MTAT.03.231

Business Process Management

Practice 13:
Conformance checking, performance mining & variant analysis

Marlon Dumas, Mariia Markovska, Maria Häling
Exercise 1: Conformance Checking

Consider the Purchase-to-Pay event log available here: https://www.dropbox.com/sh/d2rmuen806bzk8k/AAChbQ4aNqpkjhULIGgt5Q4a?dl=0

1. What’s the on-time completion rate for this process, assuming that the service-level objective for completing this process is 21 days from the start to end?
2. Are there any cases where the invoice is released and authorized by the same resource? And if so, who is doing this most often?
Exercise 2: Conformance checking

Consider the RefundProcess log available here: https://www.dropbox.com/sh/d2rmuen806bfkhk/AAChbQ4aNqpkjihULIGgt5Q4a?dl=0

This log captures the refund process of an electronics retailer. Customer complaints indicate that this process suffers from inefficiencies and overly long cycle times.

Assume that only cases that have reached the “Order completed” event are finished.

Questions:

1. According to the SLA of the refund service, 90% of refund requests should be fulfilled within 3 weeks. Is this SLA being fulfilled?

2. How many customers have received a refund without the product being received by the electronics manufacturing company? This should not happen.

3. Has a customer ever received a double payment? This should not happen in this process.

Hint: look at activities “Payment issued”, “Product received”, “Refund issued” and “Special refund issued”.
Exercise 3: Performance Mining

Consider the repairExample log:

1. Which activity has the longest average processing time (the activity bottleneck)?
2. Which transition between activities has the longest average waiting time (the waiting bottleneck)?
3. Is there a clear difference in duration between cases where the activity bottleneck occurs versus those cases where it does not occur?
4. Is there a clear difference in duration between cases where the waiting bottleneck occurs versus those cases where it does not occur?
5. Which resource has the highest workload (in the sense of executing the Langent number of task instances)? Is there a difference between cases where this resource is involved in a case and those where he/she is not involved?
Exercise 4: Variant analysis (logical driver)

Consider the SEPSIS log. This is a log related to 1050 patients treated for sepsis in a Dutch hospital. Generate two variants of this log, one where the patient age is up to 30 years (SEPSIS_young), the other where the age is 65 or above (SEPSIS_old). Based on these two variants, answer the following questions using a process mining tool:

1. What is the cycle time of each variant?
2. Where are the bottlenecks (highest waiting times) in each of the two variants and how do these bottlenecks differ?
3. Describe the differences in terms of frequency and order in which activities are executed between the two variants. Can these explain the cycle time difference?

Hint: If you use process maps, consider using the abstraction slider to hide some of the most infrequent arcs to make the maps more readable.