FRD-102: PAN Verification & Blacklist Check

1. Functionality Summary

The system must validate the PAN number provided by the customer. This includes format checking, blacklist validation, and mock Income Tax API verification. The PAN must be structurally correct and must not exist in the blacklist repository. Only valid PANs allow the onboarding to proceed.

2. Detailed Functional Description

2.1 Input Field

Field	Type	Mandatory	Rules
panNumber	String (10 chars)	Yes	Must match regex ^[A-Z]{5}[0-9]{4}[A-Z]{1}$

2.2 Validation Flow

```
# ENDPOINT
POST /mock-tax/validatePAN

# HEADERS
Content-Type: application/json

# REQUEST
{
■"panNumber": "ABCDE1234F"
}

# RESPONSE (VALID)
{
■"status": "VALID",
■"name": "John Doe",
■"dob": "1990-04-21"
}

# RESPONSE (INVALID)
{
■"status": "INVALID",
■"message": "PAN not found"
}

# RESPONSE (BLACKLISTED)
{
■"status": "BLACKLISTED",
■"reason": "Fraudulent activity"
}

# RESPONSE (ERROR)
{
```

```
■"status": "ERROR",
■"message": "Internal service failure"
}
```

2.3 System Behavior

If status = VALID:
• Proceed to Aadhaar/PAN cross-verification

If status = INVALID:
• Block onboarding and display error message

If status = BLACKLISTED:
• Immediately terminate onboarding
• Display generic message: 'Verification failed. Please contact support.'

If status = ERROR:
• Retry up to 3 times
• If still failing, mark as SYSTEM ERROR

3. Error Codes

Error Code	Description	When Triggered
ERR-1020	PAN format invalid	Regex validation fails
ERR-1021	PAN not found	Mock API returns INVALID
ERR-1022	PAN blacklisted	Mock API returns BLACKLISTED
ERR-1023	Tax API unreachable	Timeout / 5xx
ERR-1024	Malformed response	Missing fields
ERR-1025	Too many attempts	Retry limit exceeded

4. Preconditions

• Aadhaar validation completed successfully (FRD-101).
• PAN number input is available.
• Mock Income Tax API is reachable.

5. Postconditions

• PAN validation result stored in KYC table.
• Blacklist flag stored if applicable.
• If PAN is VALID → proceed to KYC document upload step.

6. Acceptance Criteria

AC ID	Acceptance Criteria
AC-201	System validates PAN format before API call.
AC-202	System receives VALID/INVALID/BLACKLISTED response.
AC-203	If INVALID → show 'Invalid PAN Number'.
AC-204	If BLACKLISTED → terminate onboarding & store flag.
AC-205	API failure triggers retries before ERR-1023.
AC-206	Store PAN status and log masked request & response.

7. Data Storage Impact

Table: KYC
Fields updated:
• pan_number (Encrypted)
• pan_status (VALID / INVALID / BLACKLISTED)
• pan_validation_timestamp

8. Non-Functional Requirements

• Response time < 3 seconds.
• Mask PAN except first 3 and last 1 characters.
• Retry policy: 3 attempts with exponential backoff.
• Concurrency: ≥100 RPS.