

Pakistan Single Window & Authorized Dealers Integration

DEVELOPED BY:



Overview

- Pakistan Single Window (PSW) is one of the most important cross border trade facilitation initiatives to have been taken up by the Government of Pakistan in recent years.
- A single window is a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single-entry point to fulfill all import, export, and transit-related regulatory requirements.
- The single window systems across the world are known to help reduce the time and cost of doing business by making trade-related business processes more efficient, transparent, and consistent.
- It also enables a country to better integrate into the global value chains and also become part of evolving regional and global single windows.



Goals & Objectives

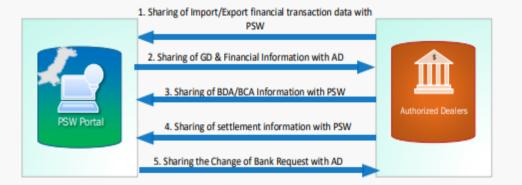
- Purpose of Integration Currently, prior issuance of an Electronic Import/Export form (EIF/EFE) by Authorized Dealers (AD) is required for traders in order to file the Goods Declaration (GD) with Customs for clearance of each import and export consignment.
- ► Trader applies for EIF/EFE which is either approved or rejected by the concerned authorized dealer.
- Issuance of EIF/EFE is a time-consuming process and being a pre-requisite for filing of any import/export transaction increases time, cost and complication in cross-border trade.
- PSW system with real-time data exchange amongst the PSW and authorized dealers have been identified as a 'priority' reform to be included in PSW. With reference to the Business Process Reengineering of EIF & EFE Business Requirement Document (BRS),
- The proposed system is predicated on pre-approved banking profiles of the traders developed after due diligence utilizing KYC (Know Your Customers) principles by the Authorized dealers.
- The authorized dealers will share the trader profile, import/export financial transaction information, and BCA/BDA information with the PSW. Meanwhile, the PSW will share the information related to the goods declaration of traders with the authorized dealers for the subsequent marking of import payments/ export receipts



EDI (Electronic Data Integration) Concept Model

PSW Trader Account Verification with Authorized Dealers 1. PSW capture the trader Bank Name, IBAN and share it with relevant authorized dealer. 2. Authorized Dealer will share the trader profile details with PSW.

Sharing of Goods Declaration and Financial Information between Authorized Dealers and PSW





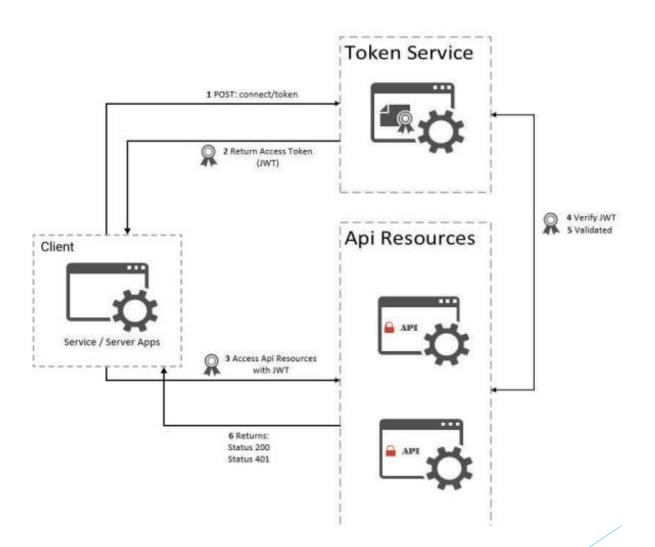
EDI Procedure Involved between Pakistan Single Window & Authorized Dealers

- The process of electronic data interchange will be possible by developing a communication channel between two systems i.e. PSW and Authorized Dealers through APIs.
- REST APIs will use HTTPs Protocol.
- REST APIs will be hosted and exposed as OpenAPI.
- ▶ These APIs will be using signatures and tokens additionally for identification and authorization.
- Tokens life cycle management will be done through Life Cycle APIs.
- JSON (JavaScript Object Notation) is to be used for sending and requesting data through REST API.



Data Exchange Mechanism

JSON Web API Token Acquisition based authentication works by ensuring that each request to a client server is accompanied by a signed token which the server verifies for authenticity and only then responds to the request. JSON Web Token (JWT) defines a compact and self-contained method for securely transmitting information between clients encoded as a JSON object.





Token based authentication description

- > JWT token based authentication allow application to access the restricted resources of a server side application. It uses a bearer token between client and server to access the resources.
- To get the JWT token, client application first send a request to authentication server endpoint with appropriate credential.
- If the credentials is found correct then the Authentication server send a token to client as a response.
- The client will send the acknowledgement in terms of Response Code i.e. 200 (Successful) and 401 (Unauthorized).
- ▶ The client application then use the received token in the requests for authentication.



Token Authentication Message Description

- ▶ 1. If AD request data from PSW then AD shall have to provide the Client ID and Client Secret which is shared by the PSW to AD confidentially.
- 2. In Response the PSW will validate the client credentials and share the request status i.e. credentials is Successful or Unauthorized.
 - i. If the credential are valid, then PSW will share the API Token with AD.
 - ii. If the credentials is invalid, then PSW will share the response message.

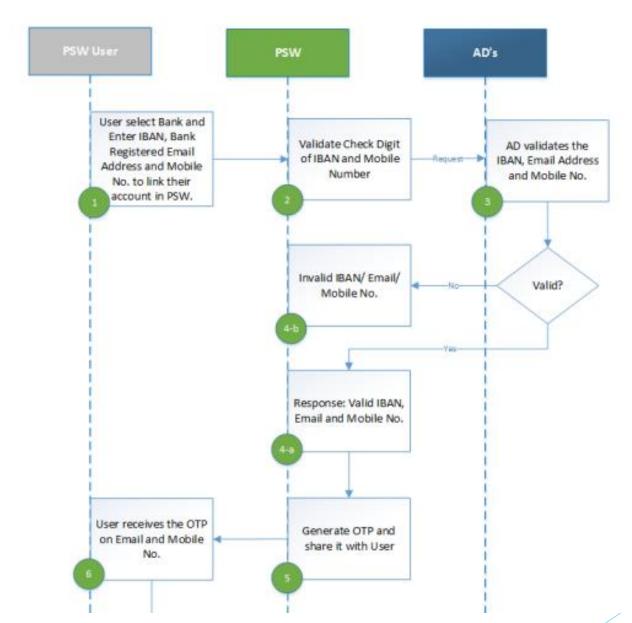
Request - AD	Request – AD				
Data Minimum Maximum Element Occurrence Occurrence			Data Type	Field Type	Sample Value
Client ID	1	1	a.n.20	Mandatory	B9875632-5eb8-4a0e- 9eb5-989521c
Client Secret	1	1	a.n.64	Mandatory	jV079Fshd

Response – PS	Response – PSW				
Data Element	Minimum Occurrence	Maximum Occurrence	Data Type	Field Type	Sample Value
Response Code	1	1	n.3	Mandatory	200 (Successful) (Please refer lookup table for Response Codes in Annexure- 1)
API Token	1	1	a.n.max	Conditional (If the Client ID & Secret is validated)	4d7a8589-290c-4475- 9fcc-1920a3d53a64



Process Flows (a)

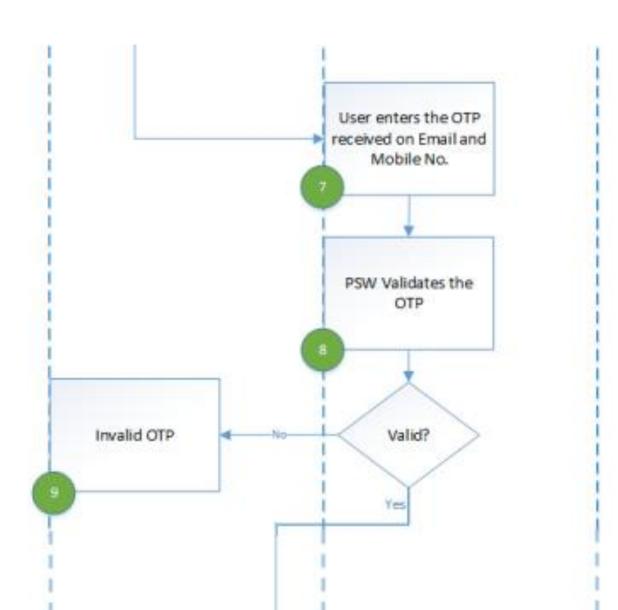
Profiling of Traders with Authorized Dealers





Process Flows (b)

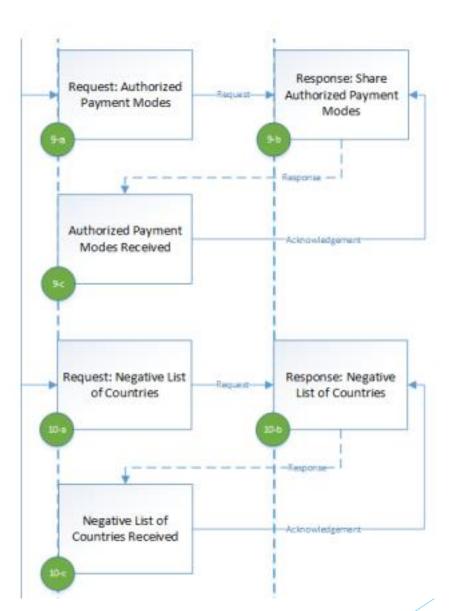
Profiling of Traders with Authorized Dealers





Process Flows (c)

Profiling of Traders with Authorized Dealers





Description of the Process flow

- 1) User shall select Bank and Enter IBAN, Bank Registered Email Address and Mobile No. to link their account in PSW.
- 2) PSW will validate check digit whether the entered IBAN and Mobile No. is in correct length or not. PSW will also validate the email address format.
- 3) Once check digit is validated by the PSW, the IBAN, Email and Mobile No. will be shared with the AD to verify.
- 4) AD shall verify the shared IBAN, Email Address and Mobile No.
- a. If IBAN, Email Address and Mobile No. is verified then AD shall share the success message.
- b. If IBAN/ Email Address or Mobile No. is invalid then AD shall share the failure message.
- 5) Upon verification of IBAN, Email Address and Mobile No., PSW will share the OTP on verified Email Address and Mobile No.
- 7) User shall enter the received OTP on Email Address and Mobile No. in PSW.
- 8) PSW shall validate the entered OTP by the user.
- 9.(a) If entered OTP is valid, then PSW will request AD to share the Authorized Payment Modes with PSW.
- 9.(b) In Response the AD will share the Authorized Payment Modes against the IBAN.
- 9.(c) PSW receives the Authorized Payment Modes and shares the acknowledgement with AD.



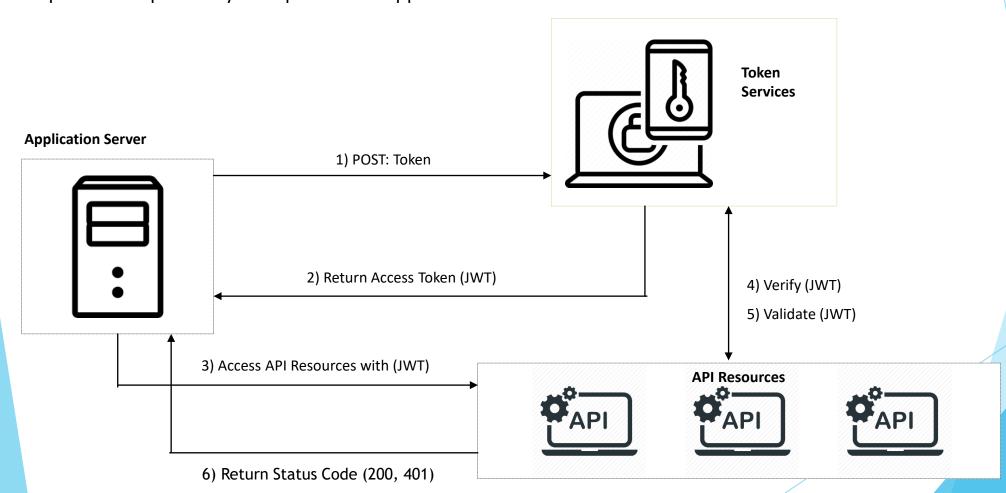
Description of the Process flow

- 10.(a) PSW will request AD to share the Negative list of Countries against IBAN
- 10.(b) In Response the AD will share the Negative list of Countries against the IBAN.
- 10.(c) PSW receives the Negative list of Countries and shares the acknowledgement with AD.
- 11.(a) PSW will request AD to share the Negative list of Commodities against IBAN.
- 11.(b) In Response the AD will share the Negative list of Commodities against the IBAN.
- 11.(c) PSW receives the Negative list of Commodities and shares the acknowledgement with AD.
- 12.(a) PSW will request AD to share the Negative list of Suppliers against IBAN.
- 12.(b) In Response the AD will share the Negative list of Suppliers against the IBAN.
- 12.(c) PSW receives the Negative list of Suppliers and shares the acknowledgement with AD.



Communication between Application Server and PSW

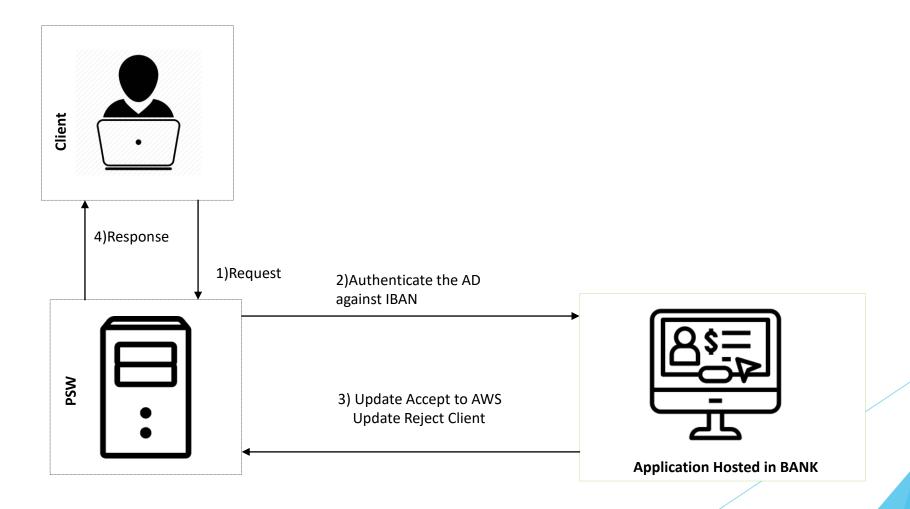
- 1. AD Application can be deployed at Bank local server or could be host on co-located servers (Regional servers).
- 2. All the Data, Request and Response code will propagate throughout in JSON format, so there would be no platform dependency like open source application architecture or Dot Net architecture.





Communication between Application Server and PSW

- 1) User shall select Bank and Enter IBAN, Bank Registered Email Address and Mobile No. to link their account in PSW
- 2) All the information flow would be the same i.e. Client will initiate the request using PSW Portal, PSW portal will provide the financial and GD information(Import/Export) of particular client.





Communication between Application Server and PSW

- In order to deploy the application BANK will have required the space to their secure server which could be stand alone or Regional server.
- Application will consume the Web API's provide by SBP
- Domain name will be required for application deployment.
- Application will serve as a bridge between PSW and BANK for sharing client information and account information.



Hardware requirement for Application Server

Operating Systems

- Windows Server 2012 SP1 (Full Server or Server Core)
- Windows Server 2012 R2 (Full Server or Server Core)
- Windows Server 2016 (Full Server, Server Core, or Nano Server)
- Mac OS X 10.11, 10.12*
- Red Hat Enterprise Linux 7
- Ubuntu 14.04, 16.04, 17

Hardware Environment

- Processor: x86 or x64
- RAM: 8 GB (minimum), 16 GB (recommended)
- Hard disk: up to 300 GB of available space may be required.



- Message 1 Verification of IBAN, Email address and Mobile No. from AD.
- 1. PSW will share user IBAN, Email Address and Mobile No. with respective AD for verification.
- 2. In Response the AD will share the verification status of the shared IBAN, Email Address and Mobile No. with PSW.
- 3. PSW receives the verification status and shares the acknowledgement with AD.

Following Details will be provided by SBP in table format.

- Data Element
- Minimum Occurrence
- Maximum Occurrence
- Data Type
- Field Type
- Sample Value
- ▶ Message 2 Sharing of Account Details & Authorized Payment Modes with PSW by AD.
- 1. PSW will request AD to share the User Account Details and Authorized Payment Modes against IBAN.
- 2. In Response the AD will share the User Account Details and Authorized Payment Modes against JBAN.
- 3. PSW receives the User Account Details Authorized Payment Modes and shares the acknowledgement with AD.



Sample Message

```
Request Type: HTTP POST
Header: [API Token] (as Bearer)
Payload (JSON):
Request: {
        "Message ID": "a1374655-5eb8-4a0e-9eb5-989521cd1ca8",
        "Timestamp": "20200925183412",
        "Sender ID": "1234567890",
        "Receiver ID": "9876543210",
        "Signature: "82045ede93efbbcbea55da67c6655e9b",
        "Processing Code": "01",
Data: {
        "IBAN": "PK36 SCBL 0010 0011 2345 6005",
        "Email Address": "abc@psw.gov.pk",
        "Mobile Number": "03451234567",
```



- Message 3 Sharing Negative List of Countries with
- 1. PSW will request AD to share the negative list of countries against IBAN.
- 2. In Response the AD will share negative list of countries against IBAN.
- 3. PSW receive the negative list of countries and shares the acknowledgement with AD
- ▶ Message 4 Sharing Negative List of Commodities with PSW
- 1. PSW will request AD to share the negative list of commodities against IBAN.
- 2. In Response the AD will share negative list of commodities against IBAN.
- 3. PSW receive the negative list of commodities and shares the acknowledgement with AD.
- Message 5 Sharing Negative List of Suppliers with PSW
- 1. PSW will request AD to share the negative list of suppliers against IBAN.
- 2. In Response the AD will share negative list of suppliers against IBAN.
- 3. PSW receive the negative list of suppliers and shares the acknowledgement with AD.



- ▶ Message 6 Sharing of Updated Information and Authorized Payment Modes by AD with PSW.
- 1. AD will share updated information and authorized payment modes against IBAN.
- 2. PSW receive the updated information, authorized payment modes and shares the acknowledgement with AD.
- Message 7 Sharing Updated Negative List of Countries with PSW.
- 1. AD will share updated negative list of countries against IBAN.
- 2. PSW receive the updated negative list of countries and shares the acknowledgement with AD.
- Message 8 Sharing Updated Negative List of Commodities with PSW
- 1. AD will share updated negative list of commodities against IBAN.
- 2. PSW receive the updated negative list of commodities and shares the acknowledgement with AD



- Message 9 Sharing Updated Negative List of Suppliers with PSW
- 1. AD will share updated negative list of suppliers against IBAN.
- 2. PSW receive the updated negative list of suppliers and shares the acknowledgement with AD
- ► Message 10 Trader Profile Active/Inactive Message by AD to PSW
- 1. AD will share account status of user against IBAN.
- 2. PSW receive the account status i.e. Active/Inactive and shares the acknowledgement with AD.



Sharing of GD & Financial Information Financial & GD Information Messages (Import)

- Message 1 Share Financial Transaction Data with PSW
- 1. AD will share the user financial transaction information of import with PSW.
- 2. In response, the PSW will send the acknowledgement to AD
- Message 2 Sharing of GD and Financial Information with AD PSW
- 1. PSW will share the goods declaration and financial information of import with the authorized dealer.
- 2. AD receive the information and shares the acknowledgement with PSW.
- Message 3 Sharing of BDA Information by AD with PSW
- 1. AD shall share the BDA information against the IBAN and Financial Instrument with PSW.
- 2. PSW receive the information and shares the acknowledgement with AD. Message 9 Sharing Updated Negative List of Suppliers with PSW



Sharing of GD & Financial Information Financial & GD Information Messages (Import)

- Message 4
- 1) Trader Request to change the bank for foreign remittance from PSW. (Only those banks will be visible to the Trader in which trader profile exist)
- 2) PSW shares the change of bank request with AD (To whom GD information sent earlier)
- 3) AD receives the bank transfer request from PSW
- 4) AD shall accept/reject the bank transfer request a. Upon acceptance of request, PSW shall share the GD and Financial information with the newly selected bank. b. Upon rejection of request, Trader will receive the bank transfer request rejection intimation.
- 5) PSW will share the GD and financial information with the bank selected by the user.
- 6) AD will share the acknowledgement with PSW.



Sharing of GD & Financial Information Financial & GD Information Messages (Export)

- Message 1 Share Financial Transaction Data with PSW.
- 1. AD will share the user financial transaction information of export with PSW.
- 2. In response, the PSW will send the acknowledgement to AD.
- Message 2 Sharing of GD and Financial Information with AD by PSW.
- 1. PSW will share the GD and financial information of export with AD.
- 2. AD receive the information and shares the acknowledgement with PSW.
- Message 3 Sharing of BCA Information by AD with PSW.
- 1. AD shall share the BCA information against the IBAN and Financial Instrument with PSW.
- 2. PSW receive the information and shares the acknowledgement with AD.



Sharing of GD & Financial Information Financial & GD Information Messages (Export)

- Message 4 Change of Bank Request from PSW (BCA Transfer)
- 1) Trader Request to change the bank for export receipts from PSW. (Only those banks will be visible to the Trader in which trader profile exist)
- 2) PSW shares the change of bank request with AD (To whom GD information sent earlier)
- 3) AD receives the bank transfer request from PSW
- 4) AD shall accept/reject the bank transfer request a. Upon acceptance of request, PSW shall share the GD and Financial information with the newly selected bank. b. Upon rejection of request, Trader will receive the bank transfer request rejection intimation.
- 5) PSW will share the GD and financial information with the bank selected by the user.
- 6) AD will share the acknowledgement with PSW.



Annexure – 1 (Response Codes)

Code	Status Name	Description	
200	OK The request has succeeded. The information returned with the response is dependent on the method used in the request,		
201	Created	The request has been fulfilled and resulted in a new resource being created.	
202	Accepted	The request has been accepted for processing, but the processing has not been completed.	
203	Non-Authoritative Information	The returned meta-information in the entity-header is not the definitive set as available from the origin server.	
206	Partial Content	The server has fulfilled the partial GET request for the resource.	
207	Verified	The verification of the input credentials successful (Conditional Operator)	
208	Not Verified	Failed to verify the input credentials. (Conditional Operator)	
209	Accept	Decision made by the business user on system.	
210	Reject	Decision made by the business user on system.	
400	Bad Request	The request could not be understood by the server due to malformed syntax. The client SHOULD NOT repeat the request without modifications.	



Annexure – 1 (Response Codes)

401	Unauthorized	The request requires user authentication	
403	Forbidden	The server understood the request, but is refusing to fulfill it.	
404	Not Found	The server has not found anything matching the Request-URI. No indication is given of whether the condition is temporary or permanent.	
405	Method Not Allowed	The method specified in the Request-Line is not allowed for the resource identified by the Request-URI.	
408	Request Timeout	The client did not produce a request within the time that the server was prepared to wait.	
413	Request Entity Too Large	The server is refusing to process a request because the request entity is larger than the server is willing or able to process.	
406	Not Acceptable	The resource identified by the request is only capable of generating response entities which have content characteristics not acceptable according to the accept headers sent in the request.	



Annexure – 2 (Authorized Payment Modes)

Code	Status Name	Description
Import		
301	Letter of credit	Authorized Payment Mode.
302	Open Account	Authorized Payment Mode.
303	Advance Payment	Authorized Payment Mode.
304	Contract/Collection	Authorized Payment Mode.
Export		
305	Open Account	Authorized Payment Mode.
306	Advance Payment	Authorized Payment Mode.
307	With LC	Authorized Payment Mode.
308	Without LC	Authorized Payment Mode.



Annexure – 3 (Account Status)

Code	Status Name	Description
600	Active	When trader account is active
601	Inactive	When trader account is not operational.

Annexure – 4 (Account Type)

Code	Status Name	Description
701	Current Account	Account Type
702	Saving Account	Account Type
703	Deposit Account	Account Type
704	Dormant Account	Account Type

Annexure – 5 (Processing Code)

Code	Status Name	Description
01	Update	Differentiate the request type under the same message ID i.e. to perform update operation.
02	Delete	Differentiate the request type under the same message ID i.e. to perform delete operation.
03	Fetch	Differentiate the request type under the same message ID i.e. to fetch the information form the source.



Annexure – 6 (List of API Messages which will be exchanged among PSW & AD)

Message No.	API Messages	Exposed By	Consumed By
Trader Profi	ling		
1.	Request for verification of IBAN, Email and Mobile No. from AD.	PSW	AD
2.	Sharing of verification status by AD with PSW.	AD	PSW
3.	Request for sharing of authorized payment modes against IBAN by PSW.	PSW	AD
4.	Sharing of Authorized Payment Modes against IBAN with PSW	AD	PSW
5.	Request for sharing of Negative list of Countries, against IBAN with PSW	PSW	AD
6.	Share Negative List of countries against IBAN with PSW	AD	PSW
7.	Request for sharing Negative list of Commodities against IBAN with PSW	PSW	AD
8.	Share Negative List against IBAN with PSW	AD	PSW
9.	Request for sharing Negative list of Suppliers against IBAN with PSW	PSW	AD
10.	Share Negative List of Suppliers against IBAN with PSW	AD	PSW
6.	Share updated Authorized Payment Modes against IBAN with PSW	AD	PSW
7.	Share updated Negative list of Countries against IBAN with PSW	AD	PSW
8.	Share updated Negative list of Commodities against IBAN with PSW	AD	PSW



Annexure – 6 (List of API Messages which will be exchanged among PSW & AD)

9.	Share updated Negative list of Suppliers against IBAN with PSW	AD	PSW
10.	Activate/Deactivate Trader Profile	AD	PSW
Sharing of GD	0 & Financial Information Message Exchange w.r.	t. Import	
1.	Share financial transaction data with PSW	AD	PSW
	(Advance payments/ LCs/ Contract)		
2.	Sharing of GD & Financial Information with AD	PSW	AD
3.	Sharing of BDA Information with PSW	AD	PSW
4.	Sharing Change of Bank Request with AD	PSW	AD
Sharing of GE	& Financial Information Message Exchange w.r.	t. Export	
1.	Share financial transaction data with PSW (Advance payments/ LCs)	AD	PSW
2.	Sharing of GD & Financial Information with AD	PSW	AD
3.	Sharing of BCA Information with PSW	AD	PSW
4.	Sharing Change of Bank Request with AD	PSW	AD



Glossary

Acronym or Key Term	Definition
PSW	Pakistan Single Window
РМО	Program Management Office
SBP	State Bank of Pakistan
AD	Authorized Dealer
BPR	Business Process Reengineering
BRS	Business Requirement Specification
кус	Know Your Customer
EIF	Electronic Import Form
EFE	Electronic Form E
EDI	Electronic Data Interchange
GD	Goods Declaration
GD	Goods Declaration
BDA	Bank Debit Advice
BCA	Bank Credit Advice
FCY	Foreign Currency Reserve
IBAN	International Bank Account Number
EDS	Electronic Declaration System
ИОМ	Units of Measurement
REST	Representational State Transfer
API	Application Programming Interface
HTTPS	Hyper Text Transfer Protocol Secure
JSON	JavaScript Object Notation
JWT	JSON Web Token



Specials

- 1. Secure IS Module
- 2. Communication through Active Directory
- > 3. Maker Checker at every level
- 4. Email mechanism
- 5. HS Code manual upload
- 6. HS Code automated upload option for future transcations

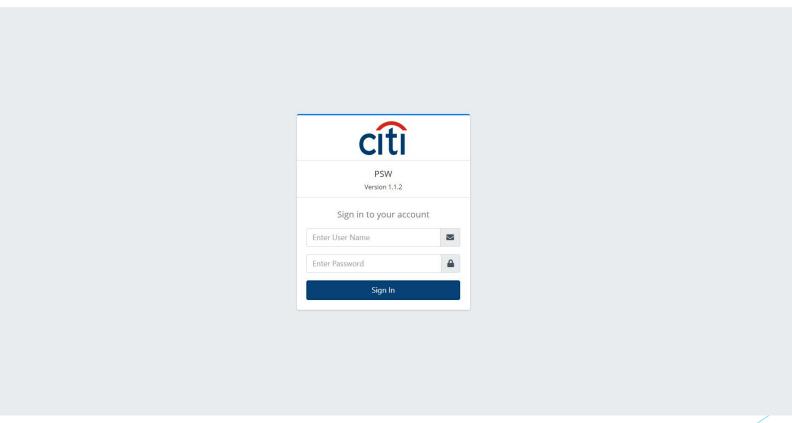
Assumptions:

- Automated handoff of HS Code is not clear, has to be clear in one or two months.
- Assuming total 10 reports. Incase of more reports, need clarification.
- Account opening information is not clear
- Customer liberary for email automation is also not clear

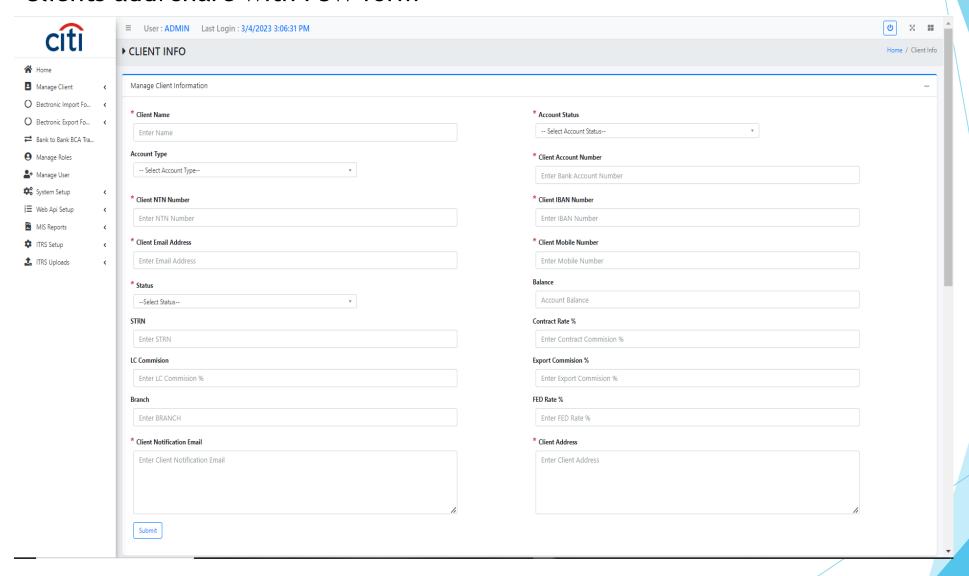


Application Flow

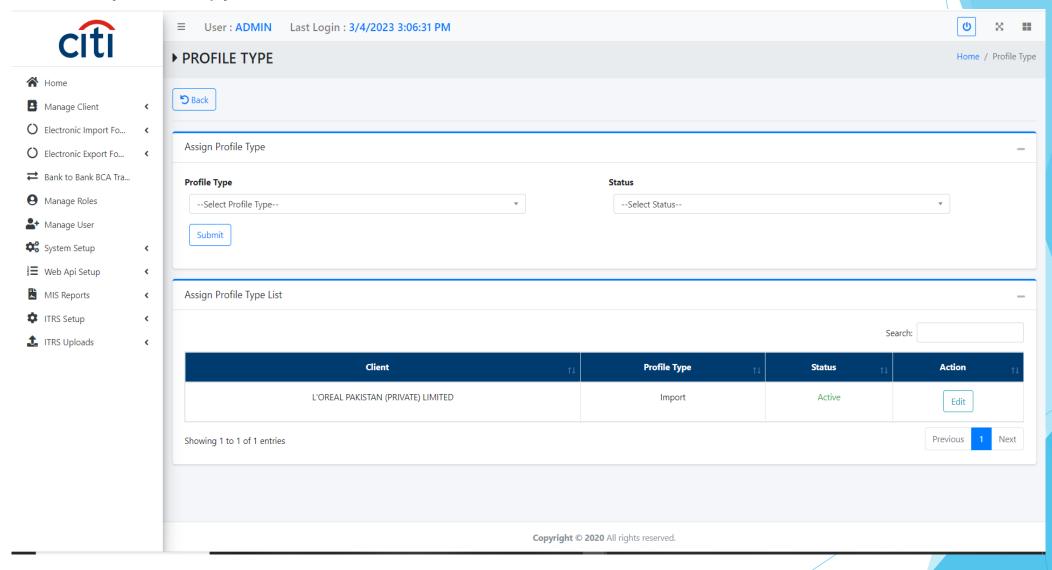
Login Form



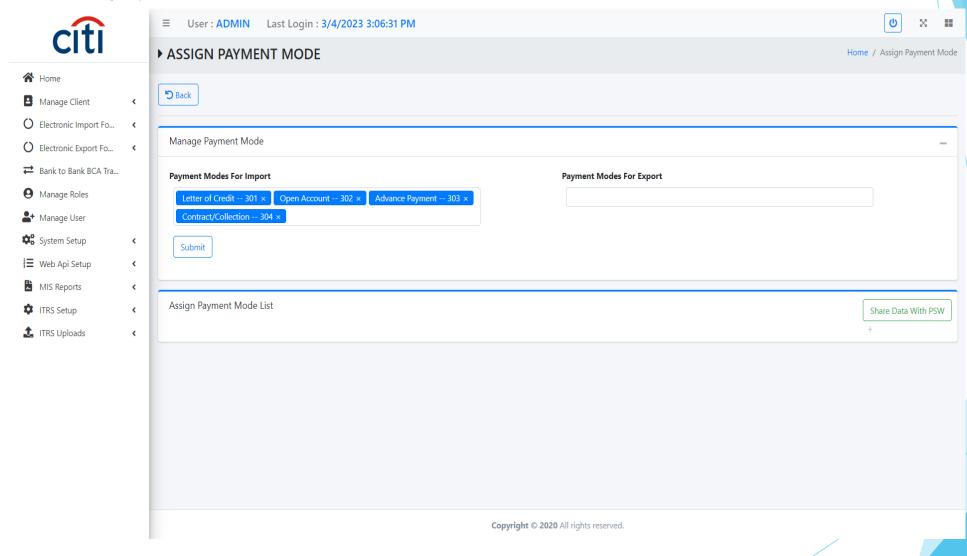
Clients add/share with PSW form



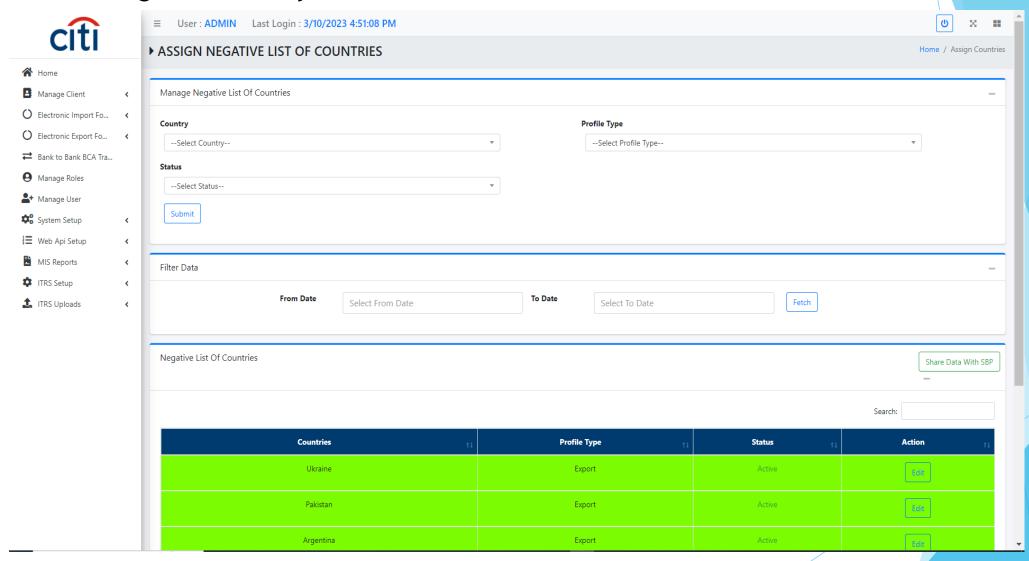
Clients profile type add/share with PSW



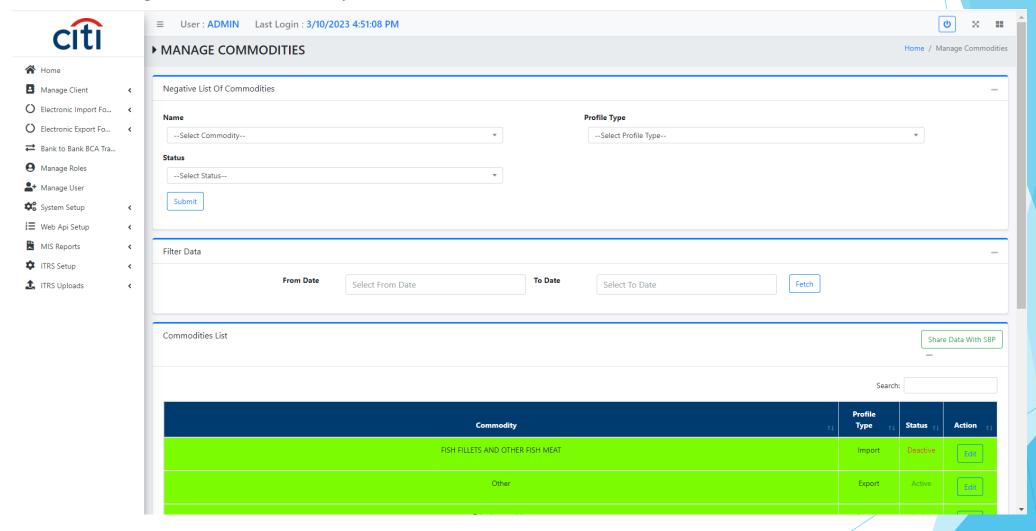
Clients payment modes add/share with PSW form



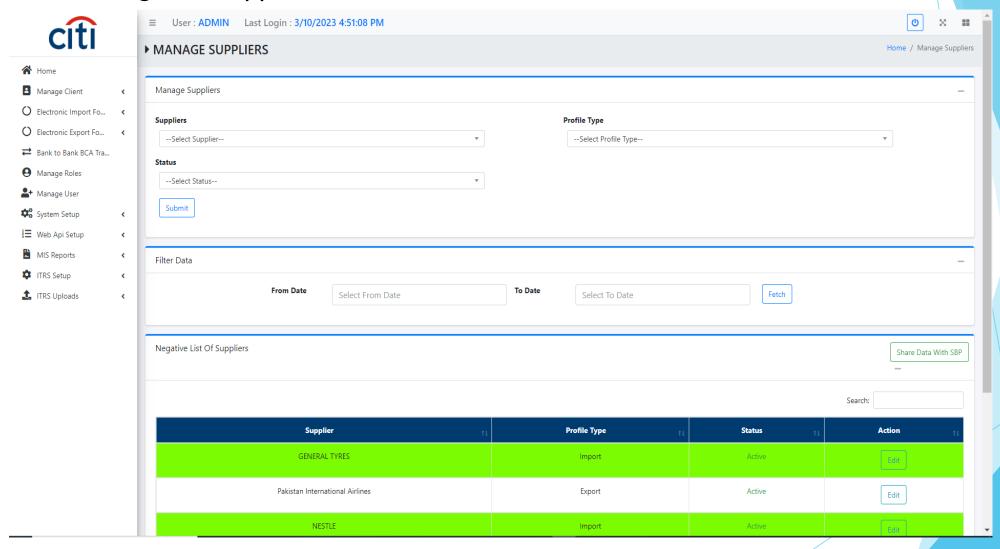
Clients negative country add/share with PSW form



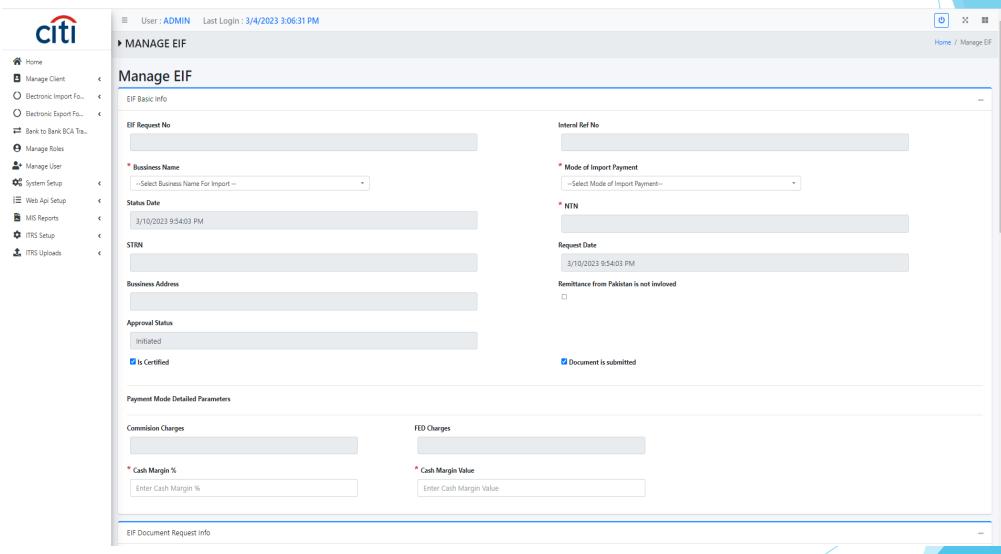
Clients negative commodity add/share with PSW form



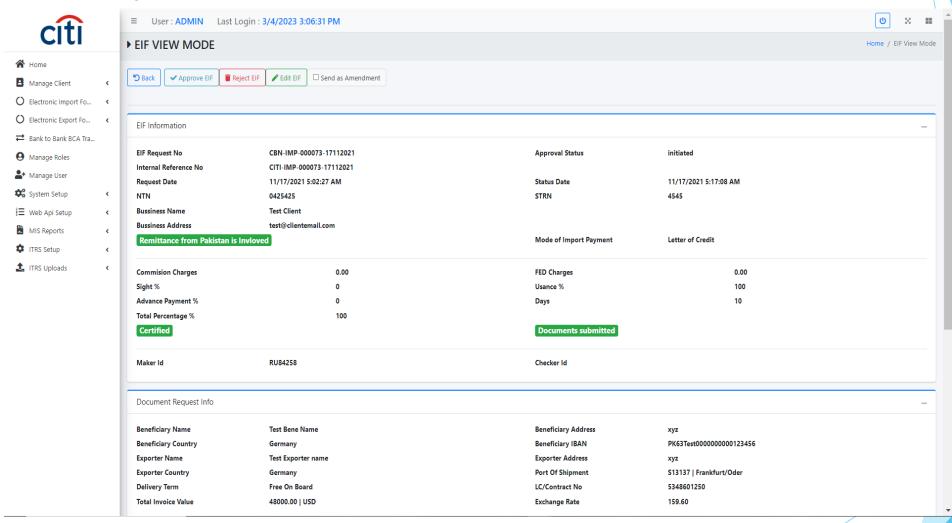
Clients negative supplier add/share with PSW form



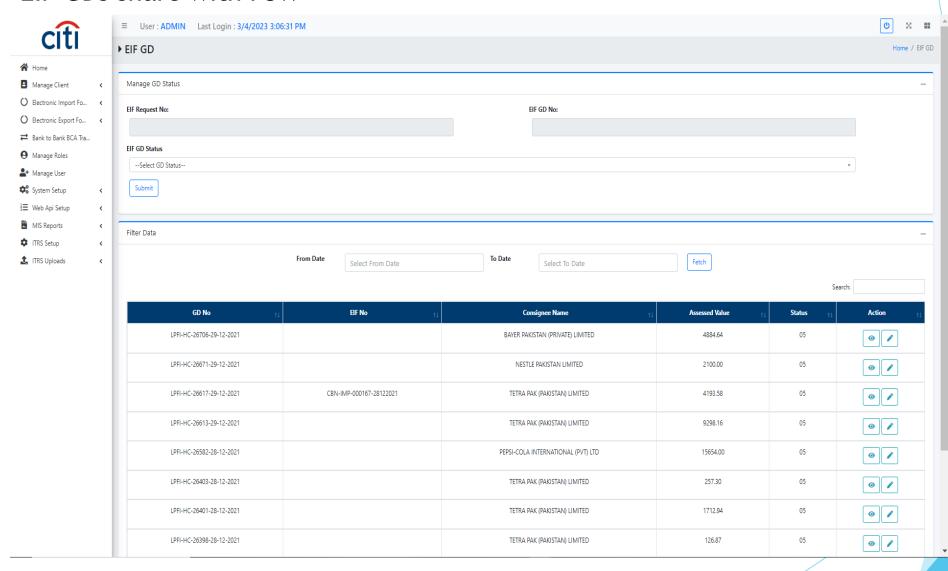
EIF(Electronic Import Form) creation form



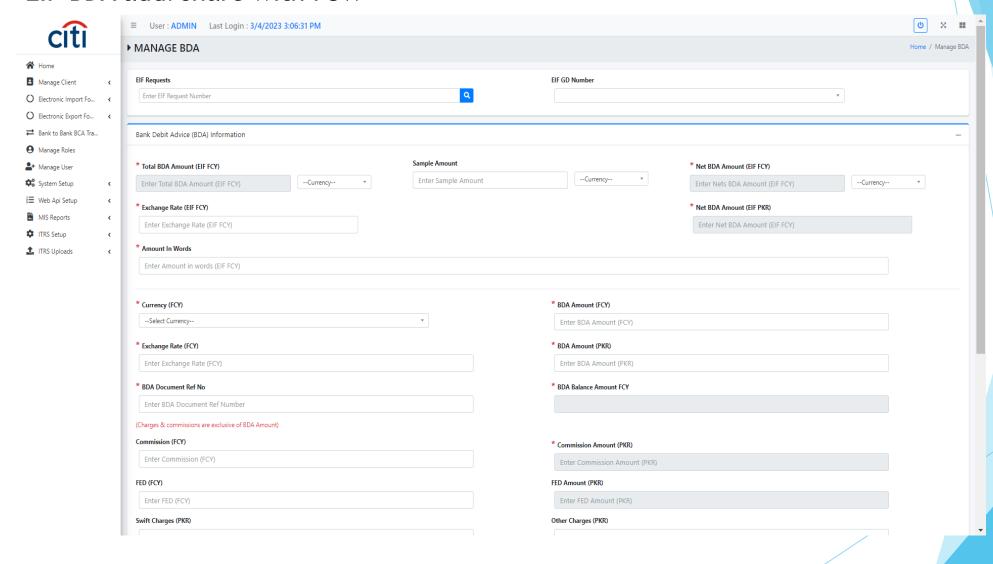
EIF sharing with PSW form



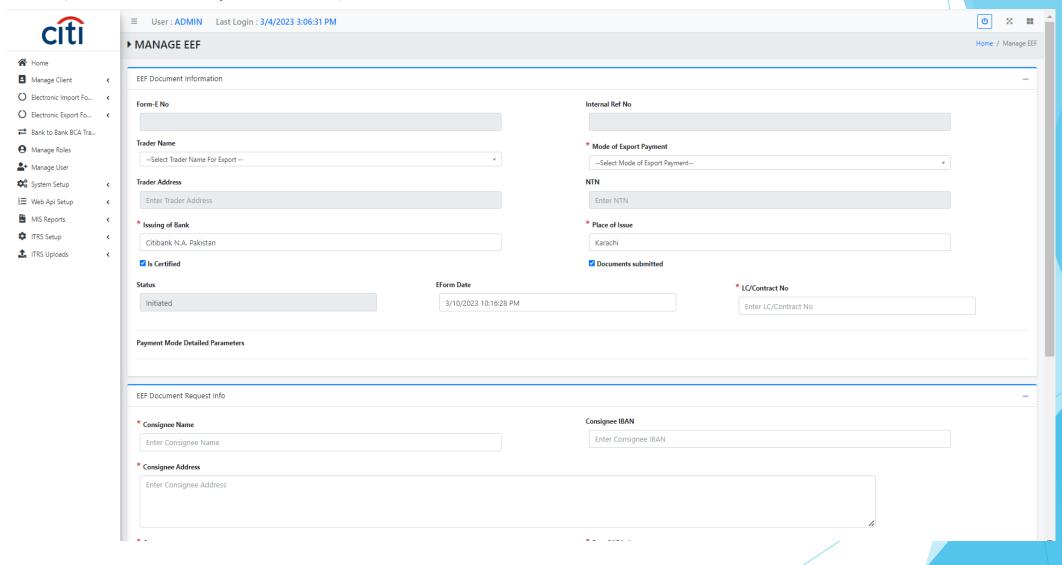
EIF GDs share with PSW



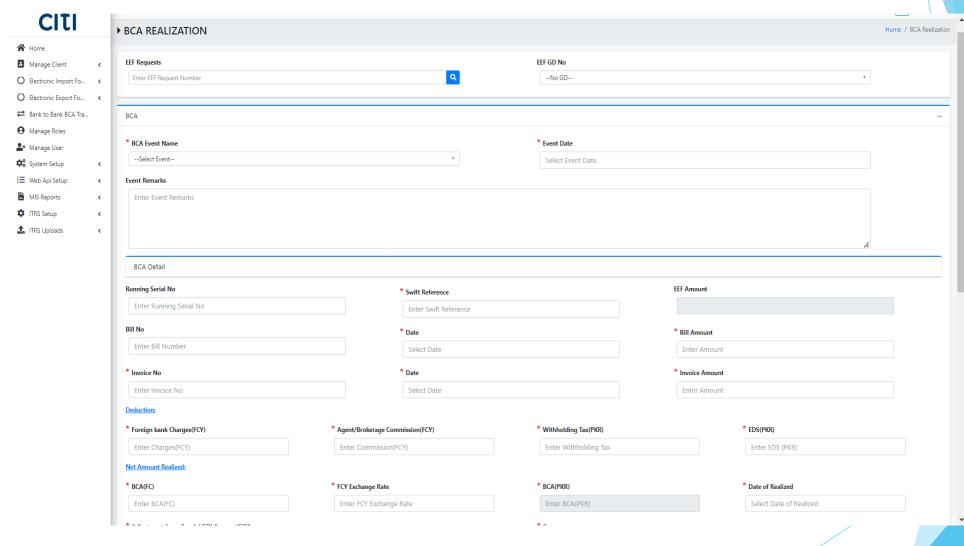
EIF BDA add/share with PSW



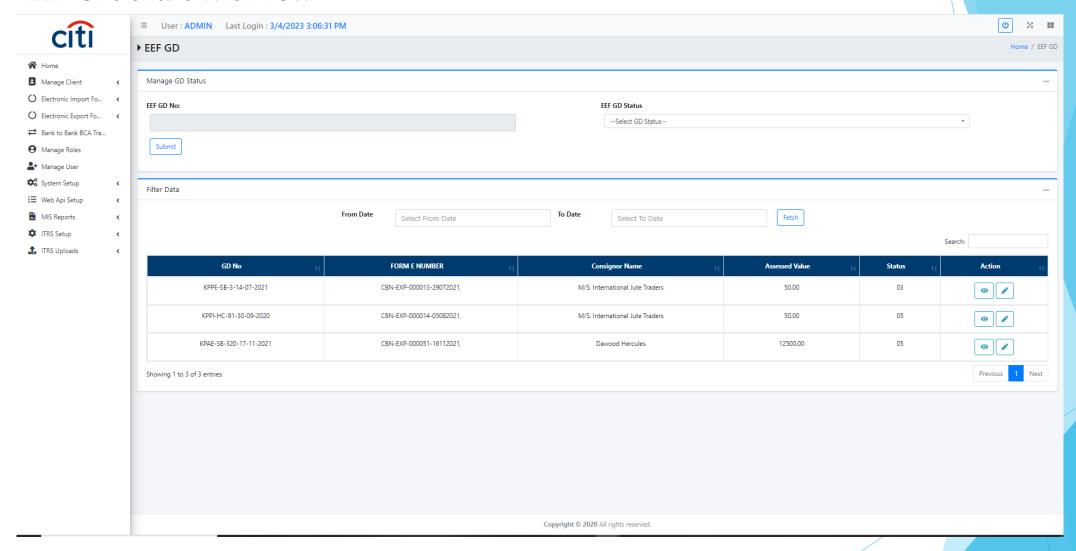
EEF(Electrinic Export Form) add/share with PSW



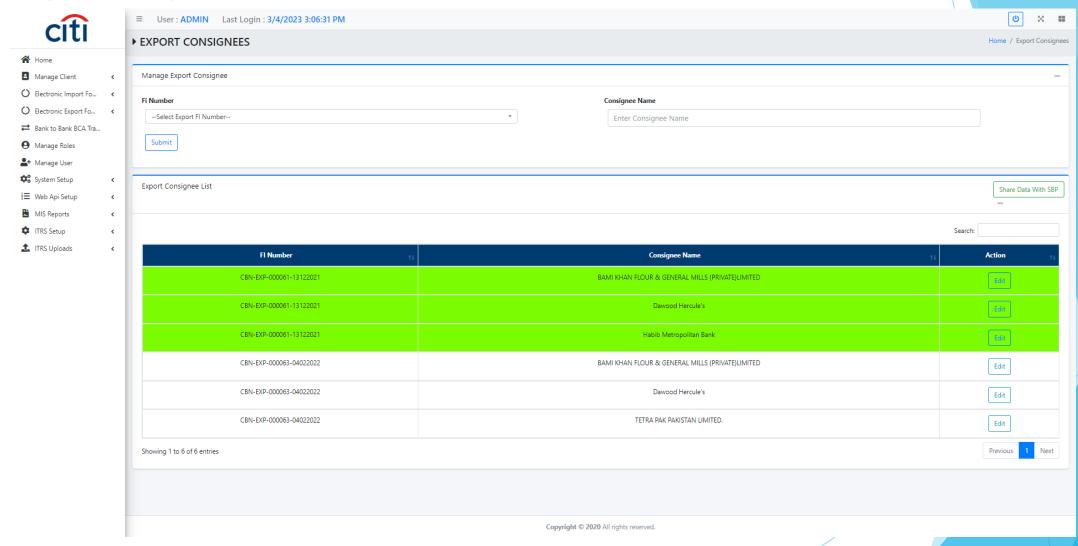
EEF BCA add/share with PSW



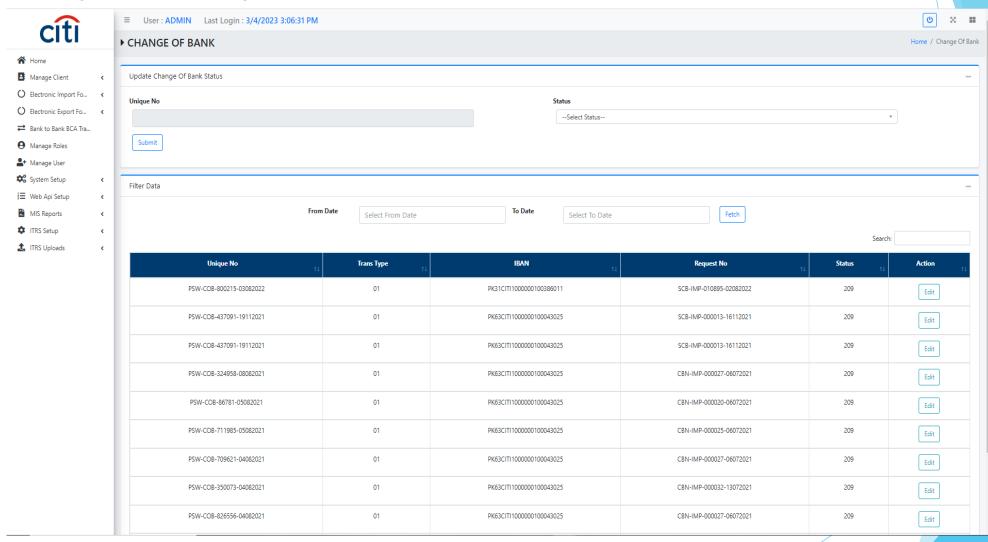
EEF GDs share with PSW



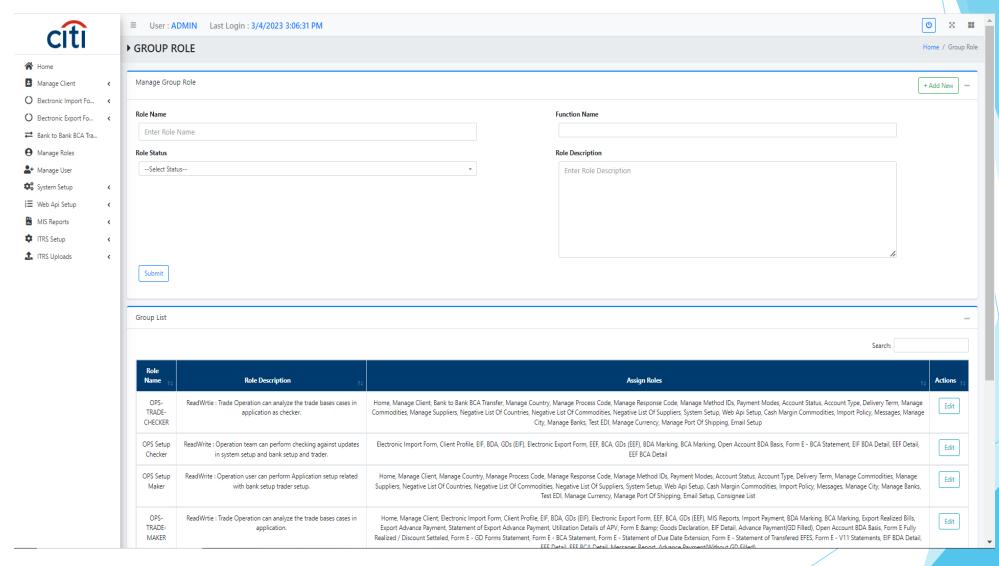
Export consignee add/share with PSW



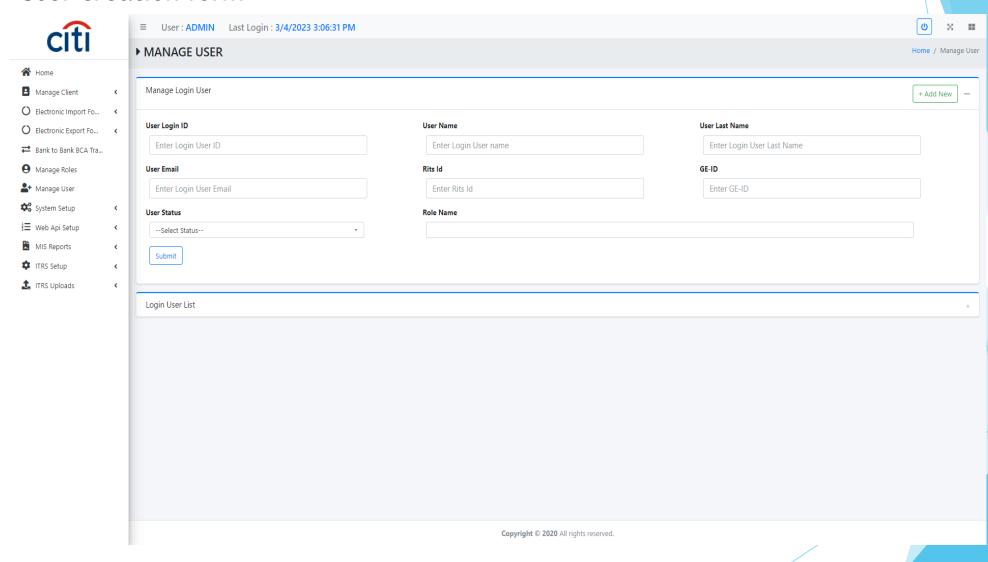
Change of bank request



Role creation form

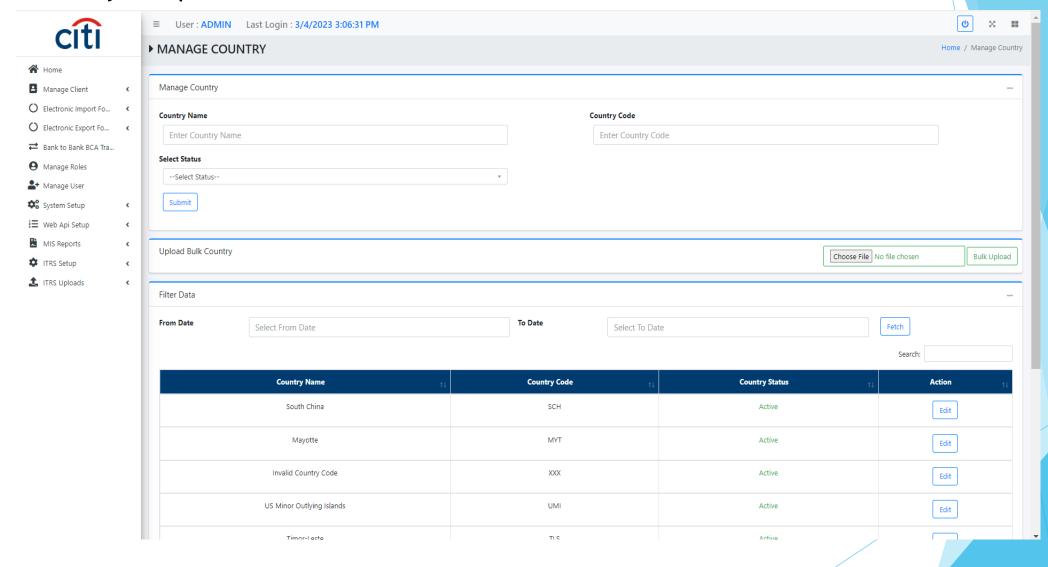


User creation form

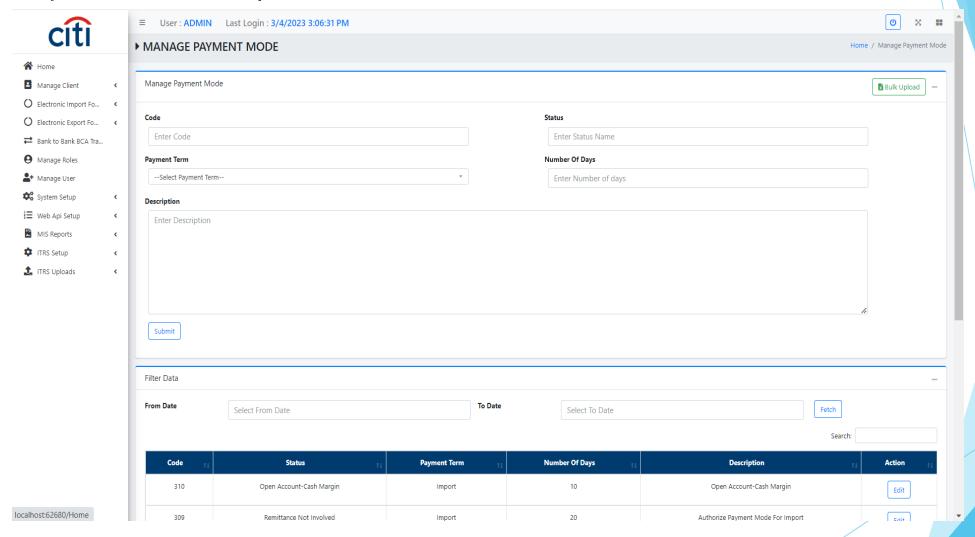


Setup

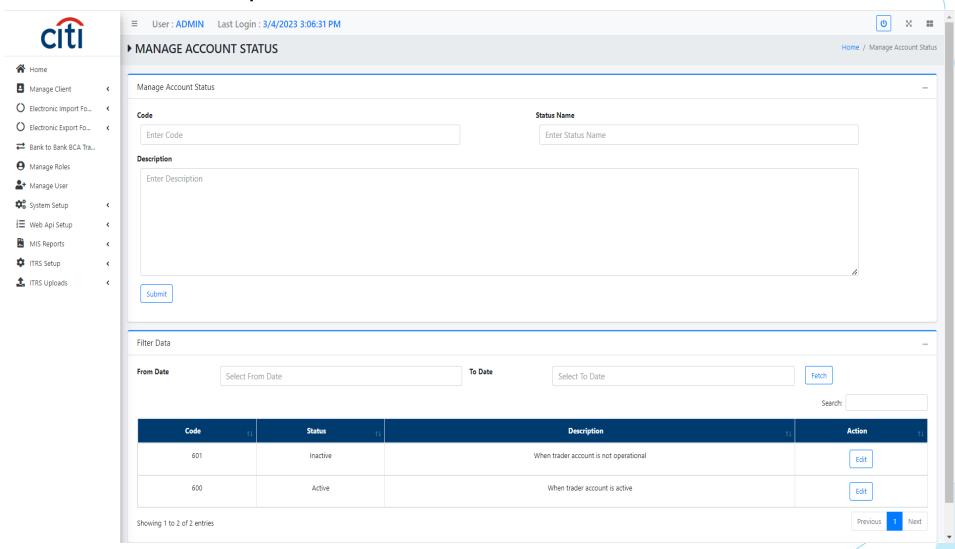
Country setup



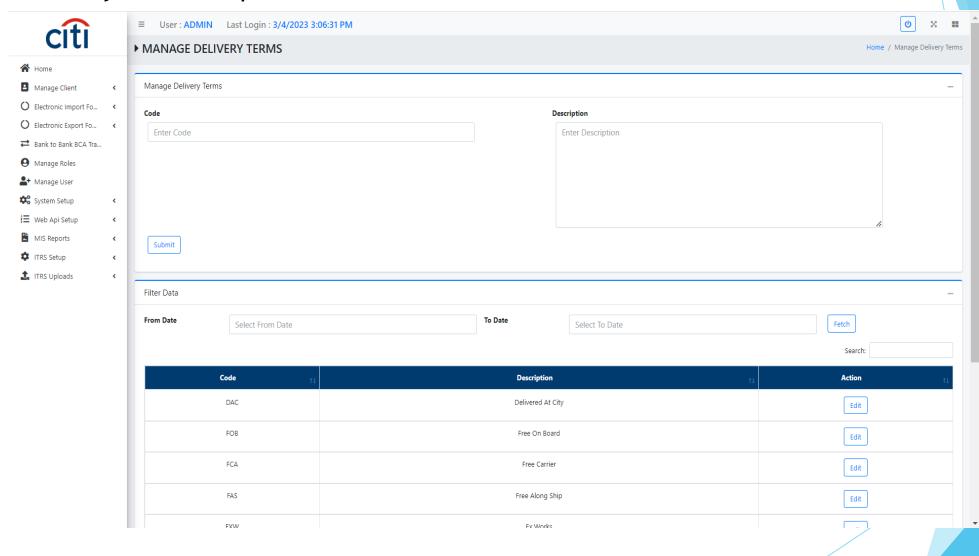
Payment mode setup



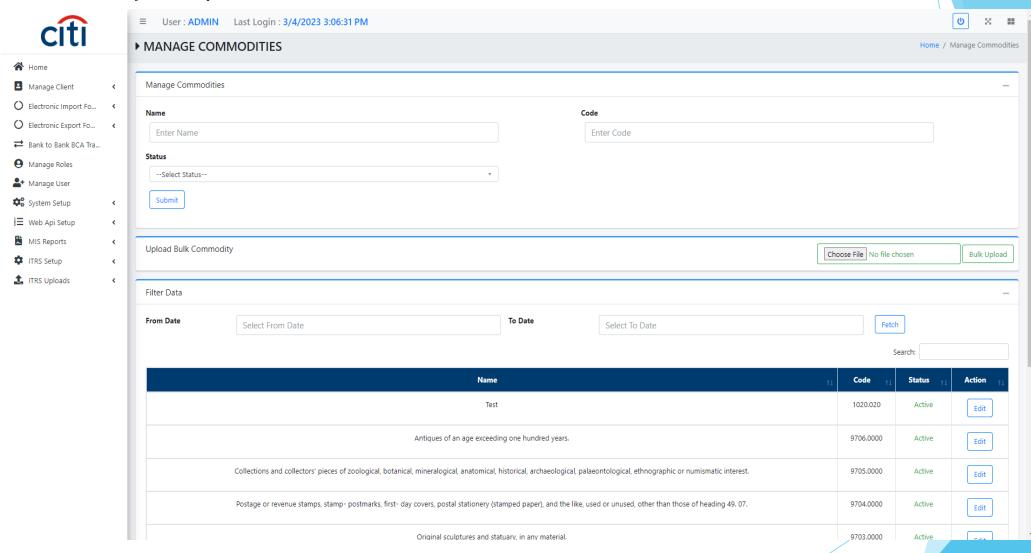
Account status setup



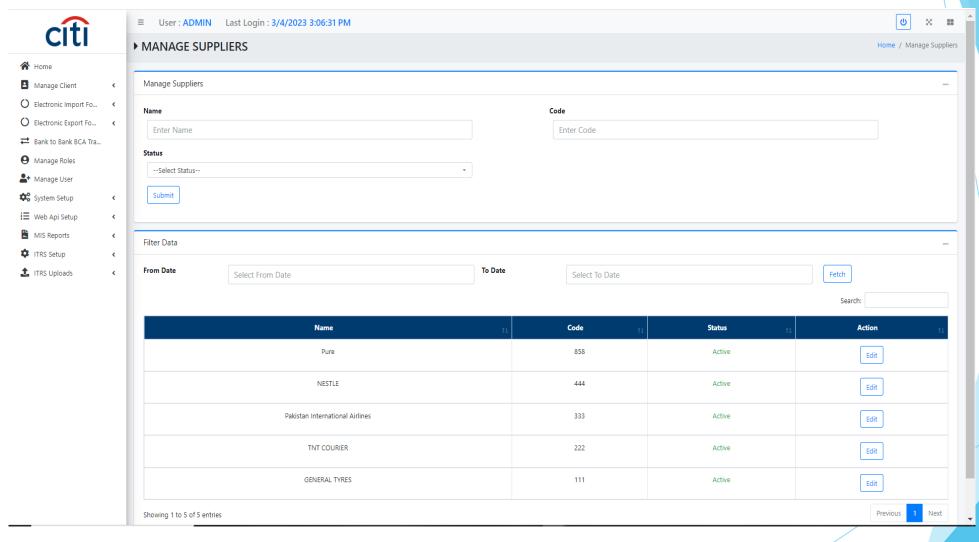
Delivery term setup



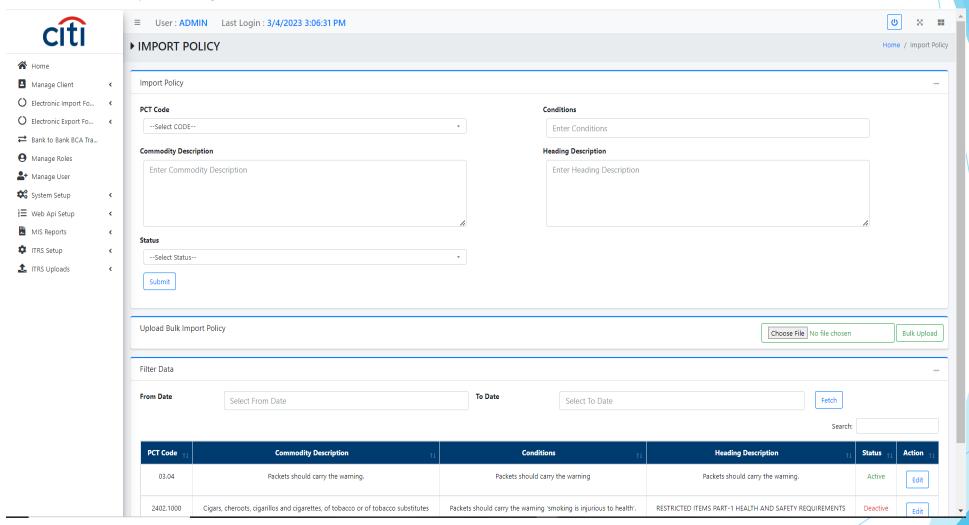
Commodity setup



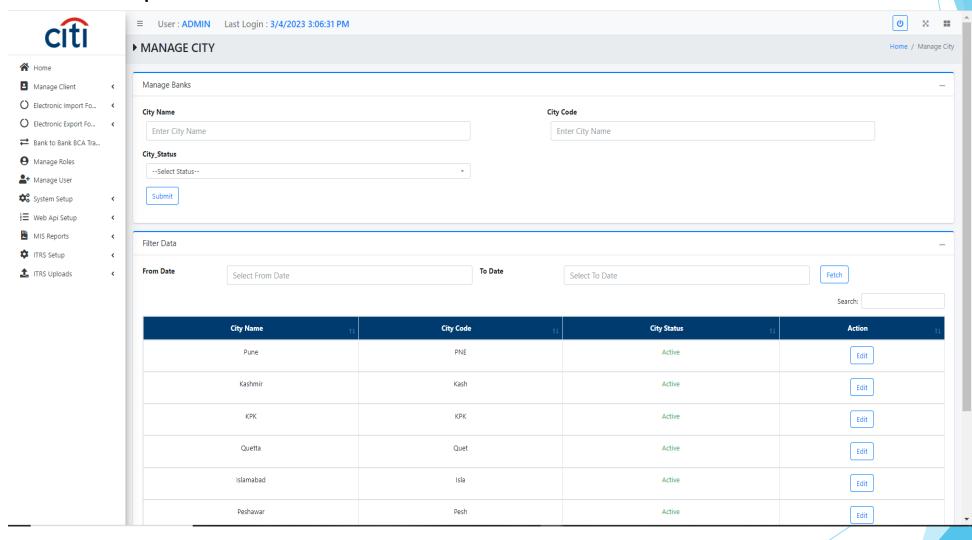
Suppliers setup



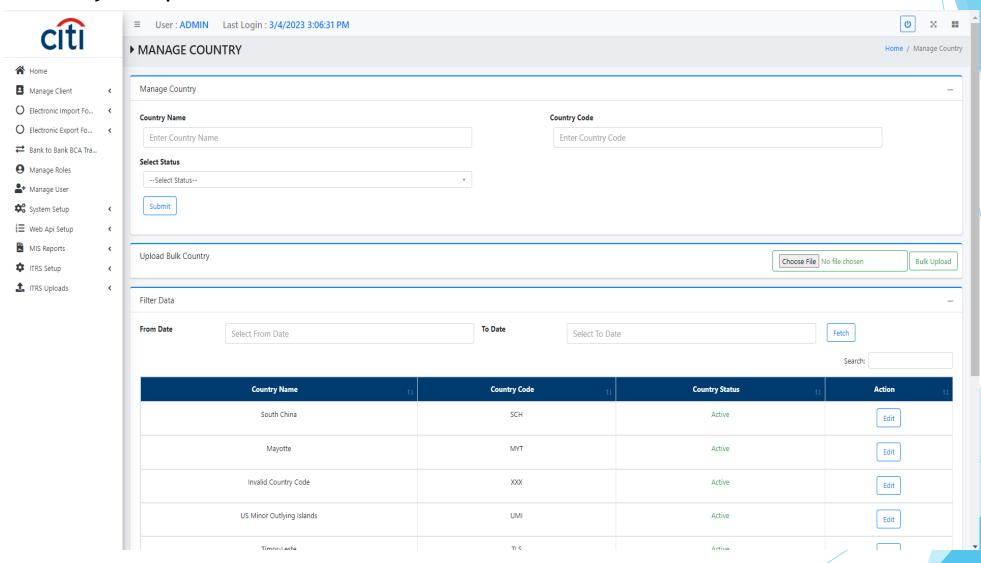
Commodity setup



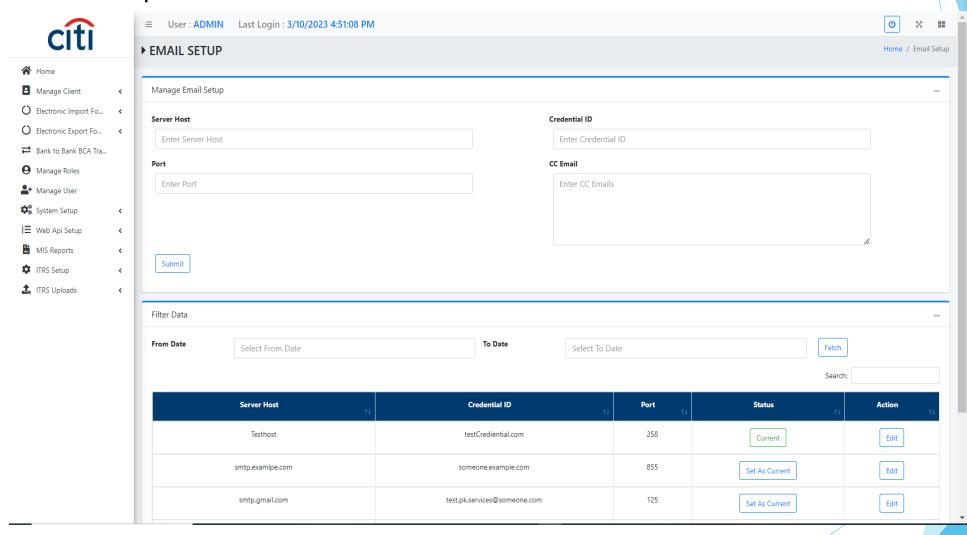
Cities setup



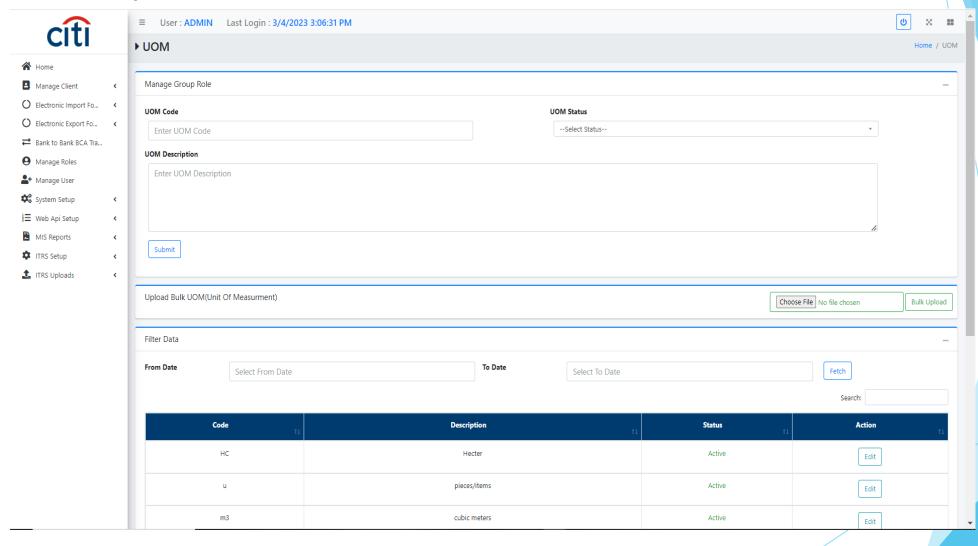
Country setup



Email setup

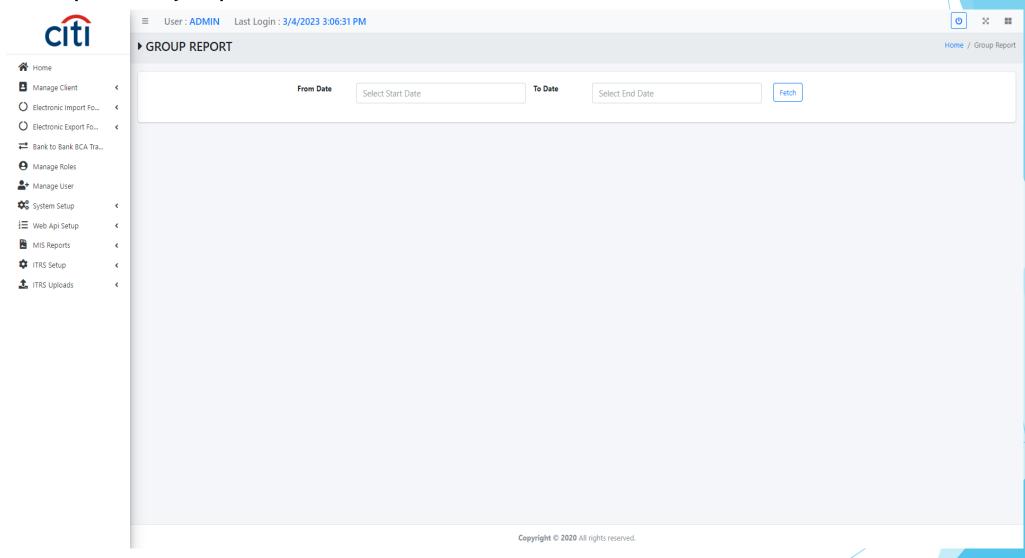


UOM setup

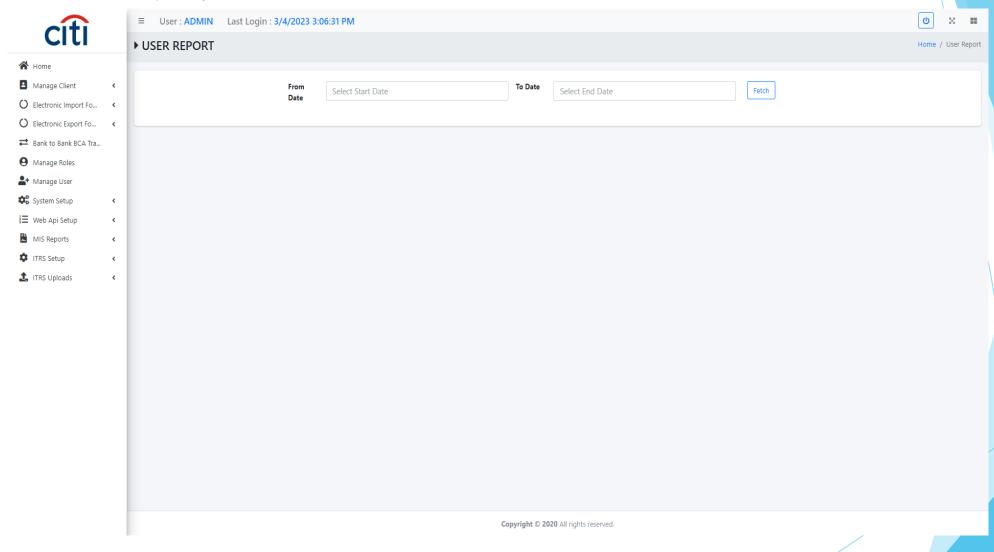


Reports

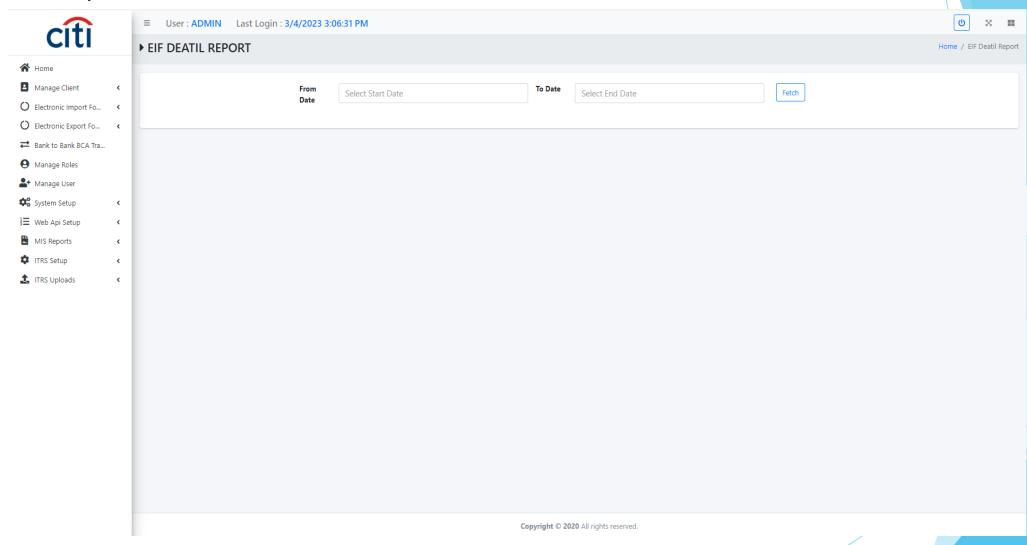
Group activity report



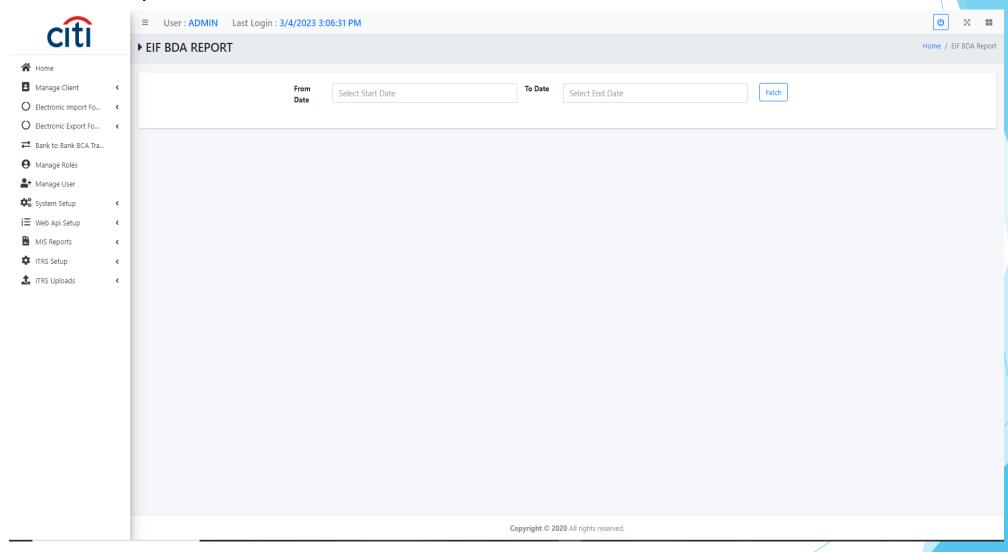
User activity report



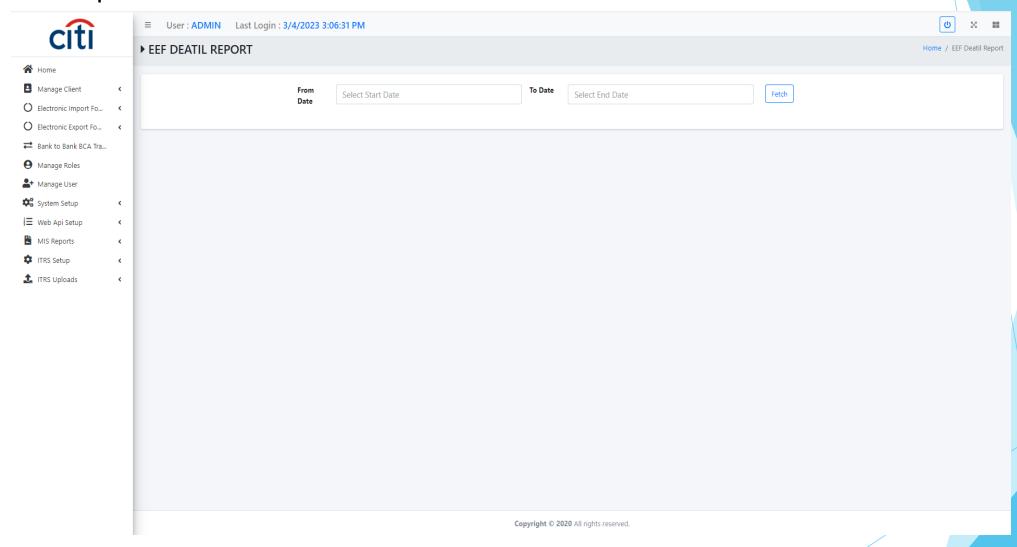
EIF report



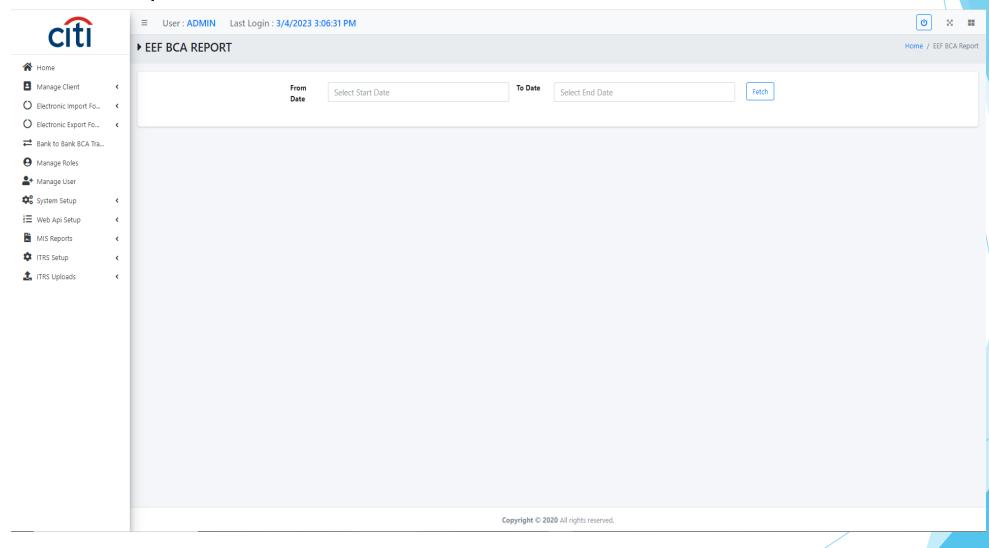
EIF BDA report



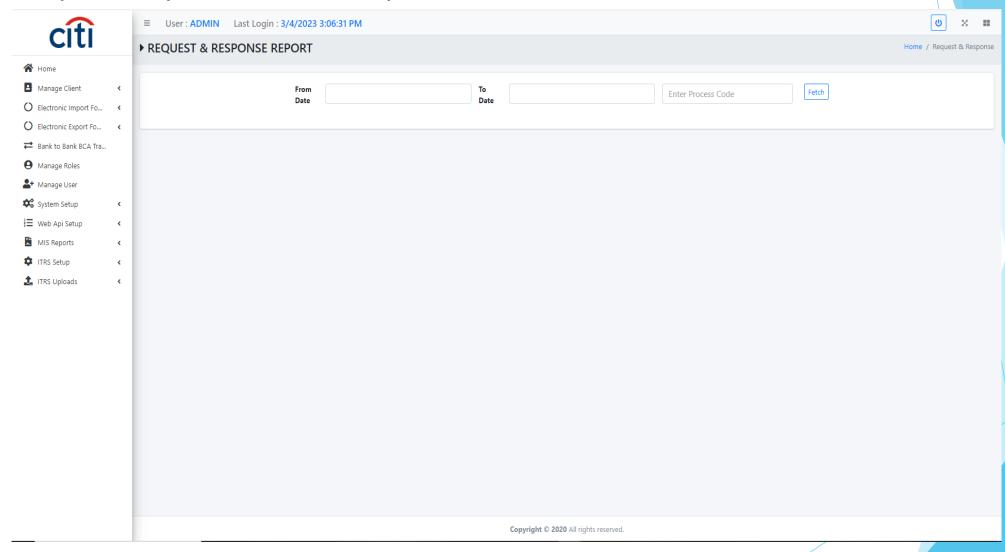
EEF report



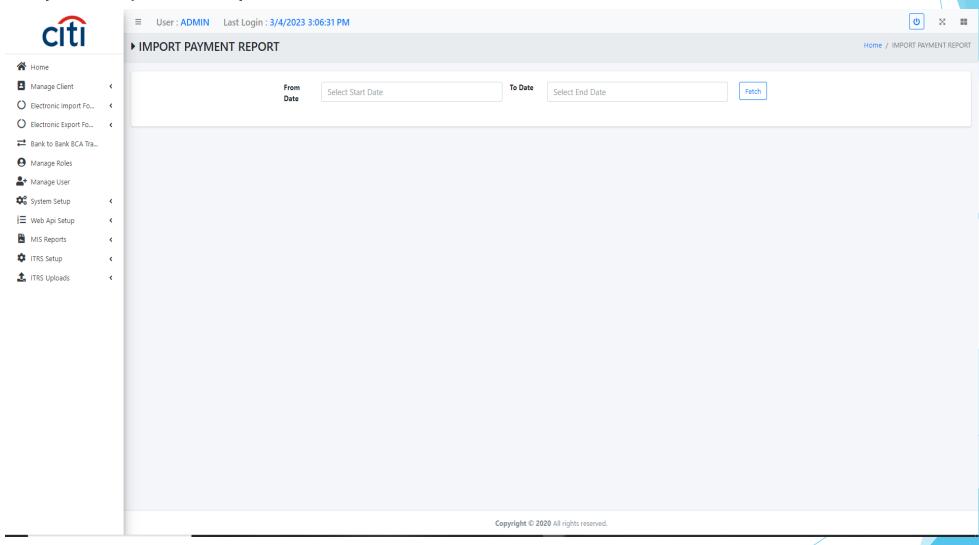
EEF BCA report



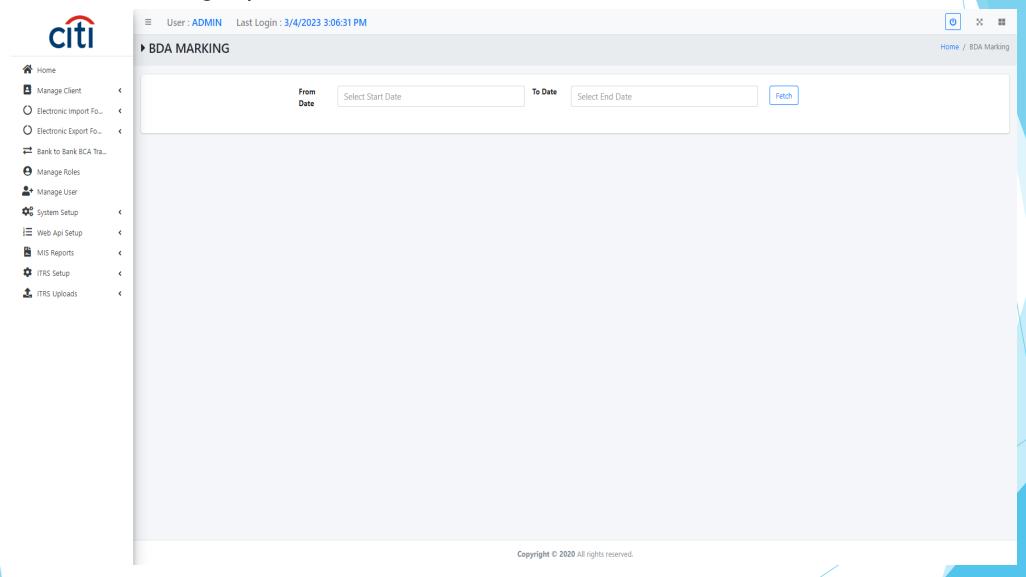
Request/response with PSW report



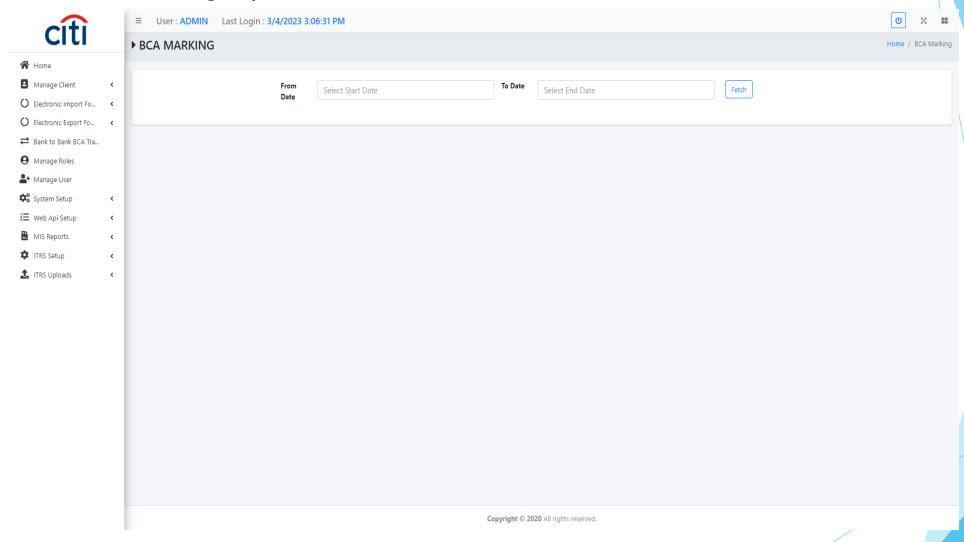
Import Payment report



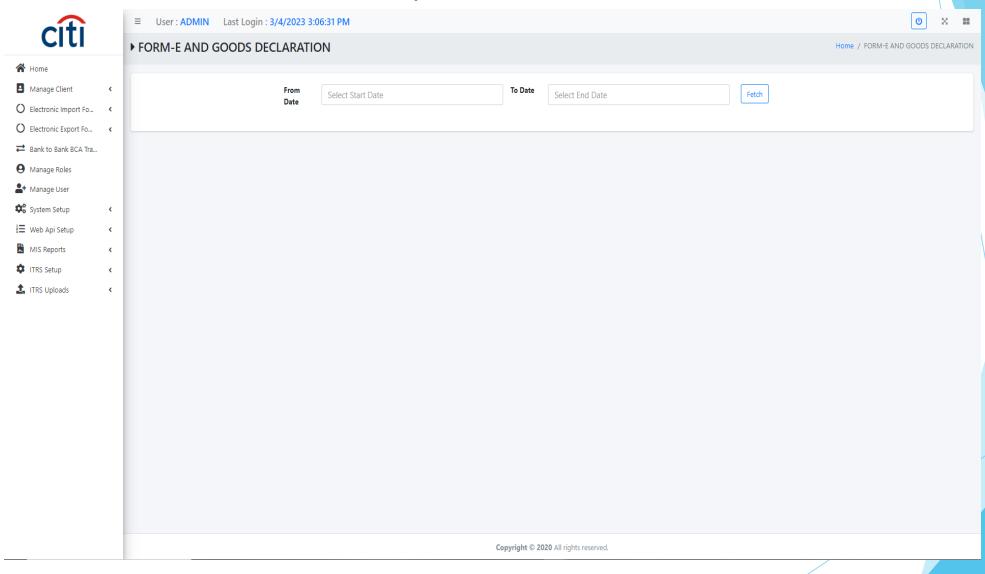
EIF BDA marking report



EEF BCA marking report



FORM-E and Goods declaration report



Advanced payment with Gd filled

