

Case Study

Integration Planning at SFB (C)

09/2021-6684

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"Now that the team has signed off on the machine learning model and the predictions it produced (Exhibit C1), I think we can move ahead with the optimization model we discussed last time," said John, a couple of weeks after his initial meeting with Kusha. "Our optimization model would decide which employee categories we would open the RCC to."

"Would we decide what constitutes an 'employee category'?" asked Kusha. "If so, we need to be careful how we define them – remember Maurice's email. We should make sure that they are objective and don't target people based on attributes such as gender. We also need to make sure that they are not so fine-grained that there are only one or two people per category. That would basically amount to us discriminating on the individual level, which French law expressly forbids."

"That's a very good point," said John. As I see it, we have a trade-off going on here: the more fine-grained the categories, the more optimal our decision, as we can tweak things at a finer level – but also it could be viewed as more discriminatory. I think we should aim at something in the middle."

"That sounds good to me. Is there anything else you need from me to build the model, John?"

"An optimization model is made of three components," he explained. We've decided on what the decision variables should be, which is one component. The two others are the constraints and objective. In other words, I need your input on what criteria our decision needs to meet and what you are interested in maximizing or minimizing."

Kusha thought for a moment. "What would be the best way of modelling this? The RCC framework obliges us to declare a target number of people we would like to see leave, so I'm guessing that may be a constraint. We also want to make sure that the people who leave are spread across job roles – it would be terrible for the company if, say, all the managers left. Is there a way of incorporating that into your model?"

"What we could do is require some kind of continuity across the process," John suggested. For example, 11.5% of the company are healthcare reps currently – we could require that the proportion remain the same, or within 2% to 5% tolerance, after the RCC."

"That would be great," said Kusha. "Maybe we could add that we want to keep a minimum level of employees in each department? Any constraint that ensures a balance in the departures would be good to add. In terms of objective, I think the best for the company would be to look at minimizing how much the severance packages are going to cost."

John nodded. This seemed reasonable. "I need from you the severance package that each employee will get – then I have everything I need to implement the model."

"Nikitha and a few others have been in negotiations with staff representatives. They have informally reached a consensus on an offer, I think. Let me check with them and get back to you by email," said Kusha (Exhibit C2).

“One last question,” she added. “As I understand it, the predictions we’ve worked on in the past few weeks (Exhibit C1) can be interpreted as the probability that a given employee will leave if he or she is offered an RCC, is that correct?”

“Absolutely.”

“So how are you going to use it to obtain the number of employees that will leave in a certain category?”

“Hmm... I can think of a couple of ways of using these numbers,” said John. “Maybe the best would be to compute the expected number of people who would leave in a given category. So if a category contained 5 employees, each with probability 0.4 of leaving, and if that category was open to the RCC, then on average we’d have 2 employees leaving and 3 remaining.”

“That works. I look forward to seeing the output of the optimization model. We’ll need to schedule a meeting with Nikhita once you have the output to discuss the categories that the optimization model selects.”

Exhibit C1

Predictions file snapshot

(Predicted probability of leaving for each employee)

	A	B	C	D	E	F	G		AN	AO	AP	AQ	AR	AS	AT
1	Age	BusinessTravel	DailyRate	Department	DistanceFromHome	Education	EducationField	...	CART_some_FE	RF_some_FE	GBM_some_FE	LR_some_more_FE	CART_some_more_FE	RF_some_more_FE	GBM_some_more_FE
2		Travel	866	Sales		3	Medic	...	0.066	0.175	0.003	0.038	0.15	0.15	0.003
3	53	Travel	1084	Resea	13	2	Medic		0.063	0.068	0.001	0.003	0.063	0.038	7E-04
4	24	Travel	240	Huma	22	1	Huma		0.091	0.327	0.19	0.308	0.091	0.287	0.514
5	45	Travel	1339	Resea	7	3	Life Sc		0.063	0.058	1E-04	0.004	0.063	0.04	3E-04
6	36	Travel	1396	Research & D		2	Life Sc		0.066	0.083	2E-04	0.023	0.15	0.067	4E-04
7	34	Travel	204	Sales	14	3	Techn		0.063	0.313	0.725	0.343	0.063	0.347	0.704
8		Travel	144	Resea	22	3	Life Sc		0.066	0.128	0.009	0.299	0.15	0.16	0.086
9	39	Travel	1431	Resea	1	4	Medic		0.091	0.137	6E-04	0.055	0.091	0.137	0.001
10	45	Non-T	1052	Sales	6	3	Medic		0.066	0.172	0.093	0.396	0.15	0.155	0.013
11		Travel	1229	Resea	8	1	Life Sc		0.091	0.232	0.002	0.015	0.091	0.155	0.005
12	47	Travel	1454	Sales	2	4	Life Sc		0.524	0.337	0.376	0.669	0.1	0.388	0.558
13	43	Travel	531	Sales	4	4	Marke		0.066	0.235	0.047	0.402	0.15	0.233	0.016
14	44	Travel	625	Resea	4	3	Medic		0.229	0.108	0.015	0.139	0.15	0.09	0.013
15	40	Travel	1171	Resea	10	4	Life Sc		0.938	0.248	0.006	0.041	0.833	0.262	0.012
16	22	Travel	581	Resea	1	2	Life Sc		0.229	0.155	0.003	0.033	0.15	0.155	0.005
...															
428	29	Travel	442	Sales	2	2	Life Sc		0.066	0.165	0.041	0.051	0.15	0.155	0.036
429	36	Travel	566	Resea	18	4	Life Sc		0.063	0.212	0.065	0.117	0.063	0.197	0.006
430	33	Travel	213	Resea	7	3	Medic		0.066	0.068	6E-04	0.003	0.15	0.055	7E-04
431	36	Travel	506	Research & D		3	Techn		0.229	0.208	0.052	0.455	0.15	0.17	0.115
432	38	Travel	1495	Resea	10	3	Medic		0.063	0.035	6E-04	0.001	0.063	0.048	9E-04
433	54	Travel	376	Resea	19	4	Medic		0.063	0.17	0.589	0.138	0.063	0.23	0.293
434	37	Non-T	1413	Research & D		2	Techn		0.066	0.288	0.454	0.262	0.15	0.288	0.572
435	33	Non-Travel		Sales	8	1	Life Sc		0.727	0.317	0.015	0.063	0.727	0.297	0.006
436	50	Travel	410	Sales	28	3	Marke		0.063	0.175	0.029	0.421	0.063	0.177	0.009
437	49	Travel	470	Resea	20	4	Medic		0.066	0.067	0.018	0.008	0.15	0.078	0.008
438	33	Travel	430	Sales	7	3	Medic		0.063	0.04	0.002	0.059	0.063	0.05	8E-04
439	27	Non-T	210	Sales	1	1	Marke		0.063	0.137	0.005	0.067	0.063	0.13	0.021
440		Travel	1157	Resea	2	4	Medic		0.524	0.29	0.992	0.684	0.833	0.273	0.922
441	39	Travel	1383	Huma	2	3	Life Sc		0.063	0.083	1E-04	0.003	0.063	0.078	4E-04
442		Travel	104	Resea	2	3	Life Sc		0.95	0.567	0.713	0.5	0.95	0.54	0.507

Source: created by case authors

Exhibit C2

One-time severance compensation offer

AHMAD Kusha

From: AHMAD Kusha
Sent: Wednesday, 20 February 2019 9:00 pm
To: WILLIAMS John
Subject: CONFIDENTIAL – Severance package negotiation

Dear John,

Following our conversation last week, I reached out to the team currently conducting negotiations with the staff representants. They are confident that they will be able to negotiate the severance package for employees down to:

- the “base package” that Maurice wrote to us about
- 2 or at most 3 additional months of income on top of that.

Nikhita also mentioned that this was similar to what had transpired in the previous office closure she conducted. All in all, I think it’s reasonable to move forward with these figures.

Please do not share this information with anyone as it is highly confidential.

Many thanks,

Kusha