

Project 3-How long do our clients pay?

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Data Cleaning, wrangling, and analysis

What I want to solve is to find out what customers finish the payment longer than three working days and five working days after getting the invoices (my company wants to receive the payment within three working days)

- I first read the excel file and anonymize some columns, and I use dplyr package to produce a new dataframe, aggregating from the original big sheet. I group the data by the traders and customers, and I summarize the average days to pay, the average value of invoice, and the number of observations.
- This task could be done with Excel or SQL, but the problem with Excel is that it takes more time and is less organized for data cleaning, and when the number of observations is bigger, the speed of processing is slower. However, R is fine with this scale, and it is more convenient to produce tables and export to PDF or HTML to write a report. As for SQL, as my previous company does not store data in a database management system to make a relational database, using statistical software like R can easily does the job.

```
# Load required packages
library(dplyr)
library(tidyr)
library(readxl)

# Load the Excel sheet
project3 <- read_excel("/Users/andy/B futurist/project/data/Trade Support - Logistics Tracking.xlsx", sl

# Mask the names of the sellers
project3$Seller <- substr(project3$Seller, 2, nchar(project3$Seller)-1)
# Mask the names of the customers
project3$Customer <- paste("abc", substr(project3$Customer, 5, nchar(project3$Customer)-3), "xyz")

# I put two parameters in group_by() to identify what traders correspond to a customer (the best classi
mean_workdays1 <- as.data.frame(project3 %>% group_by(Customer, Seller) %>% drop_na() %>% summarize(me
me
number_of_invoices = n()) %>% mutate(five_days = ifelse(mean_workdays_to_pay >= 5, 1, 0)) %
# View(mean_workdays1)
```

I extract two subsets from the big dataframe

```
# subsets the master dataframe created above to better summarize
df_3days <- subset(mean_workdays1, three_days == 1&five_days==0)
df_5days <- subset(mean_workdays1, five_days == 1)
```

Customers pay longer than three days

##		Customer	Seller
## 3		abc FASHION xyz	mr
## 5		abc Fragrances of Paris xyz	mr
## 13		abc KONG STAR LINK LIM xyz	ophi
## 17		abc PROFUMI S.A.S. DI SOLLA GIOVA xyz	mr
## 28		abc A INTERNATIONAL TRADING LIM xyz	avid
## 36		abc AYKONG TECHNOLOGY xyz	avid
## 39		abc BLUE (HONGKONG) TRADING CO., L xyz	avid
## 55		abc ICIOS DE MEDIACION COMERCIAL SEMECO, S.L xyz	mr
## 57		abc IUM PERFUMES TRADING xyz	ebastia
## 61		abc LOBAL DISTRIBUTORS xyz	avvin
## 62		abc LY PATH LIM xyz	mr
## 63	abc MATI TRADING MATEUSZ LIGECKI PC&HB INTERNATIONAL GR	xyz	icha
## 66		abc MAX INDUSTRIAL LIM xyz	ophi
## 69		abc Min Hui (Hongkong) Trading Co.,L xyz	ophi
## 74		abc NDS SP. Z O.O. S xyz	aku
## 79		abc O G xyz	.Hauc
## 81		abc OP xyz	mr
## 84		abc PACT SP. Z.O.O. SP. xyz	mr
## 88		abc RAGRANCES xyz	ebastia
## 89		abc SA xyz	arsel
## 95		abc TO FRANCO PERFUMERIAS S.L xyz	mr
## 105	abc acia Internazionale di Ciro Cozzolino & C. S.n	xyz	mr
## 106		abc acie Centrali xyz	mr
## 119		abc iskills xyz	avvin
## 120		abc l Attractive Perfumes L. xyz	ebastia
## 123		abc ng xyz	mr
## 124		abc nternatio xyz	avid
## 141		abc umeria Internacional xyz	ssa
##	mean_invoice_amount	number_of_invoices	
## 3	31098.00	4	
## 5	92050.38	8	
## 13	55255.79	1	
## 17	12769.20	1	
## 28	26200.00	1	
## 36	17540.19	11	
## 39	36193.10	2	
## 55	43767.37	9	
## 57	19900.38	1	
## 61	7278.56	1	
## 62	45696.16	2	
## 63	10750.00	1	
## 66	20098.92	1	
## 69	20060.00	1	
## 74	15252.39	1	
## 79	20830.29	1	
## 81	3007.50	1	
## 84	2804.50	2	
## 88	48442.56	3	
## 89	11273.92	2	
## 95	149784.00	1	
## 105	10650.00	3	

## 106	33937.00	3
## 119	12387.12	1
## 120	20241.74	1
## 123	28795.42	2
## 124	39726.95	1
## 141	12506.40	1

Customers pay longer than five days

##	Customer	Seller
## 2	abc ELE LIMi xyz	ia
## 6	abc G xyz	avid
## 7	abc Global Limi xyz	avid
## 8	abc Global Limi xyz	yej
## 11	abc KONG LENJOY FASHION (add shipment co xyz	ophi
## 14	abc Line xyz	arsel
## 18	abc SUNLIGHT(CHINA) LIMi xyz	avid
## 20	abc TRADING INTERNATIONAL S xyz	mr
## 22	abc WORLDWIDE LIMi xyz	avid
## 29	abc A(HK)TRADING LIMi xyz	arsel
## 33	abc AM EXP xyz	mr
## 38	abc AYKONG TECHNOLOGY xyz	ophi
## 42	abc EAUTY xyz	mr
## 44	abc ERSAL PERFU xyz	avvin
## 45	abc ES, FRAGANCIAS Y COSMÉTICOS S xyz	ssa
## 50	abc GIFTS PLUS xyz	mr
## 52	abc HA SUPPLY CHAIN LIMi xyz	avid
## 53	abc HANT TRADING LIMi xyz	avid
## 64	abc MAVANCE GROUPEM xyz	avid
## 65	abc MAX INDUSTRIAL LIMi xyz	avid
## 67	abc MI EUR xyz	yej
## 68	abc MIK GENRAL TRADING L. xyz	avid
## 73	abc NA 7 E xyz	avid
## 75	abc NDS SP. Z O.O. S xyz	mr
## 76	abc NO S.R xyz	omm
## 77	abc NSHU xyz	avid
## 80	abc OND PHARMACEUTICALS L xyz	ebastia
## 83	abc ORY INTERNATIONAL (USA), xyz	ebastia
## 90	abc SA xyz	er
## 92	abc T DAMOUR TRADING xyz	ebastia
## 93	abc TIGE GROUP INTERNATIO xyz	mr
## 94	abc TIVE VENTURES xyz	avvin
## 97	abc UM B xyz	ebastia
## 98	abc UME CENTER OF AMER xyz	mr
## 99	abc UME SOURCE xyz	avvin
## 104	abc acia Internazionale di Ciro Cozzolino & C. S.n xyz	ebastia
## 107	abc akeup S xyz	omm
## 111	abc co xyz	ebastia
## 115	abc i Trading Z xyz	mr
## 118	abc inumnow B xyz	ebastia
## 129	abc ress International s.r xyz	ebastia
## 132	abc saction System Servis, s.r xyz	aku
## 136	abc ty Care Global Sp. xyz	mr

## 137		abc uch of scent PTY xyz ebastia
## 138		abc um Company Sp. z o.o. S.K xyz mr
## 143		abc ums Canada I xyz mr
##	mean_invoice_amount	number_of_invoices
## 2	85399.93	5
## 6	60078.00	2
## 7	15840.00	1
## 8	6393.61	2
## 11	16856.94	1
## 14	14132.63	1
## 18	126000.00	2
## 20	38191.57	2
## 22	20830.00	1
## 29	29502.53	3
## 33	66982.10	14
## 38	18600.00	1
## 42	39615.78	3
## 44	38263.26	1
## 45	32590.00	2
## 50	13923.41	1
## 52	39460.16	1
## 53	12666.00	1
## 64	21568.28	5
## 65	20160.00	1
## 67	12027.95	1
## 68	13254.26	2
## 73	14052.03	1
## 75	36172.96	16
## 76	23431.06	9
## 77	23435.02	2
## 80	37800.00	1
## 83	99803.85	6
## 90	7092.14	2
## 92	12475.91	2
## 93	50622.54	1
## 94	24512.50	2
## 97	28162.75	2
## 98	74778.00	3
## 99	48306.14	2
## 104	58667.70	19
## 107	8553.64	1
## 111	31910.88	1
## 115	49717.69	5
## 118	92987.01	2
## 129	53928.00	1
## 132	7927.86	1
## 136	7863.10	1
## 137	27346.56	1
## 138	27600.00	1
## 143	35056.13	1