Process Variant Analysis Across Continuous Features: A Novel Framework – supplementary material

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1 Case Study

1.1 Normative Model Explanation

The normative BPMN model shown in Fig. 1 represents a claim-handling process at UWV. First, a claim from a customer is received. Then, either the claim is accepted or blocked. A blocked claim indicates either some information needs to be checked or corrected after which the claim is accepted, or the claim is blocked and then immediately rejected. After a rejected claim, an objection can be received by customers if they do not agree with the decision. The handling of this objection is out of the scope of this process model. After an accepted claim, which has received one or at most three payments, an objection can be received. This is due to customers who in hindsight find that they do not need the payments. A claim withdrawal process is started that results in repayment of the total sum of received benefits. In case the customer is still entitled to one or more payments, the *Block Claim* activity is executed. This prevents any new payments from being automatically made.

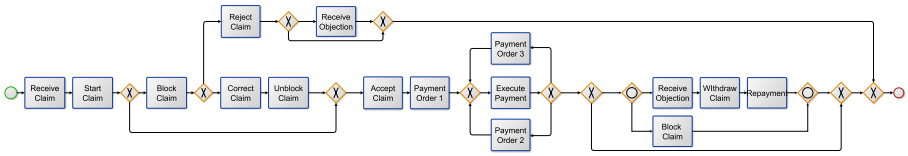
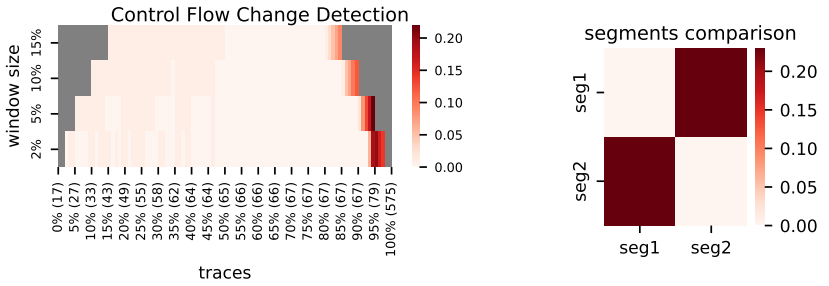


Fig. 1: The normative BPMN model representing the investigated UWV claim handling process.

1.2 A deeper analysis considering accepted cases

The derived segments for the accepted cases are shown in Fig. 2. Based on Fig. 2a considering $w = 2$ and $\theta = 0.1$, two segments are found, with duration periods of [0,79] days and [80,575] days. The two segments are compared to each other

in Fig. 2b and the results show that they are significantly different considering $\theta = 0.1$.

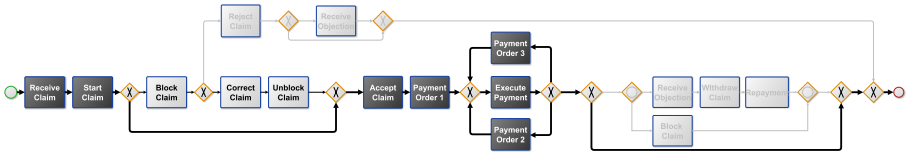


(a) Control flow change detection with b=100 and $w \in \{2, 5, 10, 15\}$.

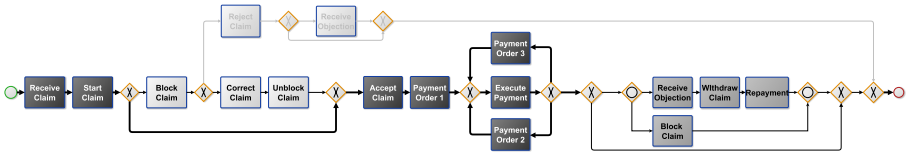
(b) Segmentation and pairwise comparison.

Fig. 2: Applying our framework to the accepted cases in the UWV event log.

The colored normative models in Fig. 3 illustrate the difference between the process models related to the two segments. The main difference between *segment 1* shown in Fig. 3a and *segment 2* shown in Fig. 3b is whether an objection is received or not. Receiving an objection is correlated with a duration of 80 days or more. The value of 80 is not a coincidence. The process has a maximum duration of 13 weeks, i.e., 91 days. To be on the safe side the internal deadline is set to 12 weeks, i.e., 84 days. It is clear that UWV has strongly focused on meeting this internal deadline.



(a) Segment 1 in the accepted cases event log with duration in the range [0,79] days.



(b) Segment 2 in the accepted cases event log with duration in the range [80,575] days.

Fig. 3: The normative BPMN model highlighted based on the frequency of the transitions in replaying the segments from the accepted event log experiment.