Using Process Mining Techniques to Support Improvement in a Financial Institution Process

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Abstract. This paper presents the analysis of the system logs of a financial institution, made available to BPI Challenge 2017, through process mining techniques, which is the activity of extracting knowledge from event logs that are recorded by systems. With the aim of mining this content, the following softwares were used: Disco and Celonis. Through these techniques, all process flows were meticulously mapped/discovered and investigated, in order to identify possible inefficiencies with the focus on the frequency of events, and thus it was possible to indicate points to be improved. In addition, we searched for some relevant behavior patterns that might allow the company to perform further analysis, suggesting changes, improvements, corrections and/or learning its processes.

Key words: Analysis, BPI, process mining, logs, techniques, improvements, behavior patterns, extracting knowledge, inefficiencies, frequency of events

1 Introduction

In the last years, process mining has increased as a new decision support method for companies. This methods's techniques analyze systems, event logs and help to improve business process. In addition, the results can guide to conclusions about other aspects of the business. BPI Challenge 2017 provided a dataset from a financial institute, the same company from BPI Challenge 2012. There were changes during this time and they decided that a new participation would be great to answer some questions. Three questions were required and also extra analysis were demanded. Two log files were available and some explanations about the data given.

1.1 About the data

The data contains 1,202,267 events divided in three types:

1. Application state changes (A);
2. Offer state changes (O) and
3. Workflow events (W).

These events correspond to 31,509 loan applications with 42,995 offers. Also there are 149 originators (employees or systems of the company) in the data. The data was made available in two files. The application event log and the offer event log. An application can have multiple offers. An offer is always related to one application. If the application has multiple offers and one of them is accepted, automatically the others are cancelled.

"For all applications, the following data is available:
- *Requested load amount (in Euro),*
- *The application type,*
- *The reason the loan was applied for (LoanGoal), and*
- *An application ID.*

For all offers, the following data is available:
- *An offer ID,*
- *The offered amount,*
- *The initial withdrawal amount,*
- *The number of payback terms agreed to,*
- *The monthly costs,*
- *The creditscore of the customer,*
- *The employee who created the offer,*
- *Whether the offer was selected, and*
- *Whether the offer was accepted by the customer"*

Notes and Comments. The information used above can be seen on the web page of BPI Challenge 2017 [5] and on the data provided.

1.2 Process Mining Tools

Celonis. This tool is very visual and intuitive. It was helpful to analyze, explore and visualize the process in general and with filters applied.

Disco. We used a set of technologies available in this software. Basically from the tools actions we apply an automated process discovery, filtering and analyzing cases and detailed statistics. Each step taken using this tool was explained in the answers.

2 Analysis

2.1 Analyzing throughput times per part of the process

Overview:

The question regards the time spent in the processing per parts, in particular, the difference between the time spent in the company systems in standby waiting for the user processing and the time spent by an applicant input.

Investigation:

To reach a conclusion, at first, it was necessary to identify which events belonged to the application log and by whom they wait(client or system/internal bank user).

Notes and Comments. In a topic [7] of the BPI Challenge 2017 category in the Eindhoven University of Technology PROM FORUM following data was observed:

> *"**Submitted:** a customer has submitted a new application from the website. A new application can also be started by the bank, in that case this state is skipped.*
> ***Concept:** the application is in the concept state, that means that the customer just submitted it (or the bank started it), and a first assessment has been done automatically. An employee calls the customer to complete the application.*
> ***Accepted:** after the call with the customer, the application is completed and assessed again. If there is a possibility to make an offer, the status is accepted. The employee now creates 1 or more offers.*
> ***Complete:** the offers have been sent to the customer and the bank waits for the customer to return a signed offer along with the rest of the documents (payslip, ID etc).*
> ***Validating:** the offer and documents are received and are checked. During this fase the status is validating.*
> ***Incomplete:** if documents are not correct or some documents are still missing, the status is set to incomplete, which means the customers needs to send in documents.*
> ***Pending:** if all documents are received and the assessment is positive, the loan is final and the customer is payed.*
> ***Denied:** if somewhere in the process the loan cannot be offered to the customer, because the application doesn't fit the acceptance criteria, the application is declined, which results in the status 'denied'.*
> ***Cancelled:** if the customer never sends in his documents or calls to tell*

he doesn't need the loan, the application is cancelled."

As exposed above, it can be concluded:

Table 1. Activities standby:

CLIENT	SYSTEM
Cancelled	Accepted
Complete	Concept
Incomplete	Denied
Submitted	Pending
	Validating

After verifying the table above, it is possible to see that a few events from the log are missing. With that said, it was considered:

Other definitions:

Regarding the offer status change:

Create - Create proposal
Created - Proposal created
Refused - Proposal rejected
Returned - Proposal returned
Sent - Proposal sent

Regarding the event flux:

Assess potential fraud
Call after offers
Call incomplete files
Complete application
Handle leads
Personal loan collection
Shortened completion
Validate application

Analyzing the remaining activities:

Table 2. Remaining activities:

CLIENT	SYSTEM
Refused	Create
Returned	Created
	Sent
	Assess potential fraud
	Call after offers
	Call incomplete files
	Complete application
	Handle leads
	Personal loan collection
	Shortened completion
	Validate application

After that, specifically the activities average times and the standby average time by another activity so that it's procedure can begin, were analyzed. All the procedure was executed using filters in the Disco Software.

1) Evaluating the activities average time:

It was observed the time spent by the activities in the models - time without dependence on another activity.

In the software, the activity analyzed is set as attribute, so only the cases that contain the activity can be seen.
Then, we set the paths in 100% in order to visualize all the cases that contain the activity analyzed. And thus, see how much time the activity takes.

In the example below, the "W_Call after offers" is being analyzed and it was detected that it takes in average 23.4 minutes from the beginning until its conclusion (analyzed in red).

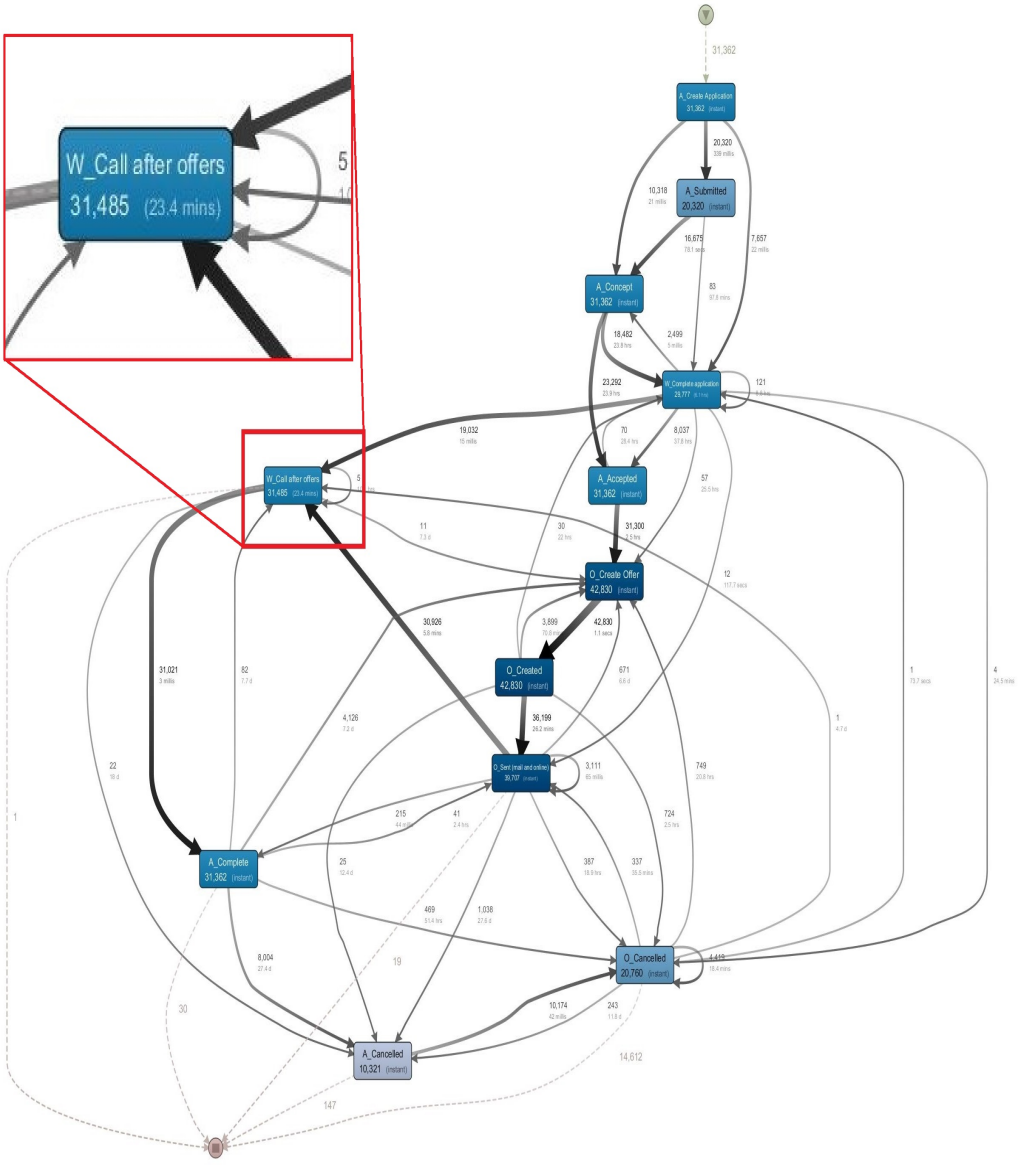

Fig. 1. W_Call after offers average time.

2) Analyzing the standby average time by another activity so that the analyzed activity can begin its procedure:

At first, we filtered : the activity analyzed is set as attribute, so only the paths that contain the activity can be seen.
Besides that, we set the paths in 100% in order to visualize all the paths that lead to the activity analyzed. And thus, see how long it takes between waiting for one activity to another.

In the example below, the activity "O_Returned" is analyzed. The incoming activities, along with the frequencies and its times until "O_Returned" can occur. In this case, seven predecessors activities regarding the one that is being analyzed.

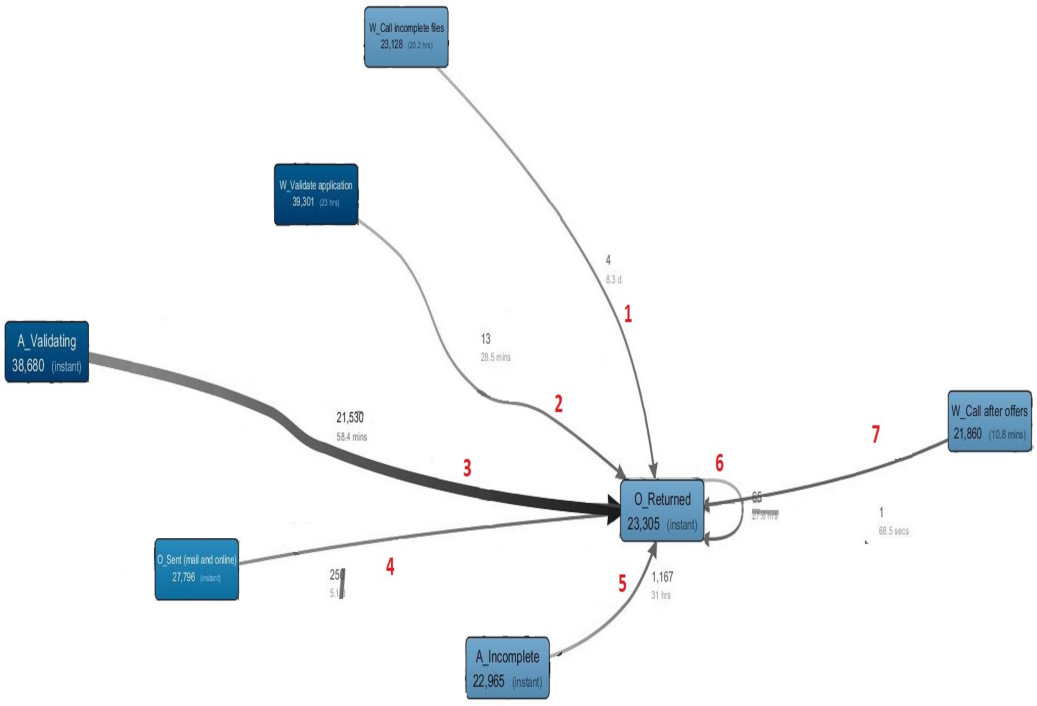

Fig. 2. O_Returned standby average time by another activities.

With the support of the tools, we analyzed some categories of information:

Total Average Time Activity - Shows how much time the analyzed activity takes from its beginning to its end - independent of others activities;

Standby Average Time From Another Activity Shows how much time the analyzed activity waits for until it can begin, after the end of an incoming activity. Specified for each of the incoming activities;

Total Occurrences Regarding the Standby Average Time After analyzing the standby times from other activities, it was verified the frequency from each analysis from an incoming activity;

Total Time (approximate value) - The total time multiples the two previous results for each incoming activity analysis. Besides that, all the values were set in hours, and for this reason an approximate value is considered;

$\sum$ **Total Time / $\sum$ Total Occurrences (approximate value) -** This category regards the division of the sum of the total time values (previous category) by the sum of the occurrences values (third category), analyzing the total time from all the incoming activities and dividing by the total activities frequency. We also found a general average value that could be compared with the others. Approximate values are considered as well.

All the information found by the analysis, that can be seen in the appendix, returned a lot of responses discussed in the results section.

Results:

Regarding the activities time:

As the study shows, it can be affirmed that the only activities that have a significant time are : W_Assess Potential Fraud, W_Validate Application, W_Call Incomplete Files, W_Complete Application, W_Call After Offers e W_Handle Leads; ranging from the highest to lowest time (from days to minutes) respectively.

The cases where the Total Average Time Activity is the only analyzed, must not be considered because they do not represent the reality of the events in the whole process. Those cases simply do not represent the workflow reality. There will be always a natural standby time by some activities, no matter if this time is too low or too high, but it will never be instantaneous.

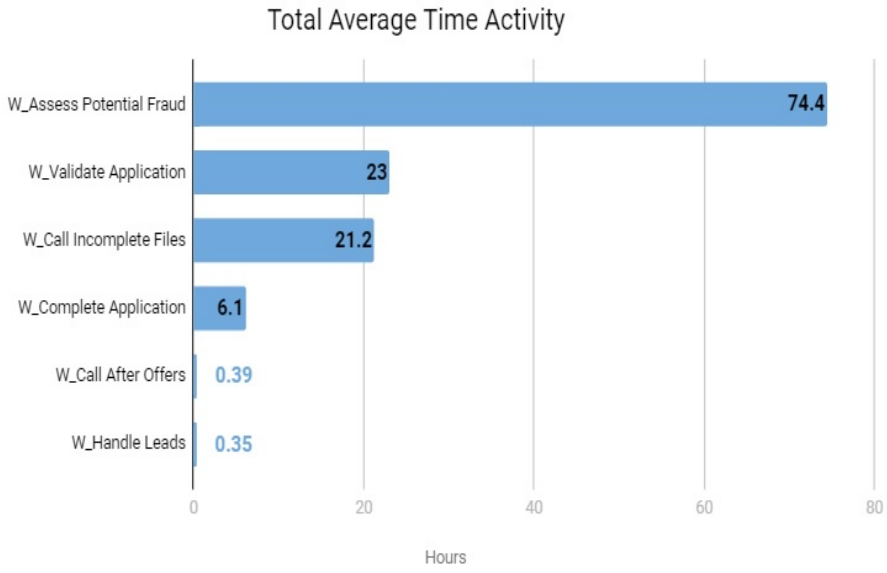

Fig. 3. Total Average Time Activity.

Regarding the activity standby time:

Observing the results found, if the general average of all activities from each category is done, we found a client waiting average time of 91.74 hours and the system waiting average of 25.76 hours. So it can be concluded that delay per client is a lot greater than the waiting per system.

However, it must be emphasized the fact that an activity in particular has a waiting per client quite significant. It is the "A_Cancelled - complete" activity. If this activity is not considered, the average client waiting would dramatically decrease to about 2 hours. Looking at the median, we can observe that the value we find as a result is 2.12 hours. This activity has a waiting time really high compared to the others, both the ones that wait for the client, and the ones that wait for the system. For this reason, a deeper study should be done to understand why this time is so high.

Fig. 4. Time Waiting For Clients.

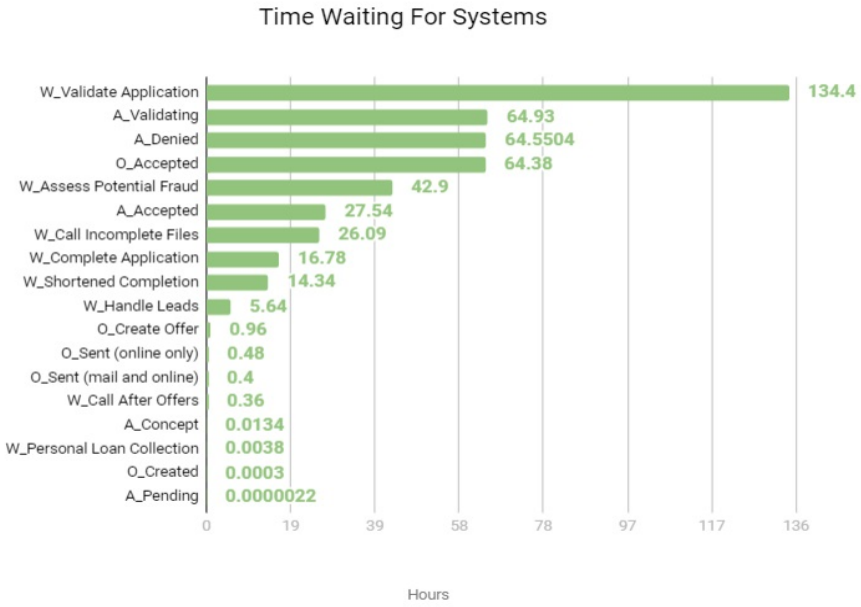

Fig. 5. Time Waiting For Systems.

2.2 Analyzing the frequency of incompleteness

Overview:

Evaluating the applicants that are confronted with more requests to the completion and the hypothesis that they should be more inclined to not accept the final offer, the following facts were observed:

Verifying the offers log, we have:

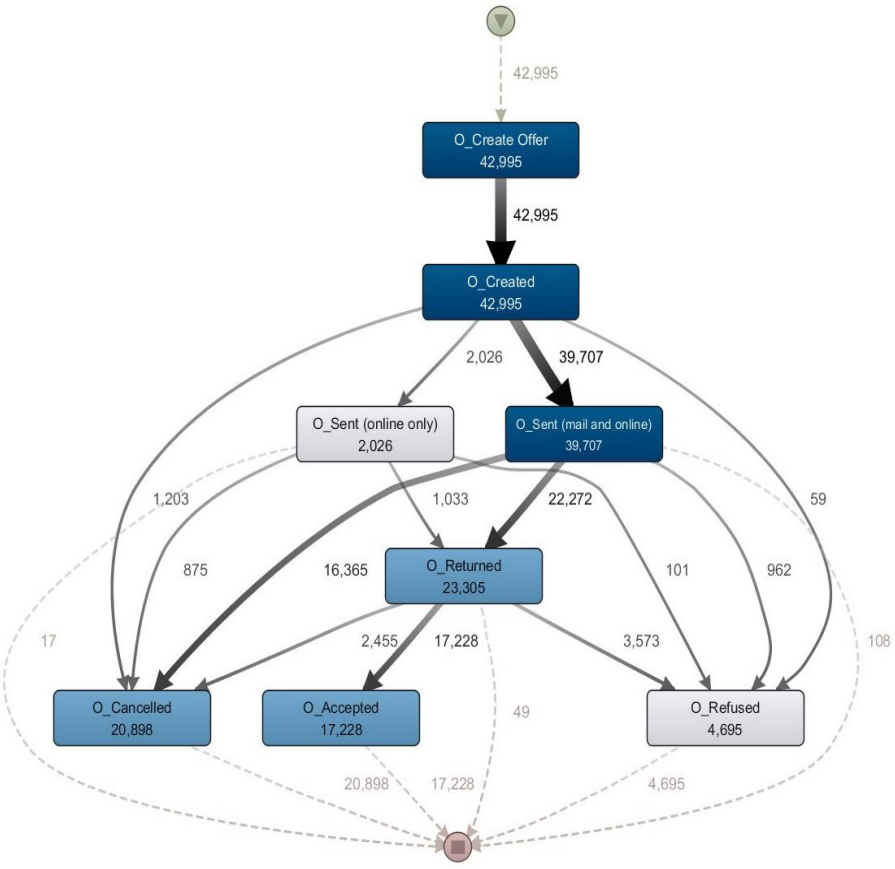

Fig. 6. All offers

From a total of 42,995 offers: 20,898 were Canceled, 17,228 were Accepted and 4,695 were Rejected.

Investigation:

By the hypothesis given we verified the cases in which, in order for the offer to be made, there were more requests to the client.
The mandatory requests were disregarded - those that all cases must change at some point, from the offer made - only the cases where, after the company's validation, were verified and recorded that items were missing and / or answered by the client. That is, the cases in which there was the need to change the application's change status to "A_Incomplete-complete".
For this it is necessary to verify in the other file given (the application log), because it is where that status change is indicated.

Besides that, search for the final states:

- **O_Accepted - complete -** To evaluate the cases where the proposal was accepted despite the requests;
- **O_Cancelled - complete -** To evaluate the cases where the documents were not sent and the cases in which the client did not need the loan anymore and
- **O_Refused - complete -** To evaluate the cases where the proposal was rejected by the client.

Analyzing the application log file, the following data were found:

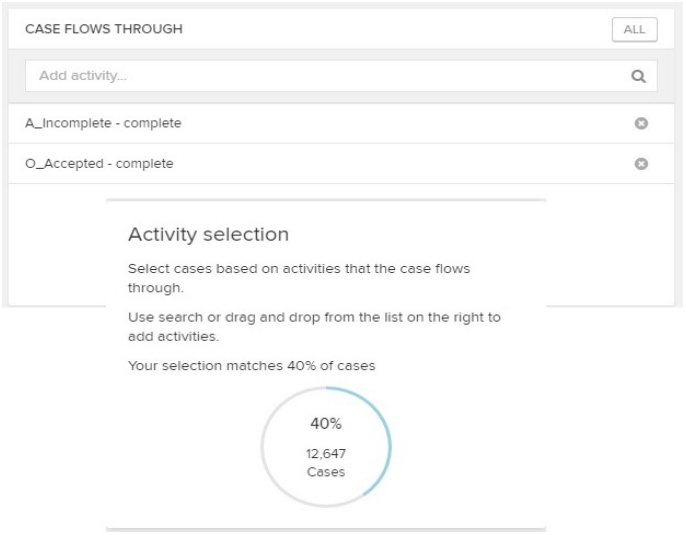

Fig. 7. The cases in which the client accepts the proposal, despite the multiple requests, total 12,647 cases.

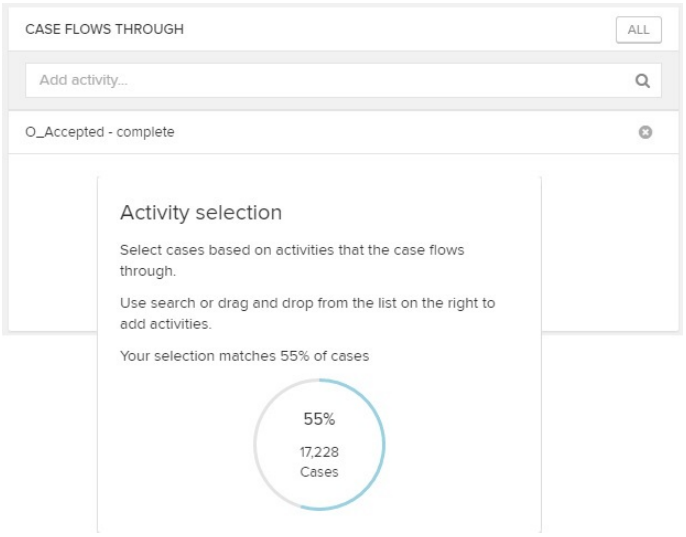

Fig. 8. Altogether 17,228 were accepted, including or not more requests.

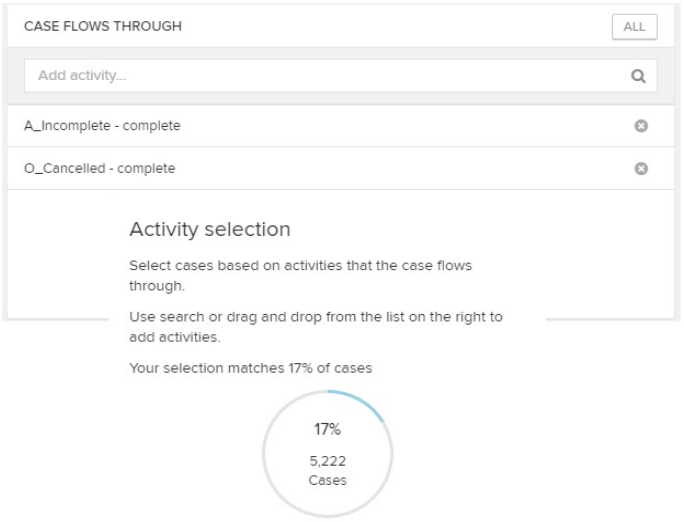

Fig. 9. The cases where the proposal were cancelled and there were multiple requests total 5,222.

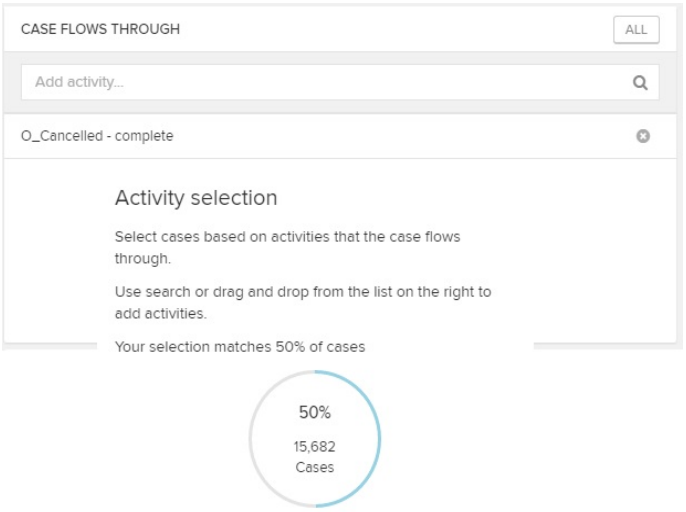

Fig. 10. Altogether 15,682 were cancelled, including more requests or not.

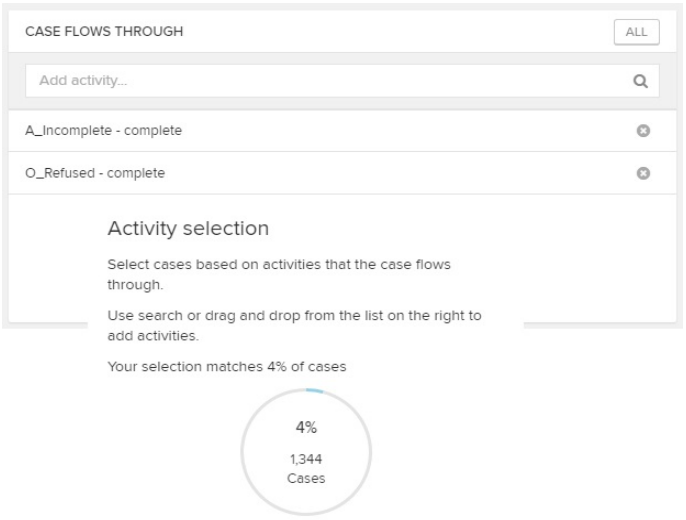

Fig. 11. The cases where the proposal is refused after multiple requests total 1,344 cases.

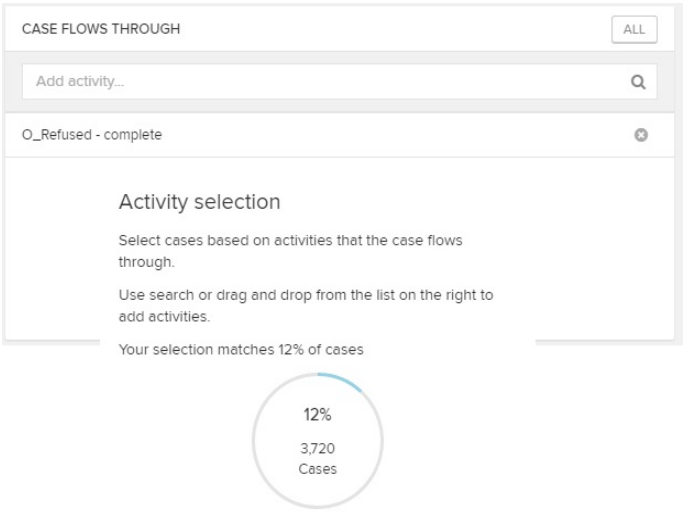

Fig. 12. Altogether 3,720 were refused, including more requests or not.

Results:

Based on the data presented above, the following results were found:

Table 3. Table with consolidated results.

EVALUATED CASE	TOTAL	TOTAL WITH MORE REQUESTS (+ A_Incomplete - complete)	PERCENTAGE OF CASES WITH MORE REQUESTS (APPROXIMATED VALUES)
O_Accepted - complete	17,228	12,647	73%
O_Cancelled - complete	15,682	5,222	33%
O_Refused - complete	3,720	1,344	36%

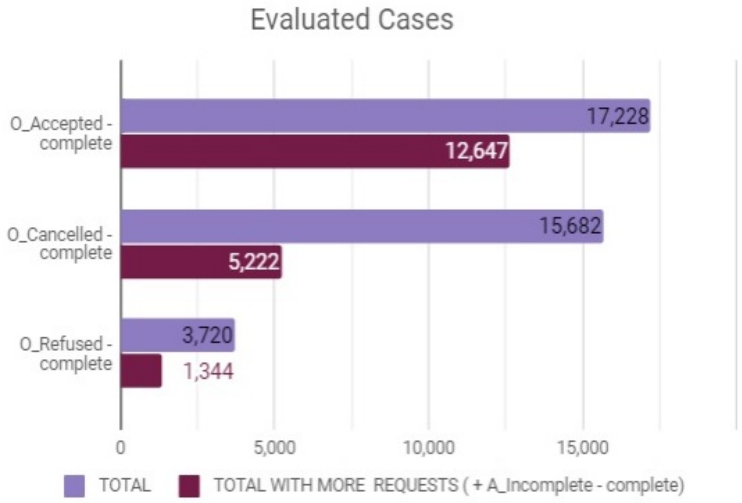

Fig. 13. Cases with more requests compared with its total.

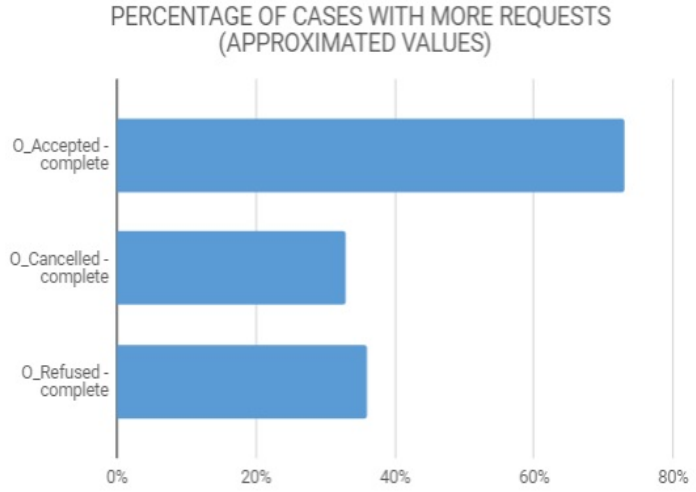

Fig. 14. Percentage of requests in cases.

Observing the results above, it can be identified that applicants that received more requests had a high acceptance percentage to the final conclusion of the offer. Therefore, we concluded that the hypothesis raised is not true.

More Analysis:

We can also see that almost 66% of all the cases with more requests were accepted. And that the percentages of the cases with more requests cancelled or refused are quite similar.

2.3 Analyzing offers, conversations and conversions

In the attempt to answer the third question, we split it in two parts for a better understanding. The used log to reach the answers to follow was the application log file. It is worth remembering that it has 31509 cases, 4047 variants and all the cases have offers.

Overview - First part:

The first part of the third question asks how many clients ask for more than one offer and if these offers are made in one or more conversations.

Investigation - First part:

Scenario 1 - Evaluating how many clients ask for more than one offer:

Filtering by "Follower" in the log, where the activity "O_Create Offer" was followed in some point by another "O_Create Offer" activity and the same re-

source was required. So, we have all the cases where there were two or more offers per application. Note figure 15:

Fig. 15. Clients who asked for more than one offer.

The result shows 4449 cases and 1729 variants.

Scenario 2 - Evaluating if the offers occurred in one or more conversations:

After what was done in scenario 1, it was also verified if the offers were made in one or more conversations. To check if more than one conversation had occurred, we focused on the "W_Call after offers" activity.

Thus, another "Follower" filter was made in the log, where the "W_Call after offers" activity was followed at some point by an "O_Create Offer" activity

and where the same resource was required. This shows that new offers had been made after a new conversation. This can be seen in the figure 16:

Fig. 16. Offers that occurred in one or more conversations.

The result shows 850 cases and 501 variants.

Overview - Second part:

The second question concerns about the conversion that occurs when the case in which the "A_Pending" status is reached, and the proposal receives the payment release.
Besides, it can be related to the behavior which regards the cases where only one offer is made and with respect to cases where more than one offer is made.

Investigation - Second part:

Scenario 3 - Evaluating the cases that came to conversation:

Considering that all the cases that arrived at the conversion state, from the "Attribute" filter by "Activity", by the "Mandatory" mode with event value "A_Pending":

Fig. 17. Cases that came to conversation.

17228 cases and 2575 variants were found.

Scenario 4 - Evaluating the cases that came to conversation with more than one offer:

Now, the cases with more than one offer were analyzed using the filter "Follower" in the log, where an activity "O_Create Offer" was followed in some point by another "O_Create Offer" activity and where the same resource was required.

Fig. 18. Cases that came to conversation with more than one offer.

2309 cases and 1092 variants were found.

Scenario 5 - Evaluating the cases that came to conversation with more conversations:

We decided to also analyze the cases where the offers were made from new conversations, using the filter "Follower" in the log as well, where the activity "W_Call after offers" was followed, in some point, by another activity "O_Create Offer", and where the same resource was required:

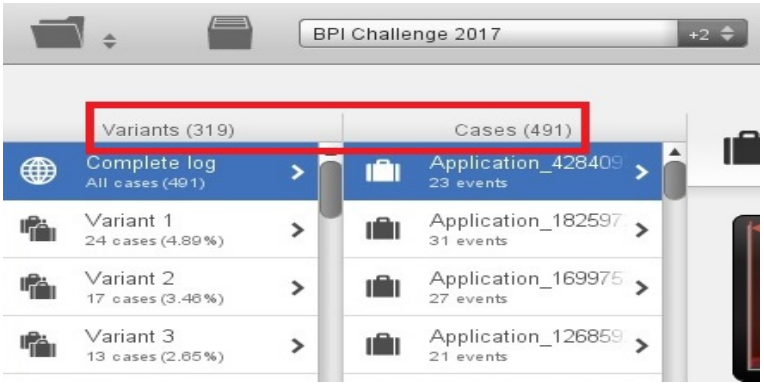

Fig. 19. Cases that came to conversation with more conversations.

491 cases and 319 variants were observed.

Results:

After all that was seen, the table 4 was generated:

Cases with conversation followed by an offer creation: those are the cases where there is an activity "W_Call after offers" followed , in some point, by a activity "W_Call after offers".

Table 4. Table with results about offers, conversations and conversions.

RESTRICTIONS	ALL CASES	CASES WITH MORE THAN ONE OFFER
Cases with no restrictions	31,509	4,449
Cases with conversations followed by an offer creation	856	850
Cases that reached the "A_Pending"	17,228	2,309
Cases with conversation followed by an offer creation and that reached the "A_Pending" status	494	491

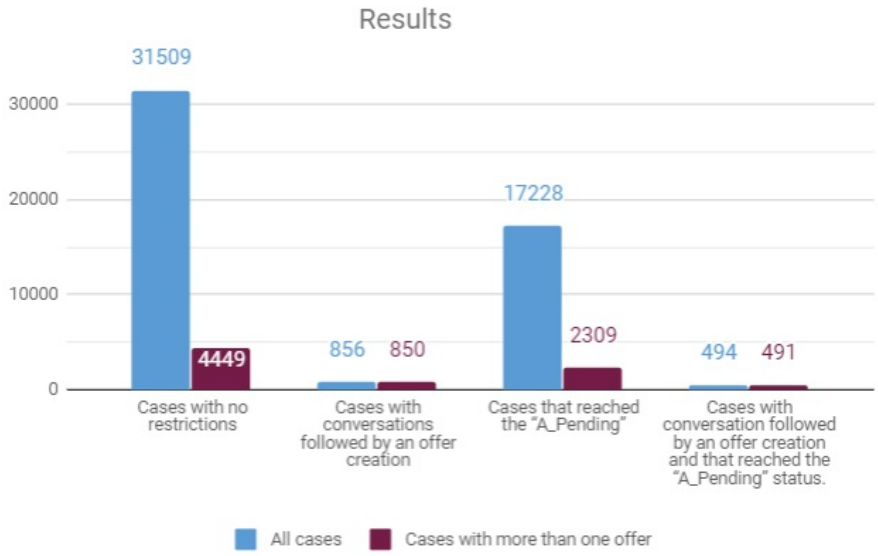

Fig. 20. Visualizing the results.

About the first part and question, we can conclude that most of the cases - 85.88% - received just one offer.
And when there is a conversation, in 99.30% of the cases there are more than one offer compared with the cases with just one offer.
We can see that, comparing cases with more than one offer, cases with conversation(s) correspond to 19.10%.

About the second part and question, we can observe that 54.68% of all the cases turn into a conversion.
Then we can note that less than 14% of the cases that turn into a conversion receive more than one offer.

Further Analysis:

We can also conclude that almost 100% of the cases with conversation(s) followed by the creation of an offer and that turn into a conversion receive more than one offer.
Note that about 51.90% of the cases with more than one offer turn into a conversion.
The 57.71% of all the cases with conversation(s) followed by the creation of an offer turn into a conversion.
And the 57.76% of the cases with conversation(s) followed by the creation of an offer and with more than one offer turn into a conversion.

2.4 Additional Discoveries

Considering that only 40% of the offers were accepted, the waiting time by the client is one of the main reasons for quitting. Therefore, we tried to analyze a client pattern behaviour regarding the offer acceptance and the time for the process conclusion.

It was identified that most of the offers that were made in a few contacts with the client , or in only one, were the ones that had more acceptance. The values that were most requested in a contact were $10,000.00, $5,000.00, $15,000.00 and $20,000.00.

Assuming that the client is approached with the loan service (or credit limit increase - minority of the cases), without any explicit quantified offer (11,05% of the cases in which the offers were accepted), and this in turn, when interested, requests the desired amount, which is accepted by the bank without any further negotiations.

With what has been reported above, we have come to the conclusion that the core business of the process is the sale of loan services estimated in the range of $5,000.00 - $20,000.00.

The creation of several offers means a negotiation process with the client, to

arrive to a common denominator regarding the value to be available. However, we realized that if the client received an offer with a lower value than the one requested, the tendency is for the offer to be canceled. In the minority of the cases where the offered value was higher than the one requested by the client, the offers also ended up being canceled.

When analyzing the number of contacts made with the clients, it was also observed that the activities directly related to the required documents validation process, when not complete for more than one cycle, led to the client giving up, even when his request was answered immediately.

As indicated above, some workflows activities have a high duration range, and in turn, when they reach their peak, directly impact negatively on the offer acceptance by the client. It was verified that in most cases where the "W_Asses Potential Fraud" and "W_Validate application" activities have an abnormally high execution time, bidding is canceled. The "W_Validate application" activity may cause more impact, as it may occur more than once during the process.

After all the analyzes carried out on the proposed log, we concluded that the subprocesses of the activities that take the longest time in the process as a whole, should be reviewed in order to drastically reduce their negative impact on the acceptance of offers by clients. It should also be taken into consideration, if indeed such activities are extremely important to the completion of the process and if they are being performed in the most correct and efficient manner.

2.5 Conclusions

Through the use of the tools Disco and Celonis in the analysis of the proposed log, it was possible to respond to the questions made by BPI Challenge 2017 succinctly. With Disco, it was possible to generate several scenarios of activity flows through the use of filters in the log. On the other side, Celonis allowed a quantitative analysis of the information collected in the flow scenarios drawn.

Due to the absence of some information concerning the main proceedings, the in-depth analysis carried out was limited. In order to proceed with the analyzes, it was necessary to carry out the investigation of certain information that was identified by patterns in the possible flows. Thus, based on the evidence found, some analyzes were oriented from these evidences.
In this study, in addition to identifying which of the activities offered by the financial institution in question represents the "heart of the business" of the company, we also succeeded in highlighting the main indicators that contribute to the poor performance of the conclusion of offers, thus proposing a critical review relative to the performance of such activities.

Considering an increasingly globalized world with enormous amounts of information, with this study it is possible to note the relevance of process mining. Since from the past data we were able to extract a great amount of information and results for the company and, noting that there would be possibility of further studies.

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8. PROM FORUM - Clarifications about question three, http://www.win.tue.nl/promforum/discussion/comment/2236/#Comment_2236

APPENDIX

Results of the analysis of throughput times per part of the process:

Analyzed Activity and Frequency	Total Average Time Activity	Standby Average Time From Another Activity	Total Occurrences Regarding the Standby Average Time	Total Time (approximate value - hours)	$\sum Total\ Time\ /\ \sum Total\ Occurrences$ (approximate value - hours)
A_Accepted (31,509)	Instant	24 hrs	23,405	561,720	27.54
		37.8 hrs	8,070	305,046	
A_Cancelled (10,431)	Instant	27.4 d	8,004	5,263,430.4	630.35
		27.6 d	1,038	687,571.2	
		11.5 d	259	71,484	
		6.4 d	116	17,817.6	
		18 d	22	9,504	
		10 d	3	720	
A_Complete (31,362)	Instant	3 millis	31,021	0.025850833	0.00000091
		44 millis	215	0.002627778	
A_Concept (31,509)	Instant	78 secs	16,753	362.9816667	0.0134
		21 millis	10,342	0.0603283333	
A_Denied (3,753)	Instant	3 d	2,165	155,880	64.5504
		47.3 hrs	1,084	51,273.2	
		5.2 d	104	12,979.2	
		28 hrs	88	2,464	
		78.1 mins	25	32.5416667	
		6.4 d	15	2,304	
		9.7 mins	2	0.3233333	
		24.9 hrs	1	24.9	
		99.7 secs	1	0.02769444	
A_Incomplete (23,055)	Instant	3 millis	20,262	0.016885	5.7935
		54.5 hrs	2,380	129,710	
		9.9 hrs	373	3,692.7	
		2.5 hrs	30	75	
		23 hrs	2	46	
A_Pending (17,228)	Instant	8 millis	17,228	0.0382844444	0.0000022
A_Submitted (20,423)	Instant	339 millis	20,423	1.923165833	0.000094
A_Validating (38,816)	Instant	469 millis	23,146	3.0154094444	64.93
		8.7 d	9,120	1,904,256	
		65.2 hrs	3,831	249,781.2	
		7.9 d	1,599	303,170.4	
		36 hrs	449	16,164	

		3.6 d	42	3,628.8	
		4 d	40	3,840	
		6.4 d	16	2,457.6	
		36.3 secs	2	0.02016667	
O_Accepted (17,228)	Instant	22 hrs	7,072	155,584	64.38
		48.7 hrs	5,227	254,554.9	
		5.9 d	4,764	674,582.4	
		5 d	232	27,840	
		4.4 d	16	1,689.6	
		6.9 d	4	662.4	
		20.9 mins	2	0.6966667	
O_Cancelled (20,898)	Instant	4.2 millis	10,270	0.011981667	2.12
		18.4 mins	4,429	1,358.226667	
		2.4 hrs	754	1,809.6	
		51.4 hrs	469	24,106.6	
		18.9 hrs	387	7,314.3	
		24.7 mins	6	2.47	
O_Create Offer (42,995)	Instant	2.5 hrs	31,447	78,617.5	0.96
		7.2 d	4,126	712,972.8	
		6.6 d	671	106,286.4	
		25.5 hrs	57	1,453.5	
		7.3 d	11	1,927.2	
O_Created (42,995)	Instant	1.1 secs	42,995	13.13736111	0.00030
O_Refused (4,695)	Instant	46 millis	3,720	0.0475333333	0.000011
		12 millis	975	0.00325	
O_Returned (23,305)	Instant	58.4 mins	21,530	20,955.86667	3.92
		31 hrs	1,167	36,177	
		5.1 d	250	30,600	
		27.6 hrs	65	1,794	
		28.5 mins	13	6.175	
		8.3 d	4	796.8	
		68.5 secs	1	0.01902778	
O_Sent (mail and online) (39,707)	Instant	26.2 mins	36,199	15,806.896667	0.40
		65 millis	3,111	0.0561708333	
		35.5 mins	337	199.3916667	
		2.4 hrs	41	98.4	
		117.7 secs	12	0.392333333	
O_Sent (online only) (2,026)	Instant	30.4 mins	1,919	972.2933333	0.48
		4 millis	85	0.0000944445	
		48.8 secs	11	0.14911111	
		95.2 mins	6	9.52	
		50.8 secs	2	0.028222222	
		7.3 mins	1	0.121667	
		5.7 mins	1	0.095	
		40.8 secs	1	0.01133333	

W_Call After Offers (31,485)	23.4 mins	5.8 mins	30,926	2,989.5133333	0.36
		15 millis	19,032	0.0793	
		7.7 d	82	15,153.6	
		10.1 hrs	5	50.5	
		4.7 d	1	112.8	
W_Complete Application (29,918)	6.1 hrs	23.8 hrs	18,551	441,513.8	16.78
		22 millis	7,697	0.0470372222	
		9.1 hrs	122	1,110.2	
		95.9 mins	85	135.858333	
		28.4 hrs	70	1,988	
		23.4 hrs	36	842.4	
		4 d	3	288	
W_Assess Potential Fraud (355)	3.1 d	63.8 hrs	184	11,739.2	42.90
		88.6 mins	130	191.96667	
		49.1 hrs	77	3,780.7	
		17.1 hrs	24	410.4	
		8.9 d	17	3,631.2	
		3.1 hrs	14	43.4	
		11.7 hrs	8	93.6	
		11 millis	7	0.0000213889	
		30.2 mins	4	2.0133333	
		5.9 d	1	141.6	
		45.8 mins	1	0.7633333	
W_Handle Leads (3,727)	21 mins	5.7 hrs	3,670	20,919	5.64
		2.6 mins	38	1.646667	
W_Call Incomplete Files (23,218)	21.2 hrs	47.5 hrs	13,831	656,972.5	26.09
		7.2 mins	10,964	1,315.68	
		24.7 hrs	8,811	217,631.7	
		36.5 hrs	142	5,183	
		25.2 hrs	42	1,058.4	
		4.8 hrs	16	76.8	
		18 hrs	9	162	
W_Personal Loan Collection (4)	Instant	4.6 secs	2	0.00255556	0.0038
		31.8 secs	1	0.008833333	
W_Shortened Completion (76)	Instant	98.1 mins	33	53.955	14.34
		36.6 hrs	26	951.6	
		3.3 hrs	8	26.4	
		14.5 hrs	5	72.5	
		74.9 secs	2	0.041611111	
		11.5 secs	2	0.00638889	
		17.3 secs	1	0.004805556	
W_Validate Application (39,444)	23 hrs	8.8 d	18,466	3,900,019.2	134.40
		59.7 hrs	14,226	849,292.2	
		7.6 d	3,242	591,340.8	

		3.2 hrs	2,238	7,161.6	
		38.9 hrs	1,713	66,635.7	
		26.2 hrs	284	7,440.8	
		35.9 hrs	171	6,138.9	
		15.4 mins	47	120.63333	
		5.4 d	36	4,665.6	