



TÜRKİYE CUMHURİYET
MERKEZ BANKASI

AUTOMATION OF THE PREPARATION PROCESS OF FINANCIAL CORPORATIONS STATISTICS WITH PYTHON

DATA GOVERNANCE AND STATISTICS DEPARTMENT

9-10-2023

Brussel



Outline

1

Financial Sector

2

**Business Process Management
and Process Improvements**

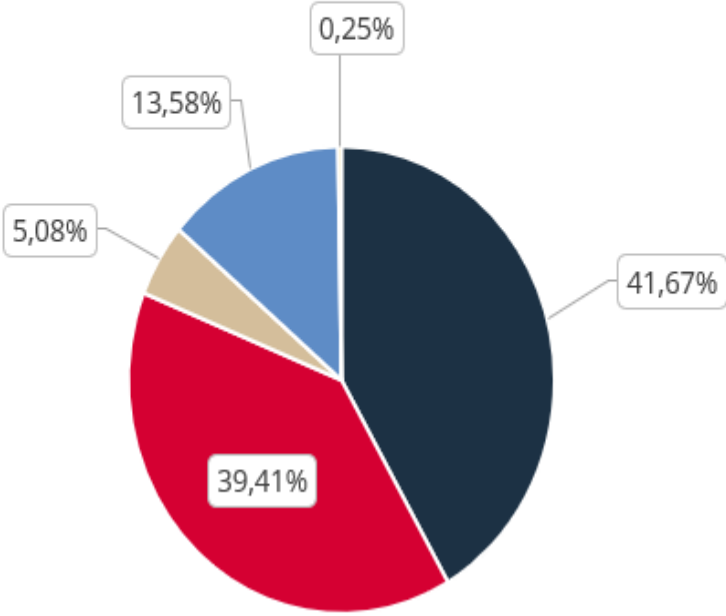
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Achievements

Turkish Economy

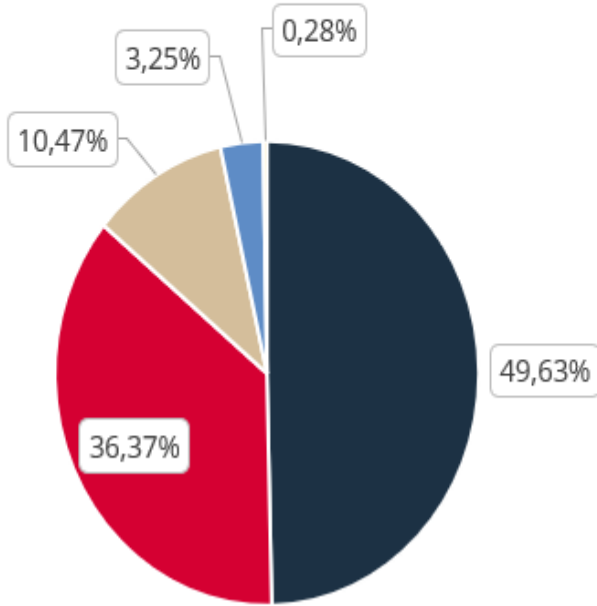
% Share of Main Sectors in the Total Economy's Financial Assets and Liabilities, 2023Q1

- Nonfinancial Corporations
- Financial Corporations
- General Government
- Households
- Non-profit ISH



Assets

- Nonfinancial Corporations
- Financial Corporations
- General Government
- Households
- Non-profit ISH



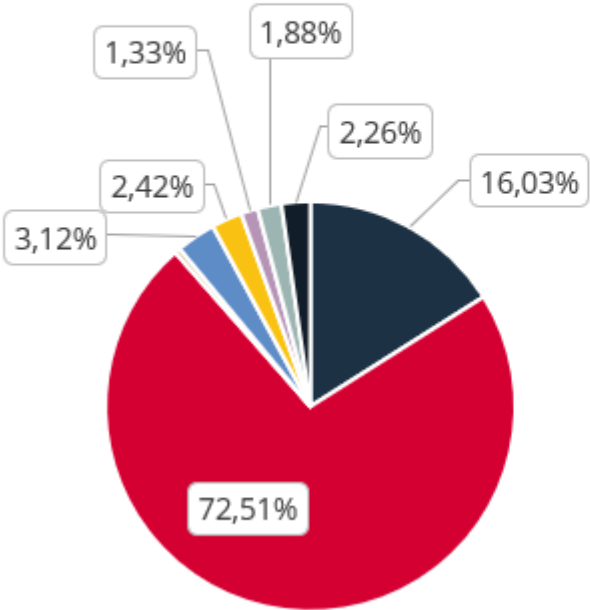
Liabilities

Financial Sector

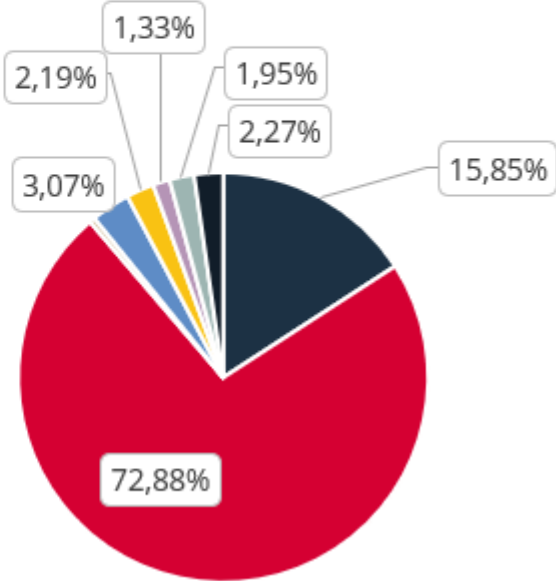
% Share of Subsectors in the Financial Sector Financial Assets and Liabilities, 2023Q1

- Central Bank
- Money Market Funds
- Other Financial Intermediaries
- Insurance Corporations
- Deposit Taking Corporations
- Non MMF Investment Funds
- Financial Auxiliaries
- Pension Funds

- Central Bank
- Money Market Funds
- Other Financial Intermediaries
- Insurance Corporations
- Deposit Taking Corporations
- Non MMF Investment Funds
- Financial Auxiliaries
- Pension Funds



Assets



Liabilities

Data Sources

S121-CB	S122-Deposit Taking Corporations	S123-MMFs	S124-Non-MMFs	S125-Other Financial Intermediaries (except ICPF)	S126-Financial Auxiliaries	S128-Insurance Companies	S129-PFs
CBRT accounting records	Monthly Money and Banking Statistics	Turkey Electronic Fund Trading Platform	Turkey Electronic Fund Trading Platform	Capital Market Intermediary Institutions' Statistics	Borsa Istanbul (BIST) Balance Sheet	Ministry of Treasury and Finance Insurance Companies Statistics	Turkey Electronic Fund Trading Platform
	Listed Shares' Holdings (MV of Shares)			Banking Regulation and Supervision Agency (BRSA) Financial Leasing, Factoring and Finance Companies Statistics	BRSA Balance Sheet	Turkish Natural Catastrophe Insurance Pool	
					Saving Deposit and Insurance Fund Balance Sheets (SDIF)	Agricultural Insurance Pool	
						Listed Shares' Holdings (MV of Shares)	

Financial Sector

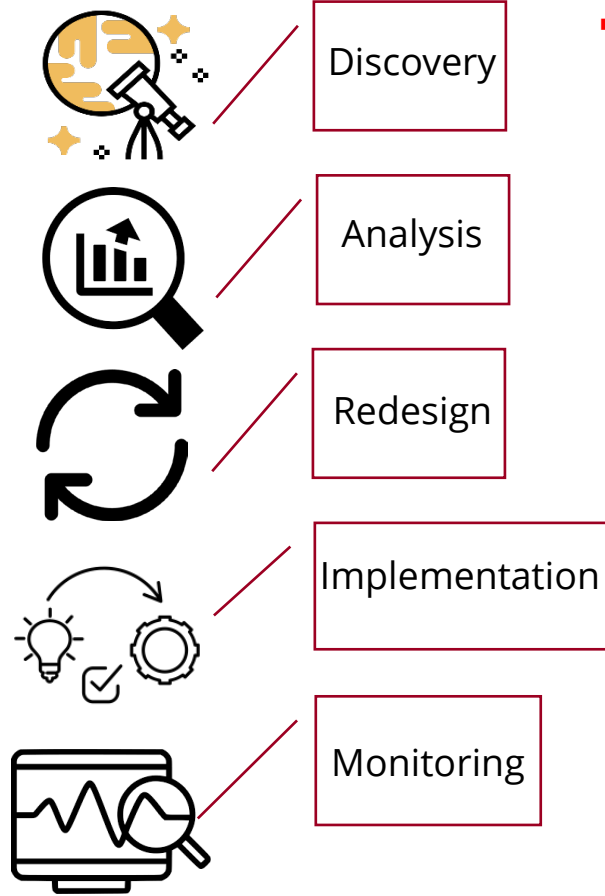
Preparation of Monthly Money and Banking Statistics

- 18 different data tables
- Using 30 different excel files
- Fully manual and open to human error
- Long and tedious process



Business Process Management

Definiton:



- Business process management (BPM) is a structured approach to improving the processes organizations use to get work done and generate business value
- It is a standardized, corporate methodology that looks at the current state of business processes how work is done today - and looks for ways to make it better, more efficient and effective.

Business Process Management

Stakeholders in Business Process Management:

Management

- Monitoring of the BPM process
- Funding
- Strategic Support

Owner of the Process

- Effective execution of the process
- Planning, organization
- Performance of the process

Analyst

- Modelling of the process
- Automation

Process Responsible

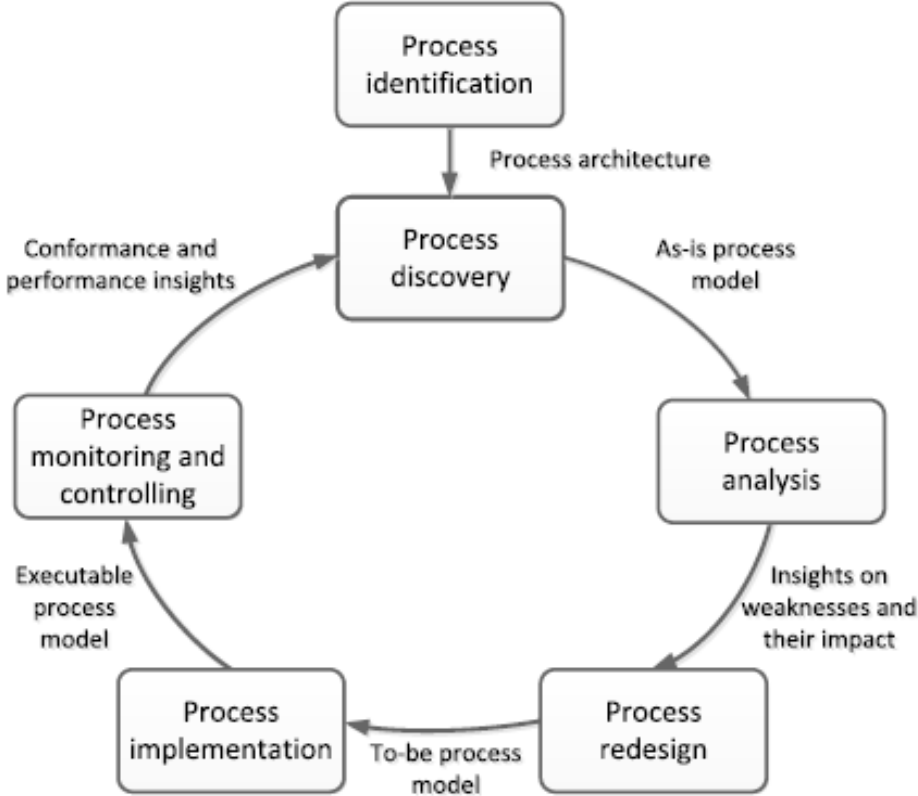
- Routine tasks of the process

IT

- Automation

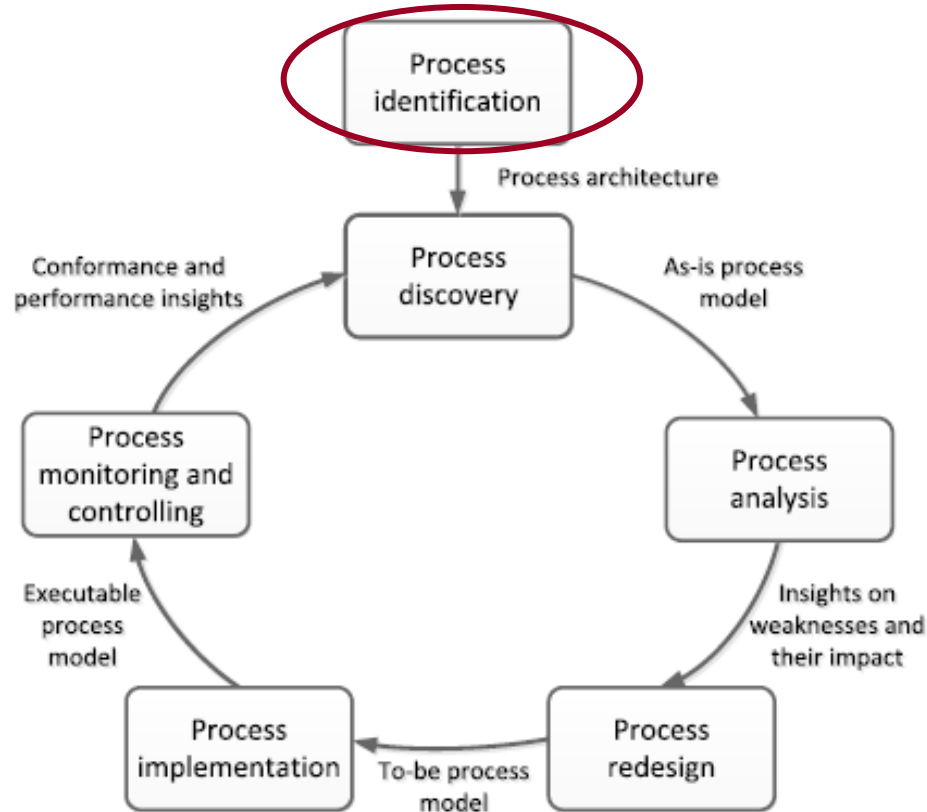
Business Process Management

BPM Lifecycle



Business Process Management

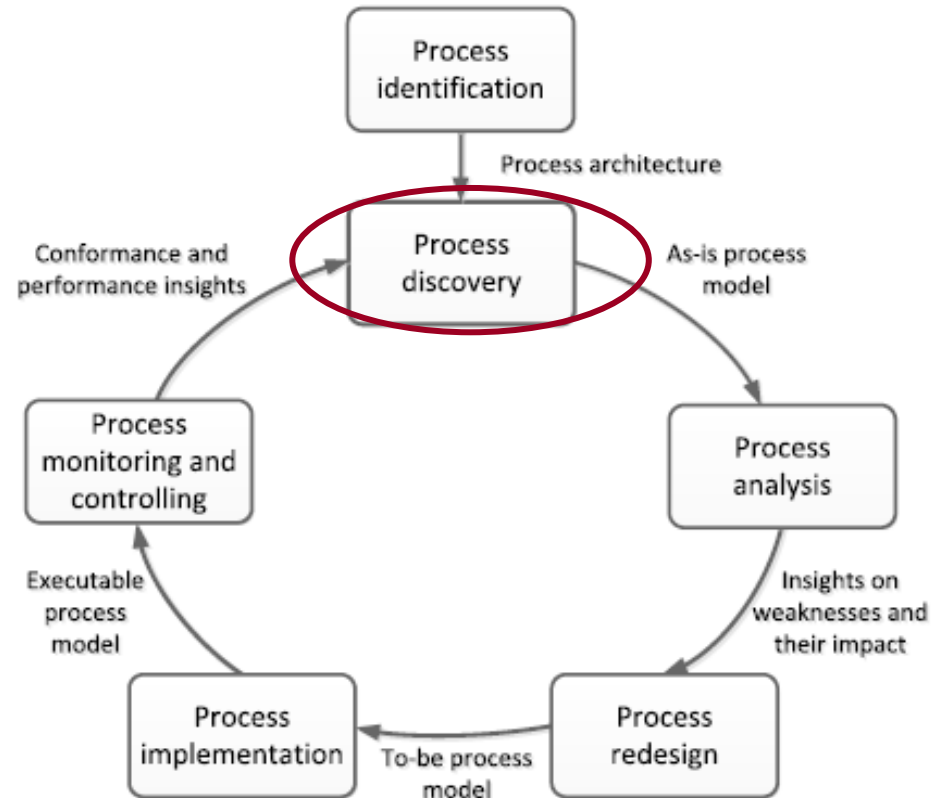
Process Identification:



- Which processes are we responsible for in our organization?
- Are these processes interrelated?
- Which one should be strategically focused on?
- Considering the cost of the BPM operation, was the highest benefit/cost choice made?
- Process Selection
 - Monthly Money and Banking Statistics
- Interrelated processes

Business Process Management

Process Discovery- I:

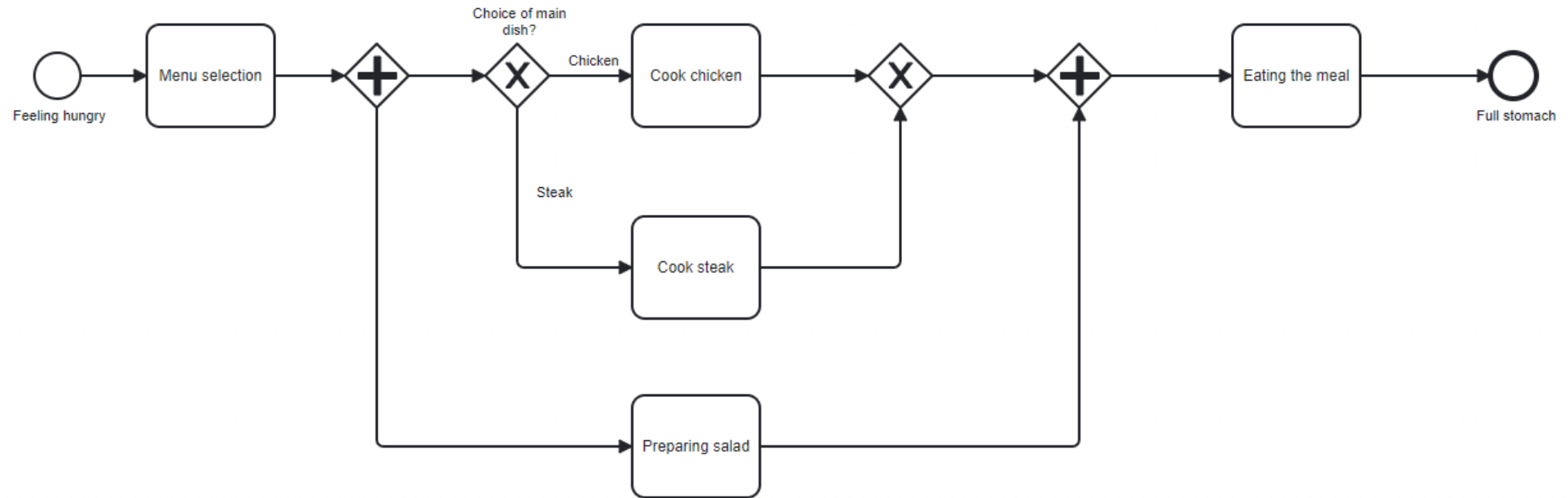


- Detailed research and information gathering related to the process
- Modelling the process
 - To understand and explain the process.
 - The process should be easily understood by everyone.
 - BPMN, UML Diagrams, Flowcharts etc.

Business Process Management

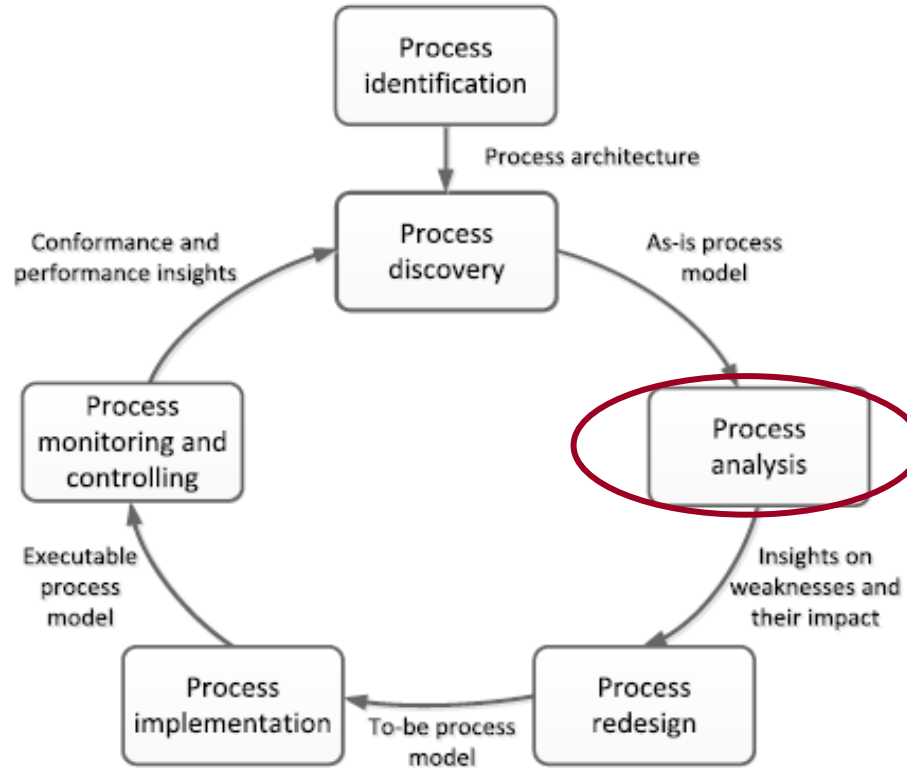
BPMN (Business Process Modeling Notation):

- It is a modeling standard for mapping business processes.
- Its purpose is to help all stakeholders understand the process through its visual structure.
- There are more than 150 symbols used in this syntax.
- A simple BPMN model includes events, tasks, gateways, pools and lanes.



Business Process Management

Process Analysis- I:



- Identification of performance metrics (KPIs):
 - Cycle Time
 - Error Rate
 - Cost
 - Quality etc.
- Deciding on the analysis method
 - Simulation

Tom DeMarco: "You can't control what you can't measure"

Business Process Management

Process Analysis- II: Simulation Results:

As-Is Model

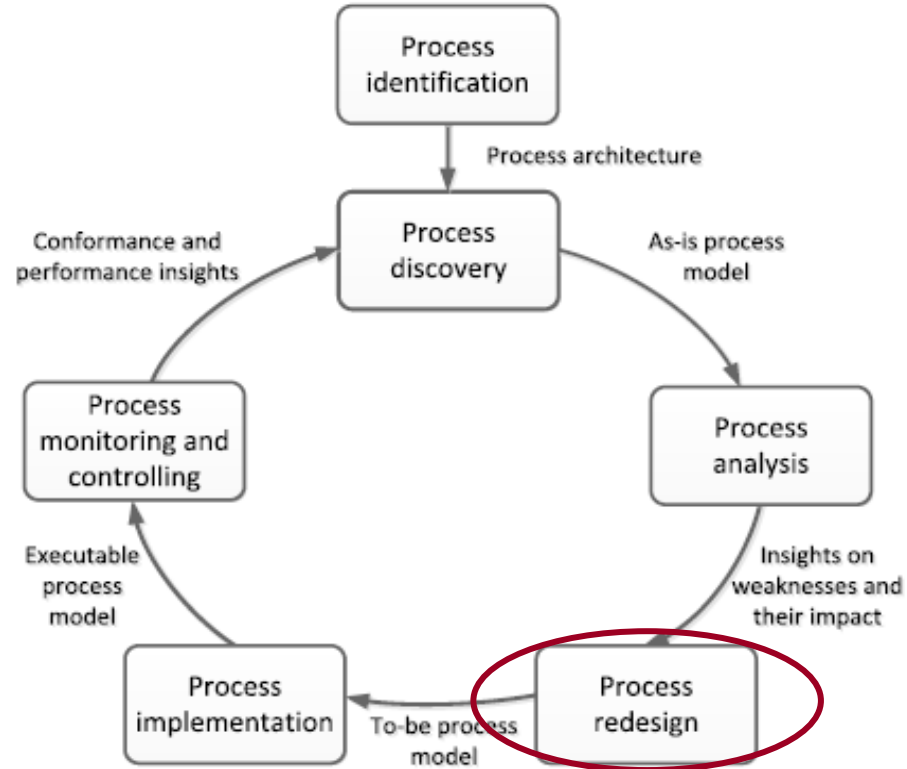
Staff	Frequency	Time Spent	Workload
Specialist - 1	100	4h:12m	31,98%
Specialist - 2	100	3h:53m	29,57%
Specialist - 3	100	3h:33m	27,03%
Specialist - 4	100	1h:30m	11,42%
Total		13h:08m	100%

- Sap Signavio
- Duration of process steps - normal distribution
- Average durations

* Data provider's delays, ordinary or extraordinary waits due to external factors are not included..

Business Process Management

Process Redesign- I:



Redesign Approaches:

- Clean slate
 - Product Based Design
 - As – is model update, re-organize
 - Heuristic Process Redesign
- * Heuristics literally means mental shortcuts and ideas used to solve problems quickly given any constraints (time, space, resources, etc.).

Business Process Management

Process Redesign- II

Heuristic Process Redesign:

Task Level

- Task Elimination
- Task composition/decomposition
- Triage

Flow Level

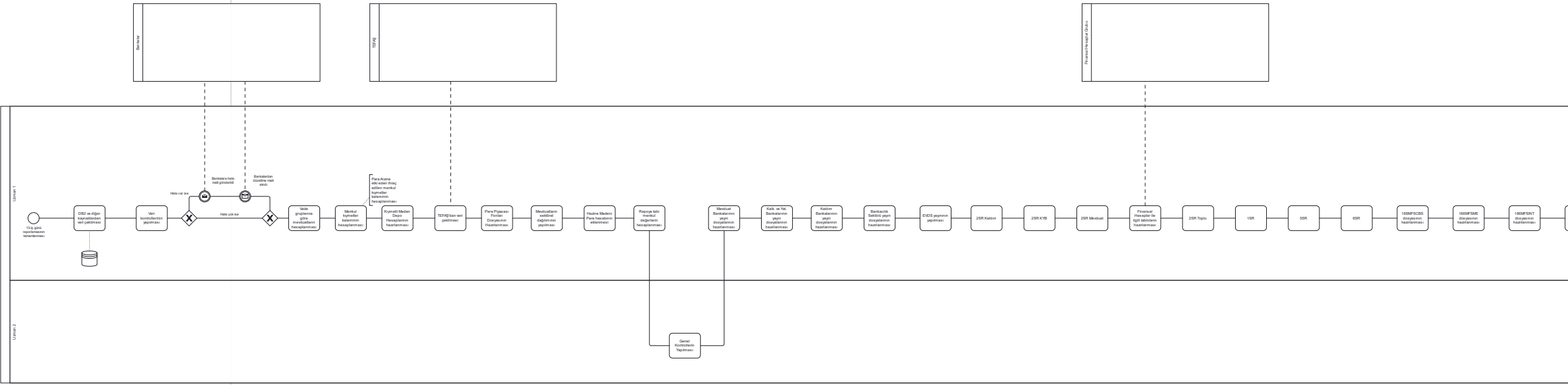
- Re-sequencing
- Parallelism enhancement

Process Level

- Specialization and standartization
- Source optimization
- Communication optimization
- Automation

Business Process Management

To Be Model



Simulation Results Comparison After Process Redesign

To-be Model

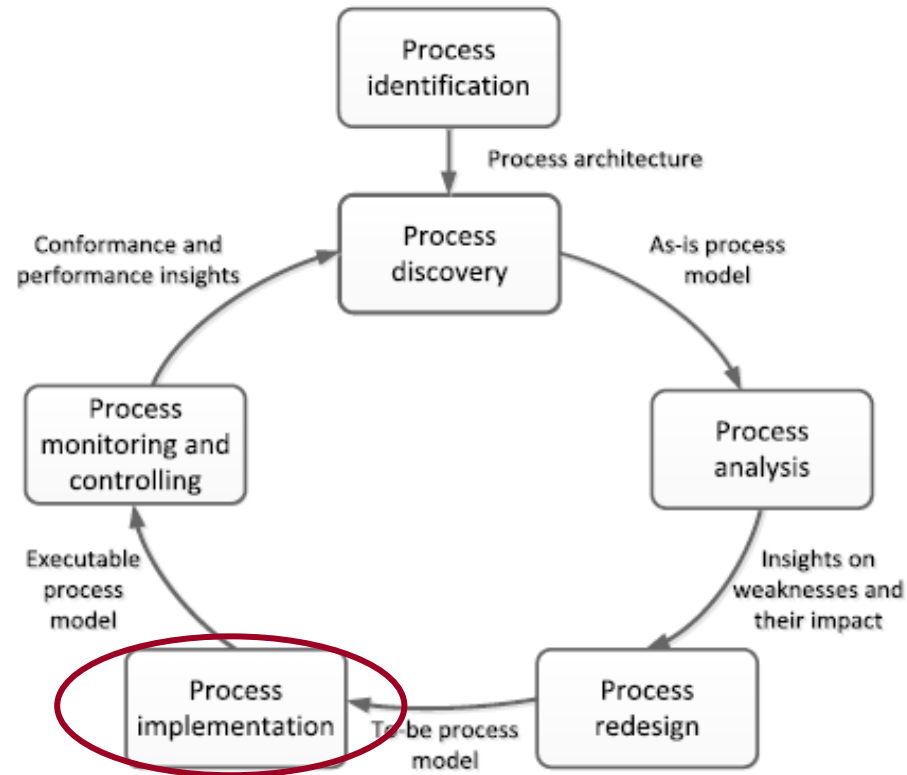
Staff	Frequency	Time Spent	Workload
Specialist - 1	100	4h:48m	79,17%
Specialist - 2	100	1h:01m	20,83%
Total		5h:48m	100%

As-is Model:

Staff	Frequency	Time Spent	Workload
Specialist - 1	100	4h:12m	31,98%
Specialist - 2	100	3h:53m	29,57%
Specialist - 3	100	3h:33m	27,03%
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Business Process Management

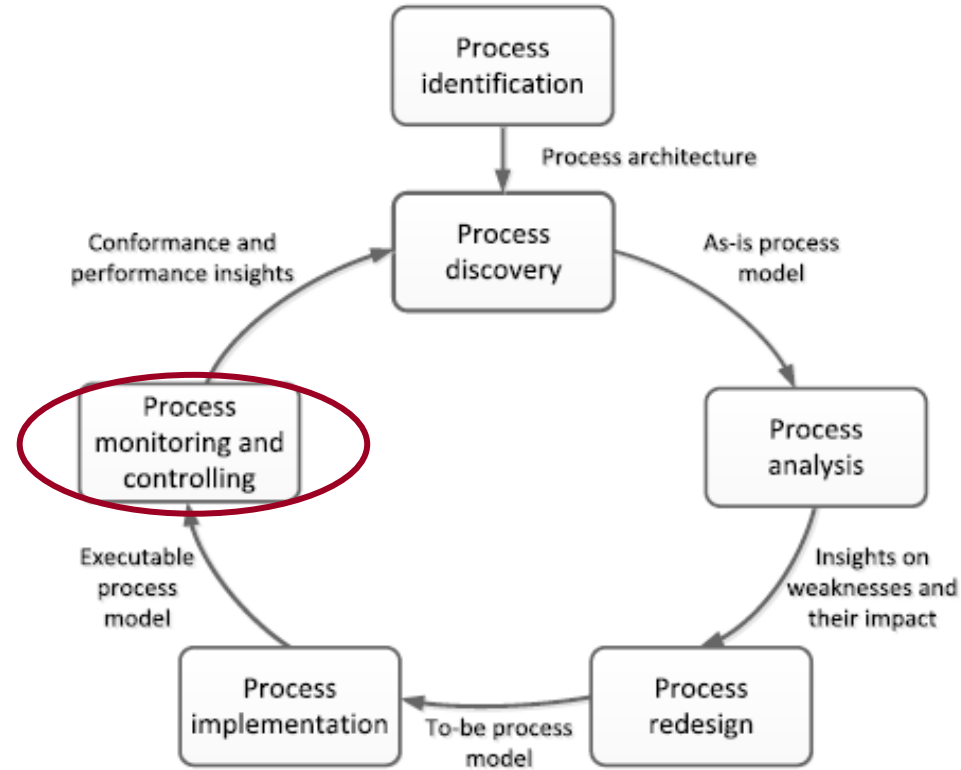
Process Implementation:



- As-is → to-be
- Explaining the benefits of the redesign to all stakeholders
- Providing training on new design to those responsible for the process

Business Process Management

Process monitoring and controlling:



- Continuous monitoring of the new process after implementation
- Continuous redesign of the process according to new developments or needs

Achievements

- Institutional memory
- Sustainable improvement
- Faster, time saving process
- Needs fewer people
- Fewer errors
- Modeling helps learning





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