BPM Challenge 2020

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Case study description

At Eindhoven University of Technology staff members travel to conferences or to other universities for project meetings and to meet up with colleagues in the field. The university pays for travel expenses.

There are two types of trips, domestic and international. For domestic travel no prior permission is required. An employee can undertake these trips and ask for reimbursement of the costs afterwards.

For international trips, permission is needed from the supervisor. This permission is obtained by filing a travel-permit and this travel permit should be approved before making any arrangements.

To get the costs for a trip reimbursed, a claim is filed. This can be done as soon as costs are actually paid, or within two months after the trip.

The data presented in this challenge

The data is collected from the reimbursement process at TU/e. The files contain data from 2017 (only two departments) and 2018 the full TU/e.

The data is split in datasets presented in the following table:

Table 1 - Data representation

| Number | Name | Cases | Events | Size, Mb | Description |
| --- | --- | --- | --- | --- | --- |
| 1 | Domestic declarations | 10500 | 56437 | 20.5 |  |
| 2 | International declarations | 6449 | 72151 | 29.2 |  |
| 3 | Prepaid travel costs | 2099 | 18246 | 7.8 |  |
| 4 | Requests for payment | 6886 | 36796 | 15.2 |  |
| 5 | Travel permits | 7065 | 86581 | 33.2 |  |

Goals

The goal of the research is to analyse the data provided in order to extract useful information. One of the most important parts of analysis is the search for bottlenecks.

The following questions are of interest:

* What is the throughput of a travel declaration from submission (or closing) to paying?
* Is there a difference in throughput between national and international trips?
* Are there differences between clusters of declarations, for example between cost centres/departments/projects etc.?
* What is the throughput in each of the process steps, i.e. the submission, judgement by various responsible roles and payment?
* Where are the bottlenecks in the process of a travel declaration?
* Where are the bottlenecks in the process of a travel permit (note that there can be multiple requests for payment and declarations per permit)?
* How many travel declarations get rejected in the various processing steps and how many are never approved?

Then there are more detailed questions

* How many travel declarations are booked on projects?
* How many corrections have been made for declarations?
* Are there any double payments?
* Are there declarations that were not preceded properly by an approved travel permit? Or are there even declarations for which no permit exists?
* How many travel declarations are submitted by the traveler and how many by a mandated person?
* How many travel declarations are first rejected because they are submitted more than 2 months after the end of a trip and are then re-submitted?
* Is this different between departments?
* How many travel declarations are not approved by budget holders in time (7 days) and are then automatically rerouted to supervisors?
* Next to travel declarations, there are also requests for payments. These are specific for non-TU/e employees. Are there any TU/e employees that submitted a request for payment instead of a travel declaration?

1 textual description

2 goal diagram

Knowledge uplift trail

List of actions taken during the analysis.

1 filtering

2 variant analysis

3 petri net and miners

4 conformance check

The first step of the analysis is filtering, that allows us to get out of noisy data.

Questions of the challenge

Project results

Conclusion

Bottlenecks = last approve and payment handled

Trip duration

Trip is a bottleneck?