MTAT.03.231 Business Process Management

Lecture 1
Introduction

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About this course

Objective

• To introduce the discipline of modeling, analyzing, automating and monitoring business processes.

Related courses

• Enterprise System Integration
  • Integrating applications to automate or support business processes
• Business Analysis, Software Product Management
  • Identifying and analyzing business problems and opportunities that can be addressed via IT solutions, including business process improvement opportunities
• Business data analytics
  • Mining business process execution data (process mining)
Structure of the course

14 lecture+practice sessions covering:

- Process Identification & Architecture
- Process Modeling
- Process Analysis
- Process Redesign
- Process Automation
- Process Monitoring & Mining

Team Project
Grading

- **Five assignments (25 points in total)**
  - 8-12 hours per homework ≈ 50 hours in total

- **Project (25 points)**
  - ≈ 40 hours

- **Exam (50 points)**
  - Minimum exam score: 20 out of 50
Readings and resources

- Course material posted on course Web page
  - http://courses.cs.ut.ee/2022/bpm

- Textbook
  - Dumas, La Rosa, Mendling & Reijers: *Fundamentals of Business Process Management (second edition)*, Springer 2018

- Slack workspace
  
  *(the link to enrol in the Slack workspace was sent to you via the study information system)*
What is a Business Process?
Business processes

Assets & Partners
- Financial
- Human Resources
- Technology
- Materials

Organisation
- Function A (Sales)
- Function B (Manufacturing)
- Function C (Finance)

Business Processes

Customers
Your turn...

- Greet & seat
- Bring menu
- Load dishwasher
- Take order
- Serve meal
- Collect laundry
- Collect payment
- Collect laundry
- Unload dishwasher
- Clean kitchen surfaces
- Sweep & mop
- Present bill
- Brush grills
- Load dishwasher
- Unload dishwasher
- Collect laundry
Customer arrived
Greet & seat
Take order
Bring menu
Serve meal
Present bill
Collect payment
Customer paid
Kitchen is dirty
Load dishwasher
Clean kitchen surfaces
Brush grills
Collect laundry
Sweep & mop
Unload dishwasher
Kitchen is clean

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A business process is...

*a chain of events, activities and decisions*

...involving several *actors and objects,*

....triggered by a *need*

and leading to an *outcome that is of value to a customer.*

Examples:

- Order-to-Cash
- Procure-to-Pay (aka Purchase-to-Pay)
- Application-to-Approval
- Issue-to-Resolution
“My washing machine doesn’t work…”

**Negative** outcomes (value-reducing):
- Fault not repaired in a timely manner
- Fault repaired but customer pays more than expected

**Positive** outcomes (value-adding):
- Fault repaired immediately with minor intervention
- Fault repaired, covered by warranty
What is Business Process Management?

And why should I care about it?
Improving Performance (Rummler’s Framework)
Process performance

If you had to choose between two services, you would typically choose the one that is:

• F...
• C...
• B...
Process performance

If you had to choose between two services, you would typically choose the one that is:

- Faster
- Cheaper
- Better
Process performance

Three dimensions of process performance

• Time
• Cost
• Quality
Improving process performance
How would you improve this process?

- Outsource to Customer
- Standardize
- Eliminate Cooking
- Invest and Build
- Re-sequence
- Eliminate Waiters
- Automate
Business Process Management (BPM)

Body of principles, methods and tools to design, analyze, execute and monitor business processes, with the aim of improving their performance.
Why BPM?

“The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency.

The second is that automation applied to an inefficient operation will magnify the inefficiency.”

Bill Gates
In other words…

Index Group (1982)
Why BPM

Are you passionate about working with data related topics and processes supporting that and be part of a team establishing ways of working within Group Business Intelligence and beyond?

In Swedbank you have the opportunity to:

- Lead and facilitate work with stakeholders during process definition work as well as followed by implementation, operations and adherence monitoring;
- Support colleagues in education and information sharing sessions, lead training sessions to establish common ways of working;
- Work in multi-cultural, multi-tasking and challenging environment across Swedbank Group and different teams;
- Be accountable and responsible for measuring process performance.

As Process Manager/Business Analyst within process work area you are the one appointed to operate the process, its improvements and support guild management team in that work. You take lead in proposing and prioritizing improvements and stakeholder engagement.

What is needed in this role:

- Bachelor’s or Master’s degree in a related field, or a great reason for not having one.
- University degree or acquiring (preferably in finance, mathematics, statistics, economics or IT);
- Previous work experience with process related work, business requirements and data analyses;

We are now hiring PROCESS AUTOMATION EXPERT to be the key person in process automation initiatives. Developing automation solutions in Microsoft PowerPlatform and AWS environment.

We are looking for someone with preliminary understanding of Microsoft PowerPlatform / API technology / scripting concepts or other automation solutions. The ideal candidate has development-minded and proactive personality, self-initiative and great teamwork skills. Relevant education or previous work experience from similar field is considered as advantage.

Main Responsibilities:

- Develop the solution according to the provided documentation and carry out testing phases
- Organize needed production environment changes (user licenses, virtual machine resourcing, production implementation) with IT and external system vendors
- Create documentation for solutions implemented
- Manage recurring activities: change and disruption management, scheduling, environment upgrades & service windows, reporting

We appreciate:

- Familiarity with process way of working
How to go about BPM?
The BPM lifecycle
Process identification steps

1. Designation step
   • Enumerate main processes
   • Determine process scope

2. Prioritization step (aka Process selection)
   Prioritize processes based on:
   • Importance
   • Health
   • Feasibility

After Davenport (1993)
Example: process architecture

Wholesaler

Management processes

- Strategic Management
- Logistics Management
- Suppliers Management
- Warehouse Management
- Demand Management

Core processes

- Direct procurement
- Sales
- Distribution
- Marketing
- Service

Support processes

- Finance
- Indirect procurement
- IT
- HR
Prioritization (aka Process Selection)

1. **Importance**
   Which processes have greatest impact on the organization’s strategic objectives?

2. **Health (or Dysfunction)**
   Which processes are in deepest trouble?

3. **Feasibility**
   Which processes are most susceptible to successful process management?

Prioritized process portfolio

Hammer, Champy (1993)
Example: prioritized process portfolio

Financial institution

Short-term action

Feasibility

Low

Medium

High

Importance

High

Low

Possible

Strategic fit?

Rating

Contract preparation

Loan market evaluation

Loan decision

Loan controlling

Handling of payments

Loan application

Loan planning
The BPM lifecycle
### Business process model

#### Invoice handling

<table>
<thead>
<tr>
<th>Finance Department</th>
<th>ERP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="" alt="Diagram of Invoice Handling Process" /></td>
</tr>
<tr>
<td>Invoice received</td>
<td>Enter Invoice Details</td>
</tr>
<tr>
<td>Invoice DB</td>
<td>Post Invoice</td>
</tr>
<tr>
<td></td>
<td>Invoice posted</td>
</tr>
</tbody>
</table>

- Invoice handling
- Enter Invoice Details
- Check Invoice Mismatches
- Invoice DB
- Post Invoice
- Invoice posted

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**ERP**

- Invoice
- Report
- Invoice

**Senior Finance Officer**

- Invoice
- Block Invoice
- Invoice blocked

- mismatch exists
- no mismatches
The BPM lifecycle

1. Process identification
2. Process discovery
3. Process monitoring and controlling
4. Process implementation
5. Process analysis
6. Process redesign

- Conformance and performance insights
- As-is process model
- Executable process model
- To-be process model
- Insights on weaknesses and their impact
Qualitative process analysis

Root-cause analysis example

Causal Factors

- Measurement
  - Clerk selected equipment with incorrect specs
  - Inaccurate equipment description in provider's catalogue
- Material
- Machine
  - The system does not keep the site engineer informed

Issue

- Equipment rejected at delivery
  - Clerk is entirely responsible for equipment selection
  - Site engineer does not validate the choice of equipment
  - Incomplete or inaccurate requirements from site engineer
  - Clerk misunderstood site engineer's requirement
  - Milieu
  - Man
  - Method
Quantitative process analysis

Process simulation

- Process durations
  - 0 - 10 h
  - 10 - 20 h
  - 20 - 30 h
  - 30 - 40 h
  - 40 - 50 h
  - 50 - 60 h

- Process waiting times
  - 0 - 10 h
  - 10 - 20 h
  - 20 - 30 h
  - 30 - 40 h
  - 40 - 50 h
  - 50 - 60 h

- Process costs (EUR)
  - 0 - 25
  - 25 - 50
  - 50 - 75
  - 75 - 100
  - 100 - 125
  - 125 - 150
  - 150 - 175
  - 175 - 200

- Resource utilization %
  - Clerk
  - Credit Officer
  - System
The BPM lifecycle

1. **Process Identification**
   - To-be process model

2. **Process Discovery**
   - As-is process model

3. **Process Monitoring and Controlling**
   - Executable process model

4. **Process Analysis**
   - Insights on weaknesses and their impact

5. **Process Implementation**

6. **Process Redesign**
   - Insights on weaknesses and their impact

Conformance and performance insights

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**Diagram Notes:**
- The BPM lifecycle is represented in a circular flow diagram.
- Each step connects to the next, with arrows indicating the sequence.
- The diagram includes visual elements such as charts and process models.
- Key terms are highlighted in the text:
  - BPM lifecycle
  - Process identification
  - Conformance and performance insights
  - Process discovery
  - Process monitoring and controlling
  - Process analysis
  - Process implementation
  - Process redesign
Process redesign

AS-IS process model

TO-BE process model

Cost
Time
Quality
Flexibility
The Process Redesign Orbit

- Crowdsourcing
- Benchmarking
- ERP-driven Redesign
- Lean
- 7FE
- BPTrends
- Positive Deviance
- Six Sigma
- Theory of Constraints
- TRIZ
- Design-led innovation
- NESTT
- Process Model Canvas
- Business Process Reengineering
- Product-Based Design
The BPM lifecycle

- Process identification
- Process architecture
- Process discovery
- Conformance and performance insights
- Process monitoring and controlling
- Executable process model

- Process analysis
- As-is process model
- Insights on weaknesses and their impact

- Process redesign
- Insights on weaknesses and their impact
- To-be process model

- Process implementation
Process implementation

- Process automation
  - Executable process design
  - IT development & configuration
  - Testing
  - ...

- Process change management
  - Job redesign
  - Training
  - Performance management plan
  - ...
  - ...
The BPM lifecycle
Process monitoring

Dashboards, alerts & reports

Model-based analytics (p. mining)
Course structure

- Process identification
  - Week 3

- Process discovery
  - Weeks 2 & 4

- Process monitoring and controlling
  - Weeks 12-14

- Process implementation
  - Weeks 10-11

- Process analysis
  - Weeks 5-7

- Process redesign
  - Weeks 8-9

- Culture
- Governance
- Strategy
Further Readings & Resources

• Fundamentals of Business Process Management
  • Chapter 1 – Introduction

• Short quiz
Next Week

Process Identification

- **Management processes**
  - Strategic Management
  - Logistics Management
  - Suppliers Management
  - Warehouse Management
  - Demand Management

- **Core processes**
  - Direct procurement
  - Sales
  - Distribution
  - Marketing
  - Service

- **Support processes**
  - Finance
  - Indirect procurement
  - IT
  - HR
Demo Time!

http://apromore.cs.ut.ee