOURISM SERVICES

Ms Khan Zainab Irfan

Prof Dr.Kirti Muley

1Student 2Professor

Master's in Computer Application (MCA),

Bharati Vidyapeeth's Institute of Management and Information Technology, Navi Mumbai, India

Abstract: Chatbots have gained increasing importance for research and practice with a lot of applications available today including Amazon's Alexa or Apple's Siri. In this paper, we present the underlying methods and technologies behind a Chatbot for e-tourism that allows people textually communicate with the purpose of booking hotels, planning trips, and asking for interesting sights worth being visit. In particular, we show how model-based reasoning can be used for enhancing user experience during a chat, e.g., in cases where too many possible selections are available or where user preferences are too restricted causing inconsistencies and as a consequence not possible answers to be provided. Besides the underlying foundations, we provide a use case from the intended tourism domain to show how such a model-based chatbot effectively can be used in practice.

Index Terms - Machine Learning, Chatbot, Natural Language Processing, Pytorch , Tokenization, keywords matching, Sentiment Analysis, Parsing, Chatbot adoption in travel and tourism services.

I. INTRODUCTION

A survey has shown that 87 % of users would interact with a travel chatbot if it could save them time and money. Chatbots act as personal travel assistants to help customers browse flights and hotels, provide budget-based options for travel, and introduce packages and campaigns according to consumers' travel behaviour.

Chatbots are a form of artificial intelligence system that allows a human-computer interaction in a natural language form. They could be based on rule sets or neural networks in order to decide the correct answer to the user's request. Chatbots are not restricted to certain application domains. They are flexible enough to be used in many different application scenarios and domains including systems for tourists recommending sights, hotels, or even complete travel plans. Often chatbots rely on pre-specified patterns that trigger the chatbot's behaviour, restricting its space of interaction with users. Travel chatbots, often called "virtual travel agents," are now emerging as a tool which can learn about its consumer and take on action items, such as booking, or searching through booking emails and calendars to build an itinerary. Some areas of the tourism industry, particularly airlines, are leading the way in the adoption of chatbots such as Alex (United Airlines), Mildred (Lufthansa) and Finn (Finnair), but many others have been very slow to adopt this strategy.

II. LITERATURE REVIEW

1. Literature review: 01

Title	Author	Working	Methodology
Chatbot-based Tourist Recommendations Using Modelbased Reasoning	Iulia Nica, Oliver A. Tazl and Franz Wotawa.	The chatbot could randomly offer alternative features to choose from, or even better, it could optimize the searching process by making use of an algorithm to determine the attribute, which if constrained, leads to the largest information gain.	<ol style="list-style-type: none"> 1. EntRecom takes a knowledge base, a set of customer requirements, and the maximum number of recommendations, and computes all recommendations. 2. MI REQ starts with assuming one faulty requirement ($i = 1$) and continues to search, if necessary, up to the number of existing requirements. The constraint solver is this time called restricting the solutions to the specific cardinality. 3. GetBestEntrAttr iterates over the set of attributes. In every step it calculates the entropy for the current attribute.

2. Literature review: 02

Title	Author	Working	Methodology
Designing a Chatbot for Tourism	Prof. Ioannis Magnisalis	Have provided the background regarding the tourism industry and how potential travellers are searching when planning their next trip, either for business or for vacation. We have also seen some facts about chatbots and artificial intelligence, some implementations of chatbots from companies in the tourism industry, and the benefits in general, that bots bring in this industry.	A chatbot, created for the Messenger app, that can be executed. However, its capabilities at the moment are limited and some messages do not display the content we want. Let's have a more detailed look at every step of the chatbot. The answer of the user can be completely different from what we have provided. This will be solved with the use of Natural Language Processing (NLP) and with the appropriate training of the chatbot. We can train the chatbot by providing it with different possible examples of replies that it will encounter.

III. OBJECTIVES

This paper discusses Artificial Intelligence (AI) but is mostly focused on chatbots. The paper introduces the fundamentals of chatbots and their functionality and conversational interfaces. Finally, the thesis focuses on providing information to evaluate digital trends and growing demand in the tourism industry. The primary objective of this research is to design and create a chatbot for holidaymakers to plan their trip and help them to make the right choices. More specifically, the implemented chatbot aims to help travellers to organize their itinerary and give them personalized suggestions based on their preference. To solve the research goals, the study has the following questions:

1. How does a travel chatbot provide good customer satisfaction?
2. How do users feel about chatbot technology, and how can chatbots improve tourists' engagement?

Solving these questions helps in designing and creating an advanced chatbot that offers a wide range of options to travellers, which leads to more customer satisfaction. Many travel companies, airlines, and hotels may use this research in order to attract more clients and improve their customer experiences.

A chatbot help potential travellers plan their next trip in a few easy steps. This chatbot can help the user to suggest where to visit and show where are recommend places. User can also use this chatbot to find hotels and type of transportation around user's location.

It will help the user selects his/her destination:

- Find and book a transportation method to the destination.
- Find accommodation.
- Find things to do and visit there.

IV. SCOPE

The reason I chose this topic was due to the recent advancement in chatbot technology and machine learning and its impact on the tourism industry. The scope paper focuses on chatbot's ability to provide options and plans for travellers and obtaining more tourists for businesses. Finally, rather than diving into the technical specifics of machine learning like technologies or statistical 3 models, the paper discusses the origin and history of machine learning, artificial intelligence, and chatbots. Also, it gives limited details regarding the implementation of a chatbot by programming. Deployment of chatbots has the following advantages: bots assist users in navigating websites, thus shortening time and assisting in quick decision-making; build social relationships with customers; maintain customer confidence in firms; and strengthen customers' emotional bonds with firms. Additionally, scholarly evidence supports customers' acceptance of robots in hotel services in particular with chatbots significantly increasing hotel sales

Some areas of the tourism industry, particularly airlines, are leading the way in the adoption of chatbots such as Alex, Mildred and Finn, but many others have been very slow to adopt this strategy.

V. PROCESS DESCRIPTION/ METHODOLOGY ADOPTED

- **Natural Language Processing:**

NLP is of particular importance for chatbots because this technique determines how the bot will understand and interpret the text input. The goal of an ideal chatbot would be to converse with the user in such a way that the user is completely unaware that they are talking with a machine. This algorithm attempts to learn through machine learning and an abundance of conversational data, the intricacies of human language. NLP helps the bot understand text data, comprehend grammar, sentiment and intent. This is primarily due to the wide range of functionalities offered by NLP such as text summarizations, word vectorization, topic modelling, PoS tagging, n-gram and sentiment polarity analysis. Due to the nature of NLP techniques to try and mimic human conversation, testing this algorithm is essentially testing the communication abilities of the chatbot.

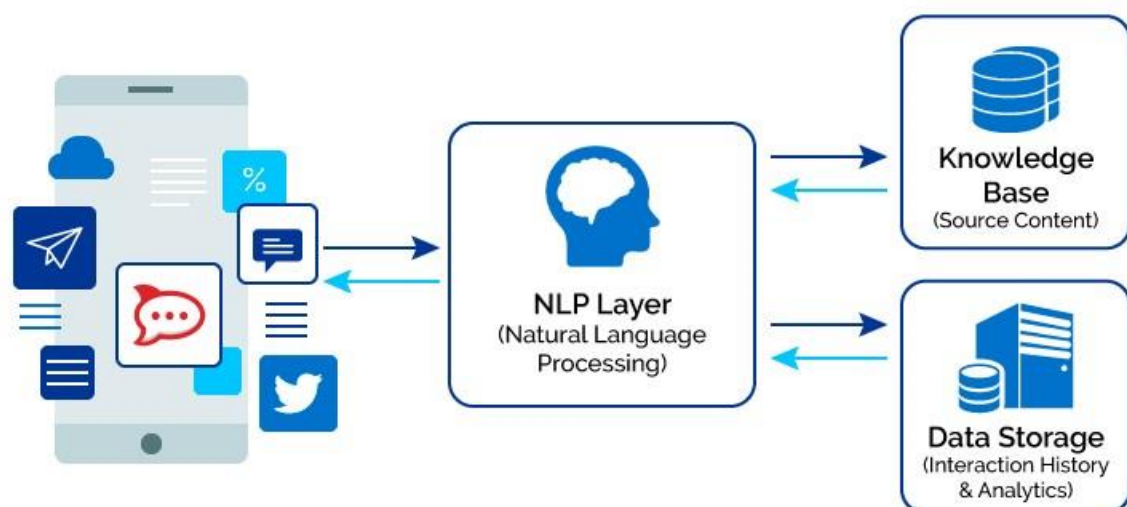


Fig.1 NLP

Testing NLP algorithm is very subjective and there is no absolute standard or benchmark to assess the algorithm's performance. Some of the most popular and appropriate ways to test NLP algorithms are user satisfaction and feedback analysis. Conducting data analysis and text analysis on user satisfaction ratings may be simple but they do not provide enough insight into the results and are therefore not recommended. Variations of Turing test can be used to test the algorithm as NLP tends to try and mimic human linguistic conversations. The Turing test can be used to assess how close the algorithm is to mimicking actual human interactions and human language. The test could also involve users trying to differentiate between conversations with that of a human and to that of a NLP based chatbot as shown in Fig.(1). Natural Language Processing includes the following steps:

1. **Tokenization:** The NLP separates a series of words into tokens or pieces that are linguistically representative, with a different value in the application.
2. **Sentiment Analysis:** It will study and learn the user's experience, and transfer the inquiry to a human when necessary.
3. **Normalization:** This program model processes the text to find out the typographical errors and common spelling mistakes that might alter the intended meaning of the user's request.
4. **Named Entity Recognition:** The program model of chatbot looks for different categories of words, similar to the name of the particular product, the user's address or name, whichever information is required.
5. **Dependency Parsing:** The Chatbot searches for the subjects, verbs, objects, common phrases and nouns in the user's text to discover related phrases that what users want to convey.

- **Pytorch:**

PyTorch is a Python-based scientific computing package that uses the power of graphics processing units (GPU). Since its release in January 2016, many researchers have continued to increasingly adopt PyTorch. It has quickly become a go-to library because of its ease in building extremely complex neural networks. It is giving a tough competition to TensorFlow especially when used for research work.

Some of the key highlights of PyTorch includes:

1. **Simple Interface:** It offers easy to use API.
2. **Pythonic in nature:** This library, being Pythonic, smoothly integrates with the Python data science stack.
3. **Tensors:** It is basically the same as a NumPy array. To run operations on the GPU, just cast the Tensor to a Cuda datatype.
4. **Computational graphs:** PyTorch provides an excellent platform that offers dynamic computational graphs.

VI. PROCESS DESIGN

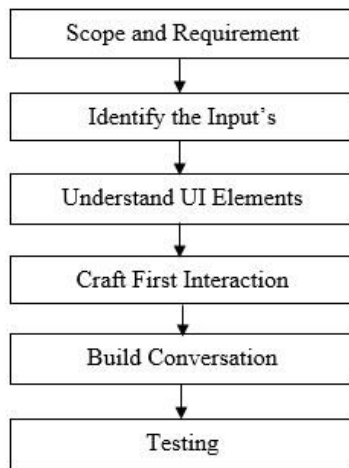


Fig.2. Process design

There are seven steps to design the Chatbot process. The Chatbot design process figure (2) is shown above: The first step to designing the Chatbot is to know the scope and requirements like why chatbot, platform to launch chatbots and its limitations. The second step is to identify the inputs from users in the form of queries through text, voice or images, from devices, and intelligence systems. The third step is to understand the User Interface (UI) elements, that we can see in our applications.

UI elements are of five types they are: Command Line (CL), Graphical User Interface (GUI), Menu-Driven Interface (MDI), Form-Based Interface (FBI) and Natural Language Interface (NLI).

After understanding user interface elements, the next step is to craft the first interaction and build a conversation. The final step of the Chatbot design process is testing, which is done on mobile and websites to know how it's working.

VII. SYSTEM ARCHITECTURE

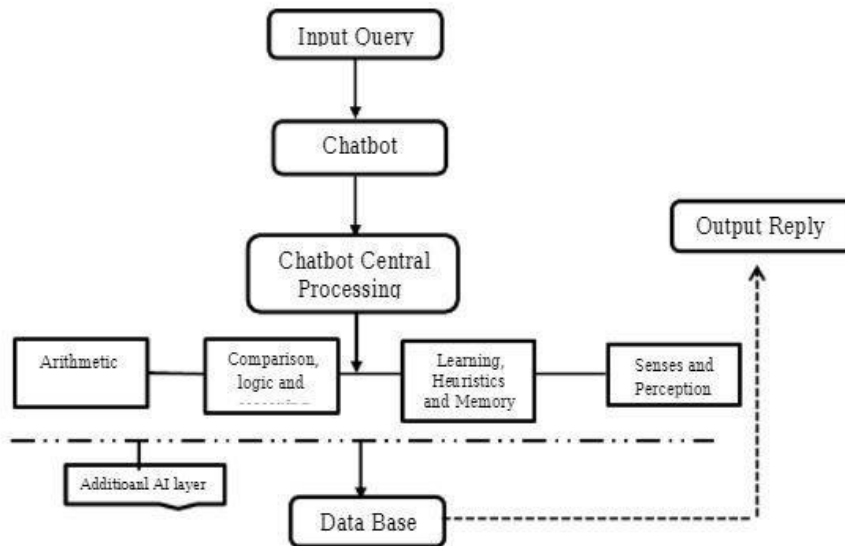


Fig.3.(a) System Architecture

In fig.3(a) the user inputs the query in the user interface in the form of text. The user interface receives the user queries and then forwards it to the Agricultural Chatbot. In the Agricultural Chatbot, the textual query undergoes a pre-processing stage. Preprocessing steps include Tokenization where the query sentence is tokenized into words, then the stop words are removed, and then the words are stemmed to their root words.

- **Response Retrieval using Machine Learning:**

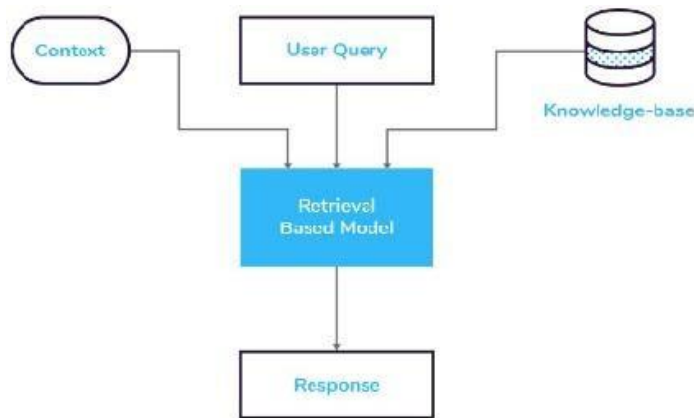


Fig.3 (b) Response Retrieval

As shown in fig.3 (b) retrieval-based chatbots work on the principle of graphs or directed flows. The chatbot is trained to provide the best possible response from a database of **predefined** responses. Retrieval-based chatbots use techniques like keywords matching, machine learning or deep learning to identify the most appropriate response.

VIII. RESULTS AND DISCUSSION

- **Results**

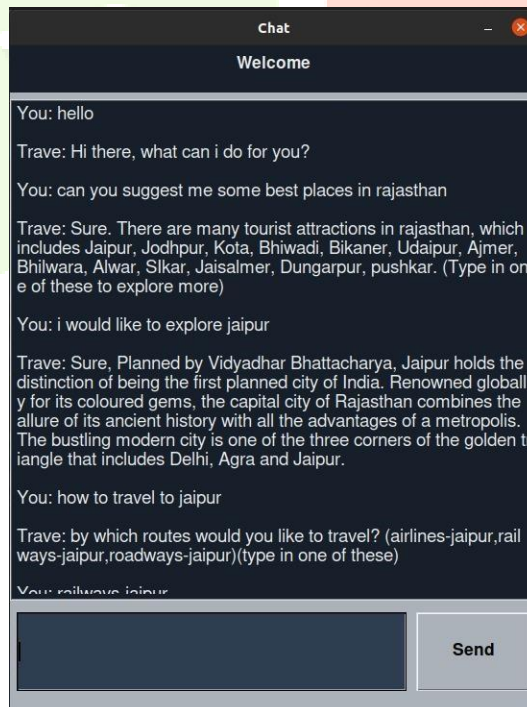


Fig.4(a) Result

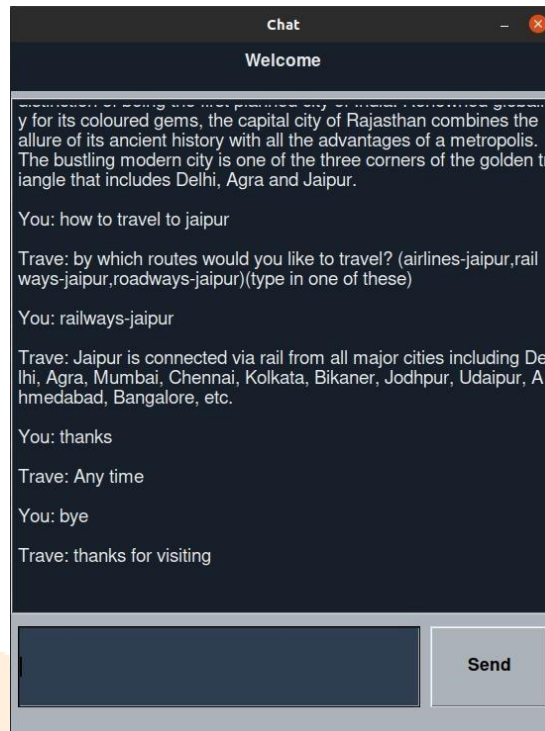


Fig.4(b) Result

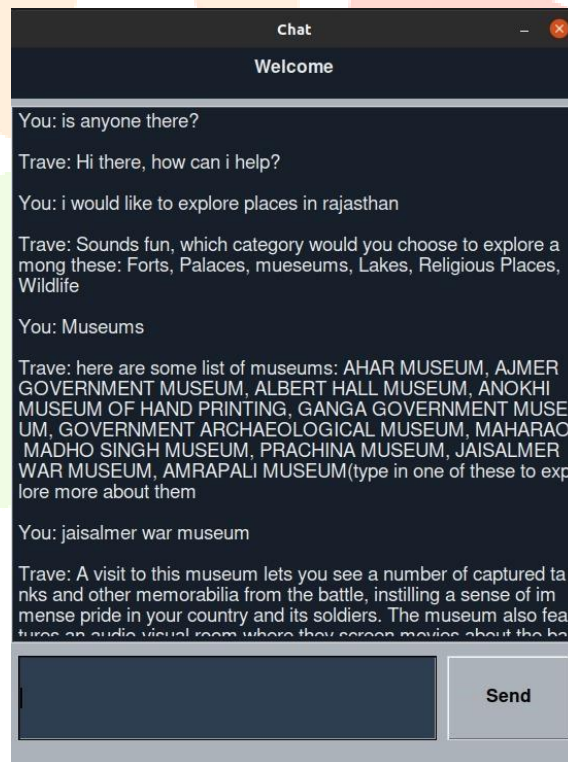


Fig.4(c) Result

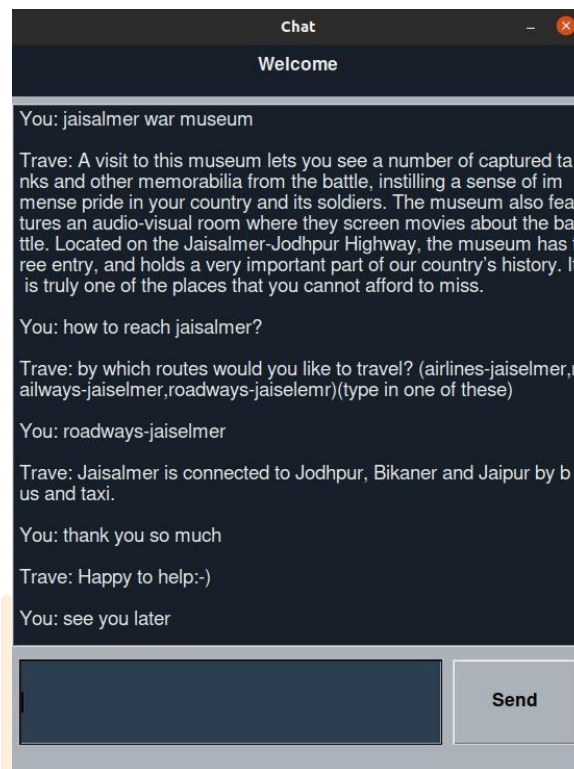


Fig.4(d) Result

The study aims to examine the development of a tourism Chatbot and focuses on the ability of the Chatbot which is a text-based application for the tourism sector in the Active Beach zone of Thailand. The Chatbot is always available to users, which can provide up to date information about places, events weather conditions and provide recommendations. We gave a technical overview of materials needed to build a Chatbot which are Natural Language Processing (NLP), Machine Learning (ML), and ChatterBot. The paper also discusses how the Chatbot classified, processed and made a prediction based on available data to find the best match by using a machine-learning-based conversational dialogue engine build in Python.

IX. CONCLUSION

The chatbot is a tool that facilitates the provision of answers to (frequently asked) questions and stimulates user action. It should not replace human-human interaction but support it. A chatbot should not be created to shield the editor from communicating with the authors, but as a tool to provide faster response when the editor cannot do this. In addition, the editor needs to be in control of the communication between the chatbot and the users.

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Cloud Computing – Architecture Issues and Challenges

Nilesh Jadhav

Master of Computer Application

Bharati Vidyapeeth Institute of Management & Information Technology, Navi Mumbai

jadhavnilesh2142000@gmail.com

Prachi Kadam

Master of Computer Application

Bharati Vidyapeeth Institute of Management & Information Technology, Navi Mumbai

prachikadam2207@gmail.com

Dr. Jyoti Kharade

Master of Computer Application

Bharati Vidyapeeth Institute of Management and Information Technology, Navi Mumbai

kharadejyoti09@gmail.com

Dr. Kirti Muley

Master of Computer Application

Bharati Vidyapeeth Institute of Management and Information Technology, Navi Mumbai

ikirti13@gmail.com

Abstract-

Distributed computing is a system that licenses straightforward, all-inclusive and on-time web network to a common pool of figuring powers, for example, switches, servers, programming's and administrations that can be handily circulated and conveyed with least exertion the board or connection between specialist co-ops. Distributed computing characterizes the design of new period bringing forth equal processing, network registering and representation advancements. Many accept that cloud will change the whole ICT industry. This paper completely reviews cloud engineering and issues connected with it. Numerous issues are characterized from the setting of distributed computing and furthermore examined similarity issues which fundamentally need further innovative work.

Keywords – Cloud Computing, Cloud Architecture, Challenges, AWS, Next Generation Technologies.

I. INTRODUCTION

Distributed computing has changed the reasoning of modern and logical individuals in numerous ways. Limiting the expense, it gives the arrangement of IT framework without any problem. Distributed computing is the strategy that is characterized as on request conveyance of IT assets through the web with pay-more only as costs arise estimating framework. There are two sorts of individuals required to this framework. One of them is a specialist organization and the other one is an endorser. Specialist co-ops are

really organization's IT individuals or an outsider or a mix of organization and the outsider. Then again supporter might be any individual who takes the administrations from the specialist Co-operation. Cloud suppliers give the administration of processing assets like information bases, registering power and capacity to the clients where clients need not purchase or become proprietor or keep up with the actual information servers and focuses. Clients can get the information facilitated on distributed storage from any spot at any time. Having web association with Laptop, Tab, Desktop and Smart Phone, they can oversee or embed the information easily on time. The large test of distributed computing is to have rapid web association with the gadgets generally.

Individuals of all circles are currently worried about their bigger measure of information which is put away in their PCs. They are attempting to figure out a framework where they can store their critical information, deal with the information, access the information generally and share that information effectively and securely. In this situation, distributed computing is the one and only answer to individuals' anxiety.

Objective of the Paper

1. To Review the cloud architecture.
2. To study the Challenges and issues in cloud architecture.

II. Literature Review

(Ennajjar et al., 2014) Security is a critical issue in cloud computing paradigm that affects the widespread adoption of cloud computing technology.[5]

(Zhang et al., 2010) Amazon network host service, S3 (Simple Storage Service) was broken down for four hours in 2010; this incident made people aware of the risks that may be encountered in users data stored in cloud.[1]

(Chen et al., 2010; Subashini and Kavita, 2011) one incident related to traditional web application and data storage security concerns are still occurring in high profile companies like Google, Microsoft, Twitter and Amazon such as data phishing, downtime, data loss, password weakness and compromised hosts running bonnet and other threats associated to network and applications.[2]

(Sonali, 2014). Challenges of cloud computing security can be handled practically by performing security assessment is discussed. Definition of an architecture ontology approach for secure cloud computing discussed.[6]

(Kevin, 2009). The architecture of cloud comprises a variety of security mechanisms such as storage security, access management, network security, and security API. These mechanisms implanted in the cloud architecture to endow with secure cloud computing.[4]

(Joel et al., 2012) Despite the potential gains achieved from the cloud computing, the organizations are slow in accepting it due to the following limitations: data loss, data cleaning, account hijacking, less

control over the process, insider attacks by the CSP's, lack of legal aspects, lack of portability/migration from one service provider to another, less reliable, lack of audit ability[3]

III. Cloud Computing Architecture –

As of late, Cloud Computing has turned into an arising innovation that acquires wide impact on IT frameworks. Distributed computing is a conveyed registering model for empowering administration situated, on-request network admittance to quickly versatile assets. Such assets incorporate foundation as a help (IaaS), improvement and runtime stages as an assistance (PaaS), and programming and business applications as an assistance (SaaS). Clients don't claim the assets, yet applications and information are destined to be accessible and pervasively available through Web administrations and Web APIs "in the Cloud". In Cloud Computing the word cloud (likewise expressed as "the cloud") is utilized as a similitude for "the Internet," so the expression distributed computing signifies "a kind of Internet based registering," where various administrations, for example, servers, stockpiling and applications are conveyed to an association's PCs and gadgets through the Internet.

- Infrastructure as a Service (IaaS) - It conveys PC foundation that is virtualized stage as a help without purchasing programming and servers. For instance, IaaS suppliers incorporate Amazon EC2
- Platform as a Service (PaaS) - It permits application designers to have their administrations. Model: Google's App Engine, Amazon E2C, Microsoft Window Azure
- Storage as a Service (SaaS) The actual application is given by the specialist organization. Programming can be utilized as a help over the

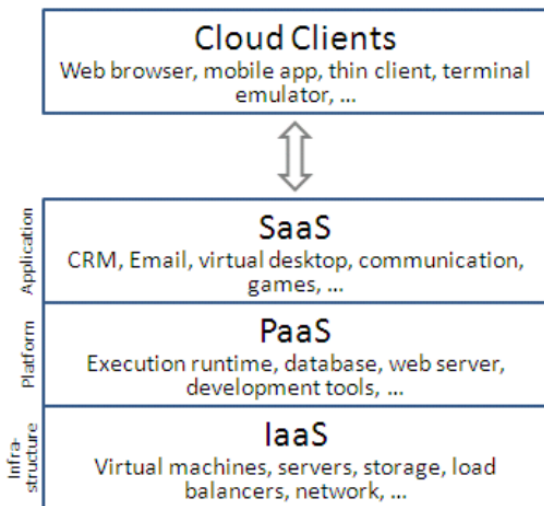


Figure 1 (Architecture Of Cloud Computing)[7]

3.1. Types of Clouds

In distributed computing assets are recovered from the web through online devices and applications. This permits the clients to work remotely on the grounds that the cloud can be utilized as the "Web". Hence, it isn't handled as conventional reevaluating. It is additionally called Massive Computing. In this the designation of use should be dynamic. There is a compelling reason for the need to introduce any sort of equipment and programming. The objective of distributed computing is to allow the clients to get information from every one of the advancements, applications with no profound information about them. In distributed computing design, there is no need of high-power PC to run online applications. In distributed computing design, the applications, information and administrations all are put away in cloud by means of web and run the applications and put away information by conveying the product assets as on-request benefits.

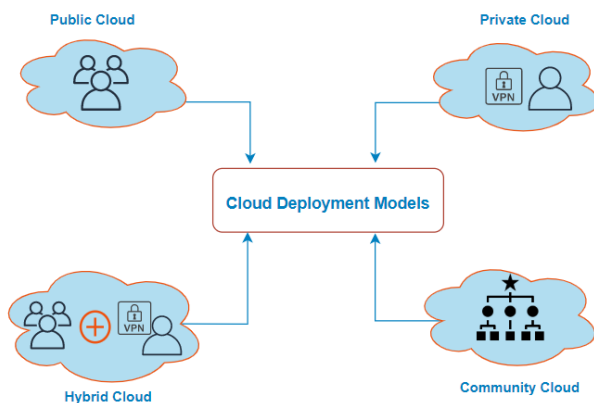


Figure 2(Models of Cloud)[6]

1. Public Cloud - It can be shared by different associations. Like - Amazon, Google. Public Computing application stockpiling is made accessible to all associations. This is otherwise called "Outer Cloud". Assets are progressively dispersed over the web by means of web administration.

2. Private Cloud - This Cloud framework is devoted to a particular association and can't be imparted to another association. Confidential cloud is safer and more costly as contrast with public cloud and other obfuscating modes.

3. Hybrid Cloud - It is mix of Public and Private Cloud and furthermore made out of in excess of two obfuscating modes. Association might have basic applications on open cloud or confidential cloud that is thoroughly relying upon requests. In a half breed cloud, some portion of the applications, administration foundation processed in private mists while the leftover part processed out in the open mists.

4. Community Cloud - A community cloud is a multi tenet cloud type that is shared among multiple organizations whether managed by internally or by a third party. It is a hybrid form of private cloud

3.2. Layers of Cloud Architecture

Distributed computing design is additionally called as "Layered registering model". Distributed computing design can be partitioned into four layers that is equipment layer, foundation layer, stage layer, application layer

- Hardware Layer - Actual assets of the cloud are overseen by it. Controlling actual servers, switches, switches and power framework is the obligation of equipment layer. The execution of the equipment layer is given in server farm. This server farm contains a few servers that are interconnected through switches and switches. A few issues arise in equipment layer including adaptation to non-critical failure, equipment design, traffic the executives and assets the board.
- Infrastructure Layer - It is additionally called the "Virtualization layer". It is a fundamental part of distributed computing. Framework layer in light of key elements, for example, dynamic asset task that is accessible through virtualization innovation. Framework layer makes the assortment of registering and stockpiling assets and segment the actual assets by utilizing virtualization strategies.
- Platform Layer - Platform Layer is comprised of working framework and application structure. It is based on the top of the framework layer. The fundamental idea of stage layer is to limit the above of conveying application straightforwardly into VM compartments. For instance, Google App Engine works at the stage layer to dispense API upholds for executing information stockpiling of various web application
- Application Layer - It is based on a high degree of cloud design. It is made out of genuine cloud application. Cloud applications have fundamental highlights to accomplish better execution, lower working expense, accessibility and versatility. Subsequently this design is more secluded than other engineering (conventional design). Approximately coupled ideas are utilized in each layer. This design license distributed computing to convey a wide scope of utilization necessities while diminishing generally speaking above.

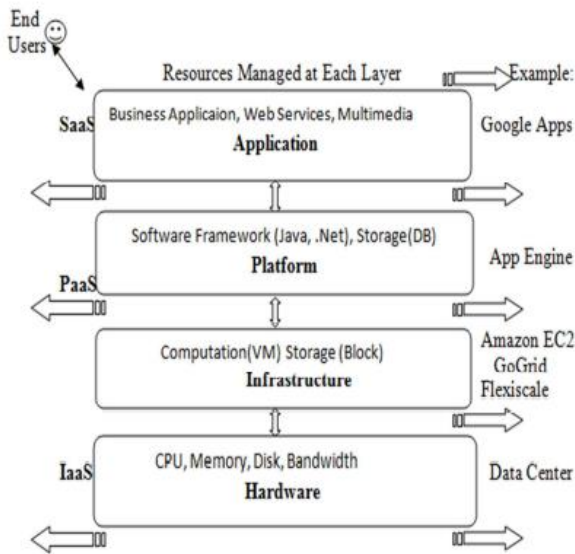


Figure 3(Layers of Cloud Architecture)[7]

IV. Challenges of Cloud Computing

Here, is the rundown of difficulties of Cloud Computing:

1. Reliability and Availability - Since the vast majority of the organizations are currently subject to cloud administration given by the outsider, cloud framework ought to be hearty, dependable and accessible.
2. Security and Privacy - Security and Privacy of information is the fundamental test of distributed computing. It tends to be feasible to defeat by utilizing encryption, security equipment as well as security applications.
3. Interoperability - It implies that the application on one stage ought to combine administrations from different stages.
4. Cost - Cost ought to be limited for the gigantic number of clients. Be that as it may, it could be a huge test for the cloud suppliers.
5. Portability - Migration of any application from one cloud supplier to another supplier is one more test of distributed computing.
6. Down time - It is the typical difficulty of distributed computing since no cloud supplier guarantees a stage that is totally liberated from down time.
7. Lack of resources - It is additionally one of the significant difficulties experienced by the cloud supplier.

8. Processing Performance - To get the greatest figuring execution, having high bandwidth is a must. Since network data transfer capacity is high, the cost is additionally high

V. Issues of Cloud Architecture

As of recently in this paper we characterized pretty much every one of the different designs, arrangement models and benefits of utilizing distributed computing administrations. Anyway, as all new innovation shows up, it carries with it a few issues which might end up being heartbreaking on the off chance that not taken care of the greatest worries about distributed computing are security and protection. Giving pivotal classified information to one more organization gives butterflies to certain individuals. Corporate clients will delay somewhat in embracing cloud administrations as they can't protect their organization's data. Anyway, organizations offering distributed computing administration counter contend to this say that they live and kick the bucket by their notorieties. Clients pay these organizations as they are dependable in safety efforts. If not, they would lose their clients. It's their focus to offer the best types of assistance to their clients. Protection is another element. As this information is gotten transport to any area, it's conceivable the client's protection could be compromised. One method for addressing this issue is the utilization of appropriate validation procedures. Another arrangement is to give approval - so every client can get to just the information and applications pertinent to their work. Replication time and expenses additionally assume a significant part. How quickly the information at any point could be repeated is significant for information versatility. Unwavering quality is an issue. Servers in the cloud can have similar issues as the association's occupant servers. Personal times can happen with cloud servers as well.

VI. CONCLUSION

In this paper we have examined another wave in the field of data innovation: distributed computing. We have additionally portrayed its design, benefits and a few issues. There is no question that distributed computing is the improvement pattern for what's in store. We can have roughly endless registering capacities, adaptability, pay-per-use, etc. In any case, this wave actually needs to determine a portion of its current issues with sincerity.

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