

# Anonymized data collection plan for EMLs

This additional example is part of the CGAP Technical Guide, *Digital Financial Services for Financial Inclusion: Tools for Supervisors*. It provides a practical illustration produced during CGAP's work with several country supervisors on DFS supervisory frameworks. This document is part of the Technical Guide's collection of Additional Examples and Guidance. Its utility and applicability to specific country contexts depends on factors such as the availability of data and other resources, the stage of development of DFS markets, experience with risk-based supervision, and institutional arrangements for supervision.

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## Purpose of this additional example

This additional example is the anonymized version of a document shared with CGAP by a country supervisory authority. It describes the requirements and processes needed to implement a data collection system to support the supervision of electronic money issuers (EMIs), carried out by the digital financial services supervision department (DFSSD) of the supervisory authority. The original document was drafted by the DFSSD in collaboration with the IT department, as the result of business process analysis, system user interviews, group discussions, and brainstorming sessions with internal and external stakeholders of the country's supervisory authority.

The purpose of the document is to illustrate how a supervisory authority can organize and implement a data collection project. Although it is an edited and shortened version compared to the original, it identifies the assumptions supporting the required software development, the limitations of a data warehouse reporting solution, the limitations of the data collection project itself, and current and proposed processes to manage data. The original document was also designed to serve as the basis for the following situations:

- Design and development of an automation solution
- Development of user acceptance test cases
- Determining project completion
- Assessing project success

The following sections are the edited version of the original document. They keep much of its original language, including references to existing regulations and internal organizational structures.

## 1. Data collection project

### 1.1 PROJECT OVERVIEW

The DFSSD has undertaken various initiatives to transform payments system infrastructure mechanisms from paper-based to electronic. The department is shifting from a focus on policy and regulatory development to active supervision of DFS providers. Recently issued EMI regulations will remove barriers to entry and provide EMIs with a level playing field that leads to a healthy payment ecosystem. Hence, it will enable EMIs to offer convenient, cost-effective, interoperable, and secure services.

To carry out DFS supervision that ensures EMIs can achieve these objectives and adhere to regulatory compliance, the supervisory authority's senior management has decided to put in place a real-time or near real-time data collection system to support EMI supervision. To this end, the DFSSD, in coordination with the IT department, has taken the initiative to automate granular data collection through a data warehouse. The main objective of the proposed solution is not only to help EMIs report data but to provide the DFSSD with a monitoring platform that offers features through multidimensional cubes, interactive reports,

and dashboards.<sup>1</sup> The real-time data collection system will reduce time spent on data validation. It will also allow for the use of advanced data analytics tools that reduce staff time and improve the quality of data analytics and visualization. Reduction in time-to-report will significantly improve the timeliness of analyses and increase supervisory effectiveness.

## 1.2 PROJECT SCOPE

The main objective of the project is to enable the DFSSD to carry out effective and efficient EMI monitoring through automated data collection on various frequencies. From a management information system (MIS) perspective, this would provide other data warehouse features, including a dashboard and MIS reports through available multidimensional cubes and interactive reports.

The DFSSD will administer the proposed system. However, a record-by-record data editing or deleting facility and system-based workflows are not within the project's scope.

## 1.3 PROJECT DEPENDENCIES

### 1.3.1 Master data

- EMI master data: This database would be maintained on the basis of values the DFSSD provides.
- Bank master data: This database already exists. No changes required.
- District master data: The data warehouse has master data of the country's districts, based on the information made available by the National Statistics Agency.
- Currency master data: This database already exists. No changes required.
- Country master data: This database already exists. No changes required.

### 1.3.2 System lookups

- Agents
- Merchants

### 1.3.3 List of values

The following list of values (LOV) would be maintained on the basis of values provided by the DFSSD.

List of values
Transaction main categories
Transaction subcategories
Payments systems used
Point of interaction types
Transaction purposes
Settlements basis
Types of accounts

<sup>1</sup> Multidimensional cubes are structures used in supervisory data analysis to organize and analyze large volumes of data from various dimensions.

### List of values

Incident types

Agent/merchant/card types

Capital types

Note: Master data and LOV details can be found in Appendix C.

## 1.4 STAKEHOLDERS

The project's internal and external stakeholders include:

### Stakeholders

DFSSD

IT department

EMIs

## 1.5 PROJECT DEVELOPMENT LIFECYCLE TIMELINES WITH ROLES AND RESPONSIBILITIES

Milestones	Responsibility	Timelines/Tentative completion date
Detailed analysis and development of system specification requirements	IT	
Review and sign-off of system specification requirements	DFSSD	
Data and technical requirements specifications for EMIs	IT	
Formal notification to EMIs	DFSSD	
Software design and development, Phase 1	IT	
User acceptance test of software development, Phase 1	DFSSD	
Deployment and go-live	IT	
Prelaunch testing	IT/DFSSD	
Pilot launch	DFSSD	
Development of other modules, Phase 2	IT	

## 2. Key assumptions and constraints

### Assumptions

DFSSD will establish and ascertain the feasibility of acquiring EMI data.

No interface will be available for users to amend (add/edit/delete) reported data. Since EMIs would adopt a batch mechanism to submit data, the same would be adopted to revise current and historical data in replace mode. However, a copy of the reporting period would be kept if a batch is revised.

A database for system lookups would first be maintained on the basis of values the DFSSD provides. DFSSD will later manage changes through updatable reports.

No system-based workflow will be provided as the data warehouse is simply a reporting system and does not provide transaction processing.

IT will provide DFSSD with the necessary training to effectively use the data collection system. Along with IT, DFSSD will provide EMIs with initial training.

Only transactions reported as finalized and marked “successful” would be reported through EMI transactional data. No “failed” or “pending” transactions would be reported through this dataset.

All data hierarchies for reporting a period in cubes will be based on the fiscal year.

### Constraints

No provision would be available to pick real-time transactions through EMI external systems. However, multiple periodic data feeds would be captured through automated channels throughout a day.

The system does not support data capturing at irregular intervals. All data acquisition will be done at regular intervals.

## 3. Business processes

### 3.1 BUSINESS PROCESS DESCRIPTION

#### 3.1.1 Current process and data formats

Currently, no process exists for collecting EMI data.

#### 3.1.2 Proposed process and data formats

The final process is part of a proposed automation that will offer EMIs a platform to report data at various frequencies, depending on data type. It includes a DFSSD data monitoring platform with features such as multidimensional cubes, interactive reports, and a dashboard.

### 3.1.2.1 Proposed data file structure

Name of data file structure	Type	Frequency	Remarks
EMI transactional data	Microdata on EMI transactions	Daily	Three times per day, at <b>regular intervals</b>
EMI summary of accounts	Summarized data	Daily	
EMI summary of balances	Summarized data	Daily	
EMI summary of transactions (failed/pending)	Summarized data	Daily	
EMI summary of instruments	Summarized data	Weekly	
EMI summary of incidents	Summarized data	Weekly	
EMI summary of agents/merchants/cards	Summarized data	Monthly	
EMI capital	Summarized data	Quarterly	

#### 3.1.2.1.1 EMI transactional data

EMIs will be required to report transactional data on a daily basis. The EMI would only report transactions reported as finalized and marked “successful.” The following data file structure attributes may be developed in the data collection system:

Variable	Data type	Optional/Mandatory	Description/Validation rules
EMI code	Numeric	Mandatory	Code to be validated with EMI's master data.
Transaction ID	Alphanumeric	Mandatory	Each EMI must have a unique transaction ID.
Transaction date	Date	Mandatory	Date on which the transaction is reported as finalized and marked as “successful.” Format: YYYY-DD-MM Example: 2023-01-01
Transaction time	Alphanumeric	Mandatory	The time at which the transaction attained its state of finality. Format: HH24:MI:SS.sss (for time up to milliseconds) Example: 17:00:00.123 for 05:00:00.123 PM
Gender	Alphanumeric	Mandatory	Only value “M” for male, “F” for female, “T” for transgender, “O” for other, or “LP” for legal person in case of business entity/corporate.
Transaction classification	Alphanumeric	Mandatory	Only value <b>“On us”</b> or <b>“Off us.”</b>
Transaction main category	Alphanumeric	Mandatory	To be validated with list of values of <b>transaction main categories</b> available in Appendix C.

Variable	Data type	Optional/ Mandatory	Description/Validation rules
Transaction subcategory	Alphanumeric	Mandatory	To be validated with list of values of <b>transaction subcategories</b> available in Appendix C. There is no relationship between main category and subcategory fields. The two fields are entirely exclusive of each other.
Payments systems used	Alphanumeric	Mandatory	To be validated with list of values of <b>payments systems used</b> , available in Appendix C
Point of interaction type	Alphanumeric	Mandatory	To be validated with list of values of <b>point of interaction types</b>
Point of interaction ID	Alphanumeric	Optional	Mandatory only in cases where <b>“point of interaction type”</b> is selected as <b>“agent”</b> or <b>“merchant.”</b> In either case, value must be validated with the values available in system lookups of <b>“agents”</b> or <b>“merchants.”</b>
Point of interaction location coordinates (longitudinal)	Numeric	Mandatory	Numeric value in decimal degree west, with up to two decimal places. There are no validations on this field.
Point of interaction location coordinates (latitudinal)	Numeric	Mandatory	Numeric value in decimal degree north, with up to two decimal places. There are no validations on this field.
Point of interaction location	Alphanumeric	Mandatory	To be validated with district’s master data. However, this field will not be validated with the longitude/latitude provided in the previous two fields.
Transaction nature	Alphanumeric	Mandatory	Only <b>“DR”</b> for debit or <b>“CR”</b> for credit— from the perspective of the customer’s account maintained at EMI.
Transaction type	Alphanumeric	Mandatory	Only <b>“domestic”</b> or <b>“cross border.”</b>
Country	Numeric	Optional	Mandatory only in cases where <b>“transaction type”</b> is selected as <b>“cross border.”</b> Code to be validated with master data of <b>transaction countries.</b>
Transaction amount	Numeric	Mandatory	Numeric value with up to two decimal places.
Transaction currency	Numeric	Mandatory	Code to be validated with master data of <b>transaction currencies.</b>
Exchange rate used	Numeric	Mandatory	Numeric value with up to two decimal places. No <b>“0”</b> value allowed for this particular variable.
Transaction amount	Numeric	Mandatory	Numeric value with up to two decimal places. Value to be validated with the formula ( <b>“Transaction Amount * Exchange Rate Used”</b> ) before any deduction.

Variable	Data type	Optional/ Mandatory	Description/Validation rules
Transaction charges	Numeric	Mandatory	Numeric value with up to two decimal places.
Transaction purpose	Alphanumeric	Optional	Mandatory only in cases where <b>“transaction type”</b> is selected as <b>“cross border.”</b> Code to be validated with list of <b>transaction purposes</b> available in Appendix C.
Counterparty institution (code)	Numeric	Mandatory	Code to be validated with master data of <b>institutions.</b>
Source account institution (code)	Numeric	Mandatory	Code to be validated with master data of <b>banks.</b>
Settlement basis	Alphanumeric	Mandatory	To be validated with list of values of <b>settlements basis</b> in Appendix C.
Remarks/comments	Alphanumeric	Optional	Must be enclosed in double quotes.
Reporting period	Date	Mandatory	Format: YYYY-DD-MM Example: 2023-01-01

### 3.1.2.1.2 EMI summary of accounts

Along with transactional data, all EMIs will be required to report summarized data pertaining to account- related details on a daily basis. The following data file structure attributes may be developed for collecting data.

Variable	Data type	Optional/ Mandatory	Description/Validation rules
EMI code	Numeric	Mandatory	Code to be validated with <b>EMI’s</b> master data
Date	Date	Mandatory	Format: YYYY-DD-MM Example: 2023-01-01
Transaction type	Alphanumeric	Mandatory	Only <b>“domestic”</b> or <b>“cross border.”</b>
Type of accounts	Alphanumeric	Mandatory	To be validated with list of values of <b>type of accounts</b> available in Appendix C.
Bank	Numeric	Optional	Mandatory in cases where <b>type of account</b> selected is <b>“trust account.”</b> Code to be validated with master data of <b>banks.</b>
Opening balance	Numeric	Mandatory	Numeric value with up to two decimal places. This variable is to be validated with last reported <b>“closing balance.”</b>
Inflows	Numeric	Mandatory	Numeric value with up to two decimal places.
Outflows	Numeric	Mandatory	Numeric value with up to two decimal places.
Closing balance	Numeric	Mandatory	Numeric value with up to two decimal places. This variable to be validated with the formula <b>(Opening Balance + Inflows – Outflows).</b>



### 3.1.2.1.3 EMI summary of balances

All EMIs will be required to report the data pertaining to their balances on a daily basis. The following data file structure attributes may be developed.

Variable	Data type	Optional/ Mandatory	Description/Validation rules
EMI code	Numeric	Mandatory	Code to be validated with <b>EMI's</b> master data, available on data portal.
Date	Date	Mandatory	Format: YYYY-DD-MM Example: 2023-01-01
Amount	Numeric	Mandatory	Numeric value with up to two decimal places.
e-Money outstanding	Numeric	Mandatory	Numeric value with up to two decimal places.
Trust balance	Numeric	Mandatory	Numeric value with up to two decimal places.
Investment balance	Numeric	Mandatory	Numeric value with up to two decimal places.

### 3.1.2.1.4 EMI number of transactions (failed/pending)

All EMIs will be required to report **failed** or **pending** transactions in summarized form on a daily basis. The following data file structure attributes may be developed.

Variable	Data type	Optional/ Mandatory	Description/Validation rules
EMI code	Numeric	Mandatory	Code to be validated with <b>EMI's</b> master data.
Date	Date	Mandatory	Format: YYYY-DD-MM Example: 2023-01-01
Transaction status	Alphanumeric	Mandatory	Only " <b>failed</b> " or " <b>pending.</b> "
Volume	Numeric	Mandatory	Positive whole number.
Value	Numeric	Mandatory	Numeric value with up to two decimal places.

### 3.1.2.1.5 EMI summary of instruments

All EMIs will be required to report data about the day-to-day activities of their instruments in summarized form on a weekly basis. The following data file structure attributes may be developed.

Variable	Data type	Optional/Mandatory	Description/Validation rules
EMI code	Numeric	Mandatory	Code to be validated with EMI's master data.
Payment card issued	Numeric	Mandatory	Positive whole number.
Payment card active	Numeric	Mandatory	Positive whole number.
e-Money accounts registered	Numeric	Mandatory	Positive whole number.
e-Money accounts active	Numeric	Mandatory	Positive whole number.
Mobile applications downloaded	Numeric	Mandatory	Positive whole number.
Mobile application users	Numeric	Mandatory	Positive whole number.
QR merchants onboarded	Numeric	Mandatory	Positive whole number.
Active QR merchants	Numeric	Mandatory	Positive whole number.
Point-of-sale (POS) merchants onboarded	Numeric	Mandatory	Positive whole number.
Active POS merchants	Numeric	Mandatory	Positive whole number.
Reporting period	Date	Mandatory	Format: YYYY-DD-MM Example: 2023-01-01

### 3.1.2.1.6 EMI summary of incidents

All EMIs will be required to report day-to-day incidents pertaining to fraud, complaints, and system-related issues in summarized form on a weekly basis. The following data file structure attributes may be developed.

Variable	Data type	Optional/Mandatory	Description/Validation rules
EMI code	Numeric	Mandatory	Code to be validated with <b>EMI's</b> master data.
Incident type	Alphanumeric	Mandatory	To be validated with list of values of <b>incident types</b> available in Appendix C.
Opening balance	Numeric	Mandatory	Positive whole number. This variable to be validated with last reported " <b>closing balance.</b> "
Received	Numeric	Mandatory	Positive whole number.
Resolved	Numeric	Mandatory	Positive whole number.
Closing balance	Numeric	Mandatory	Positive whole number. This variable to be validated with formula <b>(Opening Balance + Received - Resolved).</b>
Service interrupted time (in minutes)	Numeric	Mandatory	Positive whole number.
Customer compensated	Numeric	Mandatory	Positive whole number.

Variable	Data type	Optional/ Mandatory	Description/Validation rules
Customer not yet compensated	Numeric	Mandatory	Positive whole number.
Incident not established	Numeric	Mandatory	Positive whole number.
Amount (opening balance)	Numeric	Mandatory	Numeric value with up to two decimal places. This variable to be validated with last reported <b>“amount (closing balance).”</b>
Amount (resolved)	Numeric	Mandatory	Numeric value with up to two decimal places.
Amount (closing balance)	Numeric	Mandatory	Numeric value with up to two decimal places. This variable to be validated with formula <b>(Opening Balance – Resolved).</b>
Reporting period	Date	Mandatory	Format: YYYY-DD-MM Example: 2023-01-01

### 3.1.2.1.7 EMI summary of agents/merchants/cards

All EMIs will be required to report data about agents, merchants, and cards in summarized form on a monthly basis. The following data file structure attributes may be developed.

Variable	Data type	Optional/ Mandatory	Description/Validation rules
EMI code	Numeric	Mandatory	Code to be validated with <b>EMI’s</b> master data.
Transaction type	Alphanumeric	Mandatory	Only <b>“domestic”</b> or <b>“cross border.”</b>
Type	Alphanumeric	Mandatory	Only <b>“agent,” “merchant,”</b> or <b>“card.”</b>
Agent/merchant/ card type	Alphanumeric	Mandatory	To be validated with list of values of <b>agent/merchant/card types</b> available in Appendix C.
Opening balance	Numeric	Mandatory	Positive whole number. This variable to be validated with last reported <b>“closing balance.”</b>
Added	Numeric	Mandatory	Positive whole number.
Terminated	Numeric	Mandatory	Positive whole number.
Closing balance	Numeric	Mandatory	Positive whole number. This variable to be validated with formula <b>(Opening Balance + Added – Terminated).</b>
Active	Numeric	Mandatory	Positive whole number.
Transaction volume	Numeric	Mandatory	Positive whole number.
Transaction value	Numeric	Mandatory	Numeric value with up to two decimal places.
Reporting period	Date	Mandatory	Format: YYYY-DD-MM Example: 2023-01-01

### 3.1.2.1.8 EMI capital

All EMIs will be required to report capital data on a quarterly basis. The following data file structure attributes may be developed.

Variable	Data type	Optional/ Mandatory	Description/Validation rules
EMI code	Numeric	Mandatory	Code to be validated with <b>EMI's</b> master data.
Capital type	Numeric	Mandatory	Code to be validated with list of values of <b>capital types</b> available in Appendix C.
Value	Numeric	Mandatory	Numeric value with up to two decimal places.
Reporting period	Date	Mandatory	Format: YYYY-DD-MM Example: 2023-01-01

### 3.1.2.2 Specific validation rules

In addition to the general validation rules in the tables above, defined against each variable of the data file structure, the following specific validation rules must be imposed for the system as a whole:

1. Since the data would be submitted through batch mode, a particular batch would contain only relevant data. For example, if a batch belongs to 10:00AM to 11:59AM, the data would be related only to this period and the system would reject data from any other period.
2. To validate the **“EMI code”** of a generated request with the **“EMI code”** available in the data sheet.
3. To validate the **“reporting period”** with the **“transaction date”** available in the data sheet.
4. For all numeric variables, to allow only **“positive”** values without the “thousands” indicator. For example: 5000.25.
5. To validate **“opening”** figures of current reporting with **“closing”** figures of previously reported data for all data file structures where opening and closing variables are involved.
6. To match **“reporting period”** value with frequency of related data file structure. Please note, the value of this variable would be based on the frequency of that particular data file structure. For example, with daily frequency, the value of the variable would be in the format “2023-01-01.” For monthly frequency, the value would be in the format “2023-01-31.”

## 4. Business requirements

This section enumerates the key business requirements and user requirements that the automation solution will fulfill.

### 4.1 BUSINESS REQUIREMENTS SUMMARY

ID prefix <sup>2</sup>	ID number	Function–Feature–Requirement	Required (Y)/Optional (O)
Business user requirements			
BR	01	System-based data submission	Y
BR	02	User-based data submission	O
BR	03	Management of lookup values	Y
BR	04	System alerts on reported scenarios	Y
Reporting requirements			
RR	01	Development of interactive reports	Y
RR	02	Development of multidimensional cubes	Y
RR	03	Development of dashboard	Y
User access/Security requirements			
SR	01	Data ownership	Y
SR	02	Management of user access	Y
SR	03	Data security	Y
Support and maintenance requirements			
MR	01	Management of master data	Y
MR	02	Management of LOV	Y
MR	03	Database/Software level changes	Y

### 4.2 BUSINESS REQUIREMENTS DETAILS

#### BR 01. System-based data submission

This mechanism allows the EMI to submit data without any human intervention. However, for the mechanism to work, the EMI will be required to complete certain configuration and/or development.

#### BR 02. User-based data submission

This mechanism allows a responsible user to log in to the data portal and upload the data file. The system uploads then validates the data. If the data passes all validation checks, the submission is considered “successful.” However, in cases where a validation check fails, the system marks the submission as “failed” and the end user is provided with log details (issues). After identified issues are corrected, the user needs to resubmit the data file.

Note: Every EMI must use either of the two mechanisms discussed above (BR 01., BR 02.) to submit data for the following data file structure:

1. EMI transactional data
2. EMI summary of accounts

2 BR = business requirements, RR = reporting requirements, SR = security requirements, and MR = maintenance requirements.

3. EMI summary of balances
4. EMI summary of transactions (failed/pending)
5. EMI summary of instruments
6. EMI summary of incidents
7. EMI summary of agents/merchants/cards
8. EMI capital

### **BR 03. Management of lookup values**

Management of lookup values are done on behalf of DFSSD through an updatable report.

### **BR 04. System alerts on reported scenarios**

When the following conditions occur (“EMI transactional data” data file structure), system alerts are generated and prompted via email. Details related to email formats (e.g., recipient[s], subject, email body) are available in Appendix A.

#### **Condition #01**

If **transaction nature** is equal to “**CR**”

**AND**

**transaction amount (equivalent to \$)** is greater than “**x00,000**”

**AND**

**transaction currency** is equal to “**\$**”

#### **Condition #02**

If **transaction nature** is equal to “**CR**”

**AND**

**transaction amount (equivalent to \$)** is greater than “**x0,000**”

**AND**

**transaction currency** is equal to “**\$**”

#### **Condition #03**

If **transaction nature** is equal to “**DR**”

**AND**

**transaction amount (equivalent to \$)** is greater than “**x,000**”

**AND**

**transaction currency** is equal to “**\$**”

### **RR 01. Development of interactive reports**

For prospective outputs, development of the following interactive report would be required. Appendix B provides the proposed format.

1. Top 5 EMIs (by transaction volume/value)

### **RR 02. Development of multidimensional cubes**

Development of the following multidimensional cubes would be required. Appendix B provides proposed formats.

1. Cube for EMI transactions
2. Cube for EMI summary of accounts
3. Cube for EMI summary of balances
4. Cube for EMI summary of transactions (failed/pending)
5. Cube for EMI summary of instruments
6. Cube for EMI summary of incidents
7. Cube for EMI summary of agents/merchants/cards
8. Cube for EMI capital

### **RR 03. Development of dashboard**

For the executive perspective, development of a dashboard would be required. Appendix B provides dashboard contents.

### **SR 01. Data ownership**

Data variables ownership would solely lie with the DFSSD.

### **SR 02. Management of user access**

Access to other internal users would only be granted upon the recommendation of the requesting department's department head, subject to DFSSD approval.

### **SR 03. Data security**

No DFSSD user would be allowed to add/update/delete any data. Any revisions an EMI makes in the data would be identified by the data owner. Business owner(s) may need to allow data resubmission in such instances, with or without penalizing the reporting institution at their discretion.

### **MR 01. and MR 02. Data management of master data and LOV**

Any additions/amendments to master data/LOV would only be performed after receiving requests from DFSSD users via email, once users have sought internal approval on their end.

### **MR 03. Database or software level changes after live deployment**

After live deployment of the project, any changes to database or software level will be taken up only through the change management process.

## 4.3 DETAIL OF DELIVERABLES

### 4.3.1 Phase 1 deliverables

Only the following deliverables for business and reporting requirements would be made available, with data limited only to “EMI transactional data”:

1. BR 01
2. BR 02
3. BR 03
4. BR 04
5. RR 01
6. RR 02
7. RR 03

### 4.3.2 Deliverables of subsequent phase(s)

Deliverables of business and reporting requirements for other modules (data file structure) would be planned by DFSSD and IT in subsequent phase(s).

## Appendix A. Output formats

### PROPOSED FORMATS OF INTERACTIVE REPORTS

#### Report #1. Top 5 EMIs (Transaction Volume/Value)

Output of this report would be generated from data submitted through “**EMI transactional data**” data file structure. Authorized DFSSD users would be able to view results of the top 5 EMIs based on transaction volume.

#### Parameter Values

Name	Type	Value	Example
E-money issuers	Optional	All or Select from provided list	All / x
From transaction date	Mandatory	Input Date	2023-01-01
To transaction date	Mandatory	Input Date	2023-01-01
From transaction time	Optional	Input Hours	17:00:00:000
Gender	Optional	All or Select from provided list	All / Male
Transaction classification	Optional	All or Select from provided list	All / On Us
Transaction main category	Optional	All or Select from provided list	All / Cash
Transaction subcategory	Optional	All or Select from provided list	All / Wallet top-up
Payments systems used	Optional	All or Select from provided list	All / ATM-1Link
Point of interaction type	Optional	All or Select from provided list	All / Agent
Point of interaction ID	Optional	All or Select from provided list, based on value selected for “ <b>point of interaction type</b> ”	All / Agent ID or Merchant ID
POI location–district	Optional	All or Select from provided list	All / x
Transaction nature	Optional	All or Select from provided list	All / x



Name	Type	Value	Example
Transaction type	Optional	All or Select from provided list	All / Domestic
Country	Optional	All or Select from provided list	All / x
Transaction currency	Optional	All or Select from provided list	All / x
Transaction purpose	Optional	All or Select from provided list	All / Import of goods
Counterparty institution	Optional	All or Select from provided list	All / x
Source account institution	Optional	All or Select from provided list	All / x
Settlement basis	Optional	All or Select from provided list	All / x

## Report Output Format

EMI name	Transaction volume	Transaction value (equivalent to \$)
EMI X	100	50,000
EMI Y	250	150,000
EMI Z	...	...
EMI T	...	...
All	9,500	450,000

## PROPOSED FORMATS OF MULTIDIMENSIONAL CUBES

Authorized DFSSD users would be able to prepare various types of MIS with the help of available data cubes for various dimensions.

### Cube #1. Cube for EMI transactions

#### *Dimensions*

1. Reporting period (year, quarter, month, day)
2. Transaction period (year, quarter, month, day)
3. Hour (members: 0 to 23)
4. E-money issuers (name and code, members: All EMIs in master data)
5. Gender (male, female, transgender, other, legal person)
6. Transaction classification (On Us, Off Us)
7. Transaction main category (name and code, members: All transaction main categories in LOV)
8. Transaction subcategory (name and code, members: all transaction subcategories in LOV)
9. Payments systems used (name and code, members: all payments systems type in LOV)
10. Point of interaction type (name and code, members: all point of interaction types in LOV)
11. Point of interaction ID (name and code, member: all agents or merchants in system lookups)

12. Point of interaction location (province->district->/town name and code)
13. Transaction nature (DR, CR)
14. Transaction type (domestic, cross border)
15. Country (name and code, members: all countries in master data)
16. Transaction currency (name and code, members: all currencies in master data)
17. Transaction purpose (name and code, members: all transaction purposes in LOV)
18. Counterparty institution (name and code, members: all banks in master data)
19. Source account institution (name and code, members: all banks in master data)
20. Settlement basis (name and code, members: all settlements basis in LOV)

*Facts*

1. Transaction amount (equivalent to \$)
2. Transaction charges (\$)
3. Tax deducted (\$)
4. Transaction volume (number of transactions)

**Cube #2. Cube for EMI summary of accounts**

*Dimensions*

1. Reporting period (year, quarter, month, day)
2. e-Money issuer (name and code, members: all EMIs in master data)
3. Bank (name and code, members: all banks in master data)
4. Transaction type (domestic, cross border)

*Facts*

1. Opening balance (\$) at the start of reporting period selected in dimension above
2. Inflows (\$)
3. Outflows (\$)
4. Closing balance (\$) at the end of reporting period selected in dimension above

**Note:** Opening balance (\$) and closing balance (\$) are semi-additive dimensions and must be handled accordingly.

**Cube #3. Cube for EMI summary of balances**

*Dimensions*

1. Reporting period (year, quarter, month, day)
2. e-Money issuer (name and code, members: all EMIs in master data)

### *Facts*

1. Amount (\$)
2. e-Money outstanding (\$)
3. Trust balance (\$)
4. Investment balance (\$)
5. Percentage

**Note:** Percentage variable will be computed with formula investment balance (\$) as share of e-Money outstanding (\$). Refer to the “data template” provided by DFSSD.

### **Cube #4. Cube for EMI summary of transactions (failed/pending)**

#### *Dimensions*

1. Reporting period (year, quarter, month)
2. e-Money issuer (name and code, members: all EMIs in master data)
3. Transaction status (failed, pending)

#### *Facts*

1. Volume
2. Value (\$)

### **Cube #5. Cube for EMI summary of instruments**

#### *Dimensions*

1. Reporting period (year, quarter, month)
2. e-Money issuer (name and code, members: all EMIs in master data)

#### *Facts*

1. Payment card issued
2. Payment card active
3. e-Money accounts registered
4. e-Money accounts active
5. Mobile applications downloaded
6. Mobile application users
7. QR merchants onboarded
8. Active QR merchants
9. POS merchants onboarded
10. Active POS merchants

## **Cube #6. Cube for EMI summary of incidents**

### *Dimensions*

1. Reporting period (year, quarter, month, day)
2. e-Money issuer (name and code, members: all EMIs in master data)
3. Incident type (name and code, members: all incident types in LOV)
4. Service interrupted hours (range for two-hour intervals, with following values)
  - a. 0 to 2 hours
  - b. 2 to 4 hours
  - c. 4 to 6 hours
  - d. 6 to 8 hours
  - e. 8+ hours

### *Facts*

1. Opening balance (number of incidents at start of reporting period selected above)
2. Received (initiated during the period)
3. Resolved (resolved during the period)
4. Closing balance (number of incidents at end of reporting period selected above)
5. Incident not established
6. Customer compensated
7. Customer not compensated
8. Amount (opening balance)
9. Amount (resolved)

Amount (closing balance)

**Note:** Amount (opening balance) and amount (closing balance) are semi-additive dimensions and must be handled accordingly.

## **Cube #7. Cube for EMI summary of agents/merchants/cards**

### *Dimensions*

1. Reporting period (year, quarter, month, day)
2. e-Money issuer (name and code, members: all EMIs in master data)
3. Transaction type (domestic, cross border)
4. Type (agent, merchant, card)
5. Agent/merchant/card type (name and code, members: all agent/merchant/card types in LOV)

### *Facts*

1. Opening
2. Added
3. Terminated
4. Closing
5. Active
6. Transaction volume
7. Transaction value (\$)

**Note:** Opening and closing are semi-additive dimensions and must be handled accordingly.

### **Cube #8. Cube for EMI capital**

#### *Dimensions*

1. Reporting period (year, quarter, month, day)
2. e-Money issuer (name and code, members: all EMIs in master data)
3. Capital type (name and code, members: all capital types in LOV)

#### *Facts*

1. Value (\$)

## **DASHBOARD CONTENTS**

**Note:** In Phase 1, the development of dashboard contents would be completed only for “EMI transactional data” data file structure. However, development of dashboard contents for other modules (data file structures) would be planned in subsequent phase(s) by IT and DFSSD.

## **Appendix B. List of master data/LOV/system lookups**

### **MASTER DATA FOR EMI/BANK/MICROFINANCE INSTITUTIONS (MFIS)**

#	EMI code	EMI name
1	XX	[not included in this anonymized version]
2	XX	
3	XX	
4	XX	

**Note:** DFSSD to provide complete list of EMIs prior to live deployment.

#	Bank code	Bank name
1		[not included in this anonymized version]
2		
3		
4		
5		

#	MFI code	MFI name
1		
2		

**Note:** For the list of master data for districts, countries, and currencies, refer to the master data details on the data portal for the list of districts, countries, and currencies.

## LIST OF VALUES

The following LOV was current at the time this document was published. However, in cases where amendments are required, DFSSD must inform the IT department accordingly.

### LOV #1. Transaction categories

#	Transaction category
1	Pass through
2	Request to pay – self
3	Request to pay – third party
4	Cash
5	Transfer (within the bank)
6	Payment (outside the bank)
7	Bill payment
8	Fee deducted
9	Tax deducted
10	QR
11	POS
12	e-Commerce
13	Others

### LOV #2. Transaction subcategories

#	Transaction subcategory
1	Wallet top-up
2	P2B
3	P2P
4	B2P
5	P2G
6	G2P

#	Transaction subcategory
7	G2G
8	Bank to EMI
9	EMI to bank
10	Cash out
11	Other

### LOV #3. Payments systems used

#	Payments system used
1	<i>[not included in this anonymized version]</i>
2	
3	
4	

### LOV #4. Point of interaction types

#	Point of interaction type
1	Internet banking
2	Mobile banking app
3	Agent
4	Merchant
5	Biometric
6	Bank branches
7	Others

### LOV #5. Transaction purposes

#	Transaction purpose
1	Remittance
2	Export of goods
3	Import of goods
4	Computer services
5	Medical expenses
6	Educational expenses
7	Travel
8	Royalties/trademarks/license fees
9	Advertising
10	Insurance
11	Trade services
12	Technical fees
13	Legal services

#	Transaction purpose
14	Consulting fees
15	Recreational services
16	Miscellaneous services
17	Others

#### LOV #6. Settlements basis

#	Settlement basis
1	Escrow
2	Instant
3	T+0
4	T+1
5	T+2
6	T+3
7	T+4

#### LOV #7. Type of accounts

#	Type of account
1	Customers
2	Merchants
3	Agents
4	Settlement accounts payable
5	Settlement accounts receivable
6	Settlement accounts net
7	Suspense/settlement accounts
8	Trust account
9	Balance with central bank
10	Investment account

#### LOV #8. Incident types

#	Incident type
1	Frauds and forgery
2	Complaint
3	System-related issues



**LOV #9. Agent/merchant/card types**

#	Agent/merchant/card type
1	Agents
2	Sub-agents
3	Super agents
4	Debit card
5	Prepaid card
6	Social transfer cards
7	Others

**LOV #10. Capital types**

#	Capital type
1	Paid up share capital
2	Reserves
3	Credit balances in P/L
4	Nonredeemable preference shares and subordinated debt
5	Revaluation reserve
6	Others