

Video KYC

Video Customer Identification Process

Video KYC (VCIP) Product Analysis

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Context:

I have divided the analysis into two crucial parts:

1. **V-CIP/Video KYC Product Analysis:** Market and competitor analysis, Process flows & key Product Features for the Video KYC Product (Video Customer Identification Process)
2. **Customer-Agent Queuing Problem:** To build a great VCIP product, we need to optimize and design a Queue which can manage any volume of customers and is scalable.

V-CIP Product Analysis

In January, RBI (and recently SEBI) allowed a way for the regulated entities to complete KYC online, eliminating the need for a physical visit. On the basis of secondary research and RBI notification (<https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=11783&Mode=0>), I have done V-CIP Product Analysis, if any organization wants to enter the market:

1. Total Addressable Market (TAM) for Video KYC (V-CIP)
2. Process flow
3. Product Features

Total Addressable Market (TAM):

TAM is the size of the addressable market where the VCIP product can have an impact and market share. It represents the revenue opportunity that exists within a market/sector, in this case, is the Digital KYC and Digital ID Verification market. Video consumer identification process will help businesses reduce their KYC operations and customer onboarding cost by up to 80-90%.

Usage and adoption of Video KYC are bound to increase from just banks to NBFCs, fintech/wallet firms, credit card market (25% CAGR) ^{[13][14]} and eventually to other financial and commercial institutions. With the latest SEBI notification ^{[2][15]}, SEBI allowed 9 entities including BSE Ltd and National Stock Exchange, Central Depository Services (India) Ltd, CDSL Ventures Ltd, CAMS Investor Services Pvt. Ltd and Link Intime India Pvt. Ltd to use Video KYC (VCIP).

TAM can be analysed using the top-down or bottom-up approach. I think the top-down approach helps to see the market potential and growth at a higher level which helps to see the long-term picture whereas the bottom-up approach is a focused approach and helps to get more realistic addressable market numbers. Furthermore, SAM (Serviceable Available Market) and SOM (Serviceable Obtainable Market) can also be calculated which are a subset of the TAM and can be calculated to get a better short-term picture.

1. Top-down Approach:

The global ID verification market is expected to touch USD 12.8 Billion by 2024, with a CAGR of 16%, whereas global e-KYC Market Size Projected to Reach USD 1,015.36 Million By 2026.

^[3] VCIP is poised to take significant market share in India with its cutting edge technology and early adopter advantage.

2. Bottom-up Approach:

In the simplest form, the bottom-up approach helps calculate the total addressable market size by multiplying the number of customers (clients/businesses) to price per customer.

Assumptions (Based on public data and secondary research):

- Veri5Digital (one of the major startups in the space) currently onboarding 2+ Million customers per month in India. Yearly ~ 25 Million
- VCIP technology will help decrease KYC cost from INR 200 to INR 20 (90% savings). This is the price of basic services, digital products can act as a platform and can offer additional services which help banks optimise current processes and help tap into new businesses at additional cost.
- Since the regulators have approved the usage of this technology recently, it is safe to assume that currently, the current products are only capturing the 5% of the total KYC market and 15-25% of the total Video KYC market in India.
- KYC will never stop as an AML regulatory onboarding requirement and banks and startups will have to adopt Video KYC options to reduce operational cost and get a competitive advantage. Hence, there will be a steep growth ahead over the next decade.
- With state-of-art AI and Computer Vision models, Signzy and Veri5Digital hav the advantage of its competitors and new entrants. (Autobridge, Idfy, Syntizen, Ameyo, etc.)
- These companies can tap into other sectors as well, for ex., Scanned Document Digitization.

Calculation (Market: India):

Total KYC Customers across industries per annum ~ 25 Mn * (100/5) = 500 Mn

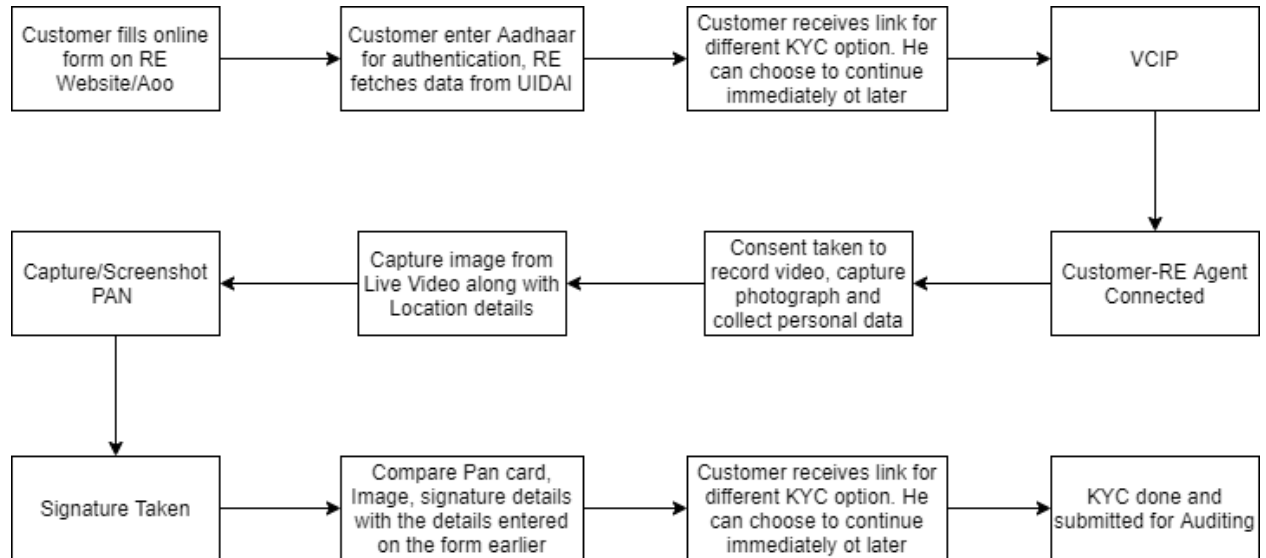
Price of offering ~ INR 20

Total = 500 Mn * INR 20 = INR 10 Billion

Therefore, TAM for VCIP offering for the India Market in 2020-21 is approximately USD 131.5 Million*

* Exchange rate: 1 USD = INR 76.05

Process Flow



Product Features:

To understand why certain features are included, product features can be divided into two broad categories:

1. Regulatory Requirement (RBI):

Features which must be included in order to comply with the regulations set by the regulatory bodies. In this case, I am only following regulations set by the Reserve Bank of India ^[1]. Actual products and features might have to comply with other regulatory bodies such as SEBI^{[2][15]}, depending on the sector in which the client is using the products and services.

Product Feature	Regulatory Requirement
Consent declaration	Informed consent to be obtained from the customers before live VCIP process begins
Video Recording and Auto-Image Capturing	RE official shall record video as well as capture photographs of the customer present for identification
Banks: Aadhaar eKYC auth by using OTP Non-Banks: Offline verification of Aadhaar	RE official shall obtain identification information
Capture PAN Image	RE officials shall capture a clear image of PAN card to be displayed by the customer during the process, except in cases where e-PAN is provided by the customer. The PAN details shall be verified from the database of the issuing authority.
Live Location (Google APIs)	Live location of the customer (Geotagging) shall be captured to ensure that customer is physically present in India
Face Match with ID card	Ensure that photograph of the customer in the Aadhaar/PAN details matching with the customer undertaking the V-CIP
Information Matching and Validation	RE official shall ensure that the provided identification details match with PAN card
Real-time Verification, End-to-end encryption and Anti-Spoofing	RE shall ensure that the process is a seamless, real-time, secured, end-to-end encrypted audiovisual interaction with the customer and the quality of the communication is adequate to allow identification of the customer beyond doubt. RE shall carry out the liveness check in order to guard against spoofing and such other fraudulent manipulations.

Randomization of questions	RE shall ask random questions to ensure there are no pre-recordings
Validation checks on Aadhaar XML/QR Code	In case of offline verification, the collected Aadhaar XML or the QR Code must not be older than 3 days
Face Matching using AI and Computer Vision	REs are encouraged to take the assistance of the latest available technology, including Artificial Intelligence (AI) and face matching technologies, to ensure the integrity of the process as well as the information furnished by the customer.
Hosted on Bank's domain	As mandated, the solution must be hosted on the Bank's Domain

2. Features based on other factors:

These are the list of features which are based on different factors which should be included in the product to help **gain competitive advantage, improve user experience, allow easy adoption by the customers** etc. The platform can have a monitoring dashboard that will ensure an effortless verification process. The RE officer or auditor will be able to see all the KYC requests in their dashboard, which can then be managed and prioritized. Below is the list of important features (List is not exhaustive):

Product Feature	Factors
Deployment flexibility	Both Cloud (AWS/GCP/Azure) and On-Prem
Platform compatibility	Solution deployable on any Web/Mobile based platforms such as Windows/iOS/Android etc
Randomized match of User-RE Officials	Algorithms randomly match user and RE official so there is no possibility of human bias in the process
Audit	The process will be audited to double-check the VCIP. Checks such as customers are actually live or not
Data analytics dashboard/KPIs	Availability of a vast range of KPIs such as Customer Wait Time, Busy hours, Real-time Agent availability, etc. These KPIs allow clients to plan resources ahead of time, there is no security breach during the interaction or data processing etc.
Real-time Recommendations	Using Data Science and AI, the product will recommendations to optimize the whole KYC process
Wide range of API available	API help the organisation take full advantage of the product by providing flexibility to the customer to choose features which are required at a certain point of time and pay

Customer-Agent Queue Problem: Introduction

Video KYC (V-CIP) Product:

An AI-driven Customer Identification process that was incepted after RBI approved VCIP (Video Customer Identification Process). You can now speed-up customer on-boarding by automating document collection and face match. Enterprises can now do KYC verification across India.

How does it work?

- Customers get on a live video call with an agent
- The system extracts data from the Government-issued ID card.
- Then it authenticates the photo on the ID with AI face match.

Key Abbreviations/Definitions: RE - Regulated entities such as banks, NBFCs

Approach

To design the queue, I followed these steps,

1. **Business Objective:** Understand the business situation and problem in detail
2. **User Problems:** Select user type, list and prioritize their problems
3. **Solution:** Generate and prioritize a list of solutions & propose a recommended solution

1.Business Objective

Customers need to connect with the agents to start the VCIP process. To manage this process, an efficient and scalable queue needs to be designed so that the customer can go through the whole process smoothly and can connect with the right agents. The queue is crucial for all the stakeholders to manage the whole process seamlessly irrespective of the volume of customers.

We need to design a queue such that the KYC requests get assigned to the right agents, requests get prioritized in real time based on various factors, takes care of customer and agent's experience and finally, it reduces the response or turn-around time for the customer.

Below is the relationship between our stakeholders:

Customer <-----> **Agent** <-----> **Auditor**

2.User Problems

User Type - Stakeholders for the Queuing Problem

1. **Customers/Prospects:** Customers who are performing the KYC process through VCIP
2. **Agents:** Person who connects with customers and verify KYC documents on video call
3. **Auditor/Reviewer:** Person who reviews the video KYC and is responsible for final approval or rejection of the KYC verification process

Problems and Solutions

For this assignment I am focusing on problems and solutions for Customers and Agents. The process will start once Customers clicks on the provided link and ends once all the steps are done and the agent submits all the details. Few features might not be part of the Queuing but are included (especially in Agents) as they can have a significant impact on the overall efficiency of the queuing and scheduling process. Below is the list of problems which Customers and Agents face and their proposed solutions (The list is not exhaustive):

1. Customers:

#	Problems	Solutions (Features/Data Points)
1	When clicked on the VCIP/Video KYC link, customer is not able to see the estimated time he/she needs to wait before the system assigns the agent	If customers want to go for VCIP immediately, they can see the “Estimated Time of Agent Availability” similar to UBER’s “ETA” for cabs. This keeps users informed.
2	Customers cannot select the time of their choice, if they are not currently available	“Schedule VCIP” features helps customers schedule the video call as per their schedule. It helps them when they do not want to wait for the next available agent, do not have required documents with them, etc.
3	Repeat customers who either waited before or had to reconnect because of some technical have to wait again	These users can come under “Priority Customers” . If our algorithm finds out that these customers genuinely waited before and for some reason couldn’t go through the VCIP process. These customers will be addressed on priority to show empathy.
4	Customers having trouble communicating with the assigned agent. Possible reasons: <ul style="list-style-type: none">- Language,- Accent, etc.	India is a diverse country with many languages & accents. Either clients can ask for the customer’s language choice which we can get through our API call. Otherwise, customers should be able to select the language when starting or scheduling the VCIP process. Easy way is to list all the languages that the Agents are trained in, but the

		better way is to provide language recommendations based on the customer's details.
5	Customer have to wait for long period of time in the waiting state	If any customer has to wait longer than it is shown in the "Estimated Time" or while connecting the scheduled call, the system should inform & put the customer into the " Priority Customers " list.
6	Customers need to get the KYC done as soon as possible. But they have to go through the whole queuing & waiting process which may delay the process & have a negative impact on them and hence may be on our clients.	"Priority Customers" : In some cases, maybe some customers want to go through the KYC process immediately without waiting. In this scenario Video KYC can be a great choice. We can maintain a team of highly trained & experienced agents (similar to what AMEX does) to cater to such requests. Such services can be provided to our clients at a premium charge which might help them onboard high value customers quickly, it can also be given as an option directly to the customers or it can be used to improve customer experiences & rebuild trust as mentioned in point 3 & 5.

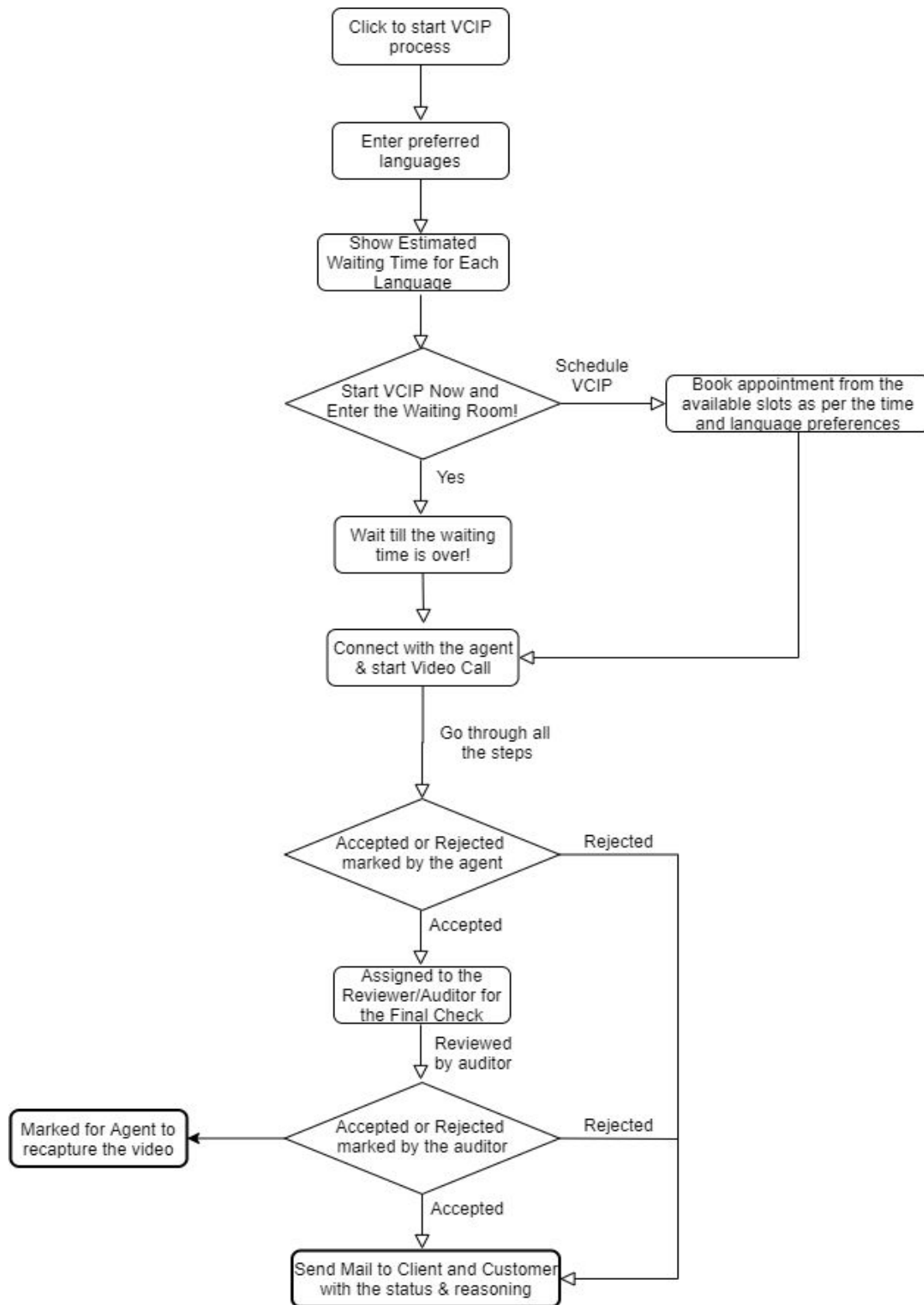
2. Agents:

#	Problems	Solutions
1	Agents cannot see the number of customers that are assigned to them	Agents must be able to see all the basic statistics on their dashboard such as number of customers assigned to them, new customers, follow-up requests, etc.
2	Agents dealing with customers from different sectors	Agents can be trained to handle sector-wise calls . Mixed calls might impact their performance. It will also help to limit the scope of training provided to each agent.
3	Standard evaluation metric for all agents working across different sectors might have implications*	Different sector agents should not be evaluated on common metrics as the nature and time of the calls can vary the total number of customers addressed. Intra-sector can have standard benchmarks and metrics
4	Agent not able to communicate with the customer which might hamper their lead conversion or rating	Related to Point #4 in the Customer List to match right Customers to right Agents so that it does not hamper the customer experience and agent's lead conversion
5	Agent not able to transfer the call to other agents or seniors who might immediately help the customer	During the call, if there is any issue which can be resolved by other agents, then the agent should be able to directly "Transfer the Call" . This might happen in the case of language barriers or limited sector knowledge etc.

6	Agents want to mark an application or even mark the specific step of the VCIP process to be reviewed by the Auditor/Reviewer which they think need to be reviewed	“Mark/Flag” feature can be very useful for reducing the overall Turn-Around Time and identifying any potential frauds in the process
7	If customers are assigned to some agents, they are not reassigned even if few agents got free before time and are available to take requests	Customer Queue is managed on the basis of ranking of customers which would be based on multiple factors. Assigning agents will depend on this ranking in the queue and availability of right agents, not just by simply first-come-first serve basis. So, the customer might or might not be addressed before the “Estimated Time” depending on the real-time situation.
8	Agents are not able to send appointment links again to the customers in case of technical issues	Agents can send new appointment links in case of technical issues & can reconnect with the same users so that it doesn't affect their leads
9	Agents are not able to mention the reason if there is any technical or genuine issue which cost them a lead.* Ex: Poor Video Quality	Feature to mention a reason or choose a reason from the list because of which the VCIP could not be completed
10	In case of OCR which might be extracting information from the ID card in the real-time, the agents are not able to edit the information extracted by the algorithm which he thinks is not right and differs from the actual information on the shown ID card*	The extracted information must be displayed to the agent in the editable format so that if it is an OCR error, the agent can correct it then and there. It will also help the development team in training and improving the OCR further.

* Problems indirectly impacting the performance of the Customer & Agent Queue

3.Flow Chart and Queues



Customer-Agent Queues: Final Thoughts

The Customer-Agent matching is not a first-come-first-serve method but rather a pick-and-choose method to match Customers and Agents based on data collected from real-time situations. The first-come-first-serve method is great for simple and small systems where the number of customers, clients and sectors/industries are limited. I think this method is much better than maintaining let say multiple queues for different types of customers. It is also based on certain important KPIs which makes it easier for the product team to pinpoint the pain points.

I tried to strike a balance between customer wait time, reducing turn-around time, providing best customer experience and managing internal resources - agents. Resources such as 'Data', technologies such as 'Machine Learning' and concepts such as 'Urgency Matrix' can help us improve this pick-and-choose method further.

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