UNSW Business School

ASSESSMENT COVER PAGE

Title of Assignment: COMM1190 Assignment 1 Report

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Introduction

MoneySoft Private Limited is a fin-tech start-up that has contracted me as a data analyst to examine factors regarding voluntary super contributions. With super funds lacking in awareness or priority, a shift towards greater awareness can greatly improve the future of Australians (Hoven, 2017) This contract has been assigned to increase voluntary super contributions and user engagement on their app “Roundups”.

To successfully conduct this analysis, three factors impacting voluntary super contribution will be discussed as well as recommendations on optimisation.

Current Position

To formulate a plan of action, the current position of “Roundups” must be analysed. With 1000 customers agreeing to share their data on app usage, an indication of the app’s position can be seen by observing the total voluntary super contributions made by each user.

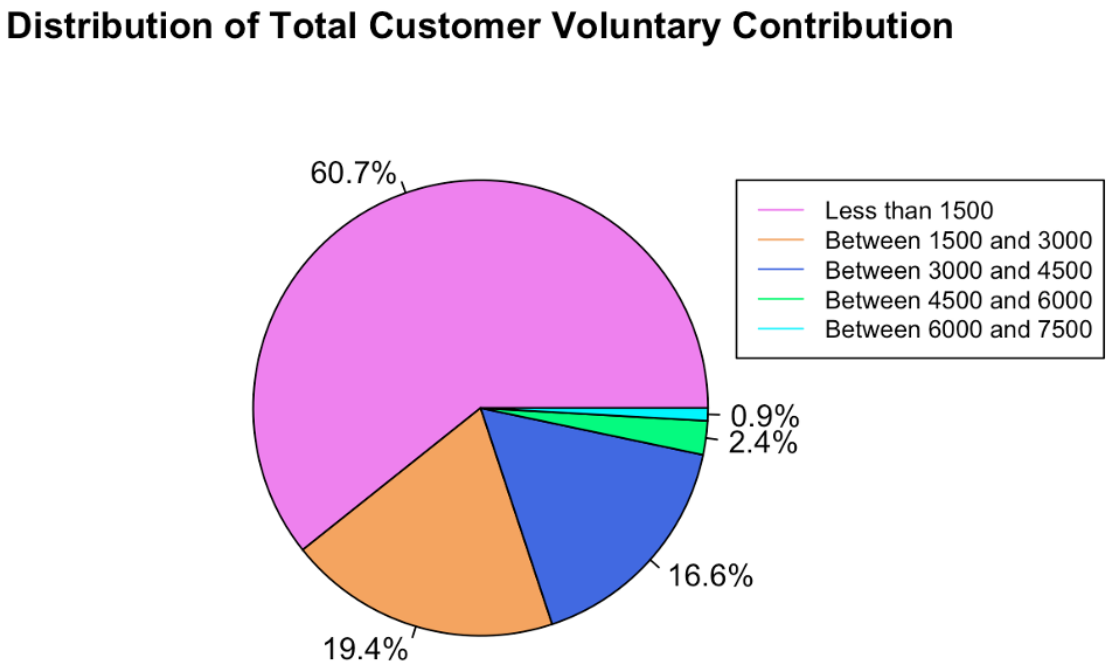

Figure 1: Pie chart showcasing distribution of total voluntary contribution range of users

Figure 1 shows that 60.7% of Roundups’ user base have a total contribution of less than $1500. With only 0.9% of users having a total contribution more than $6000, a shift towards higher contribution is essential.

Factor Analysis

Factor 1: High Trigger amount for Low Earners

The user's monthly income helps in determining their ability to meet their trigger amount and voluntarily contribute money into their super.

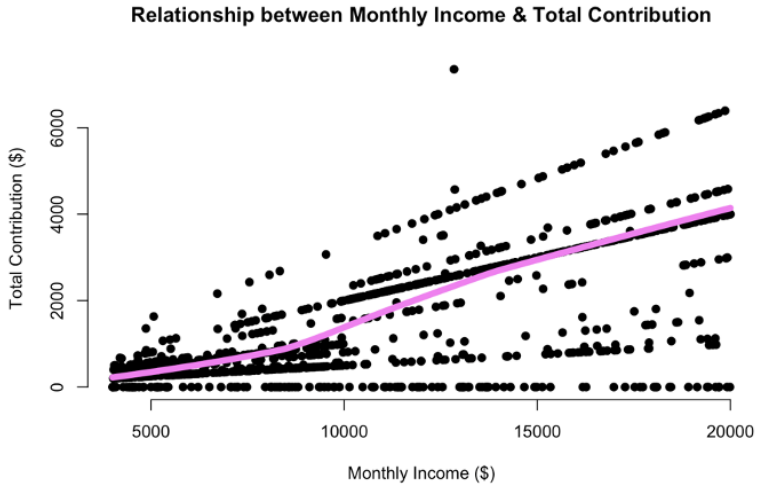

Figure 2: A scatter plot representing the correlation between Monthly income and Total contribution

It is notable in figure 2 that the line of best fit suggests a positive moderate correlation between monthly income and total voluntarily contribution. This suggests that users who are earning more are likely to invest more to super as they have more money to spare (Andrei, 2021).

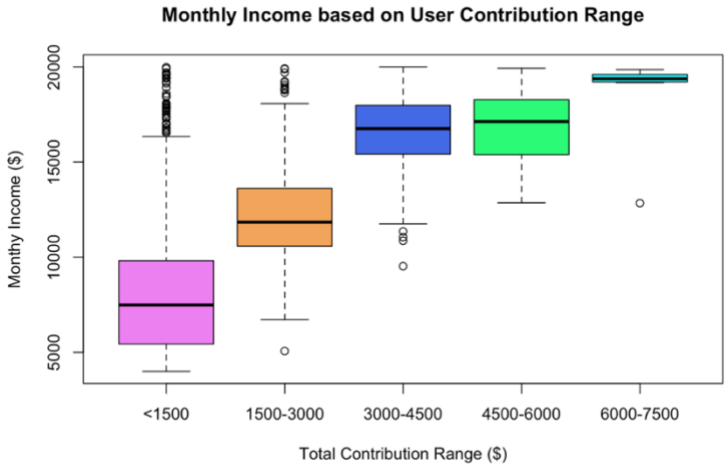

Figure 3: A box plot representing total contribution ranges and the mean income of user

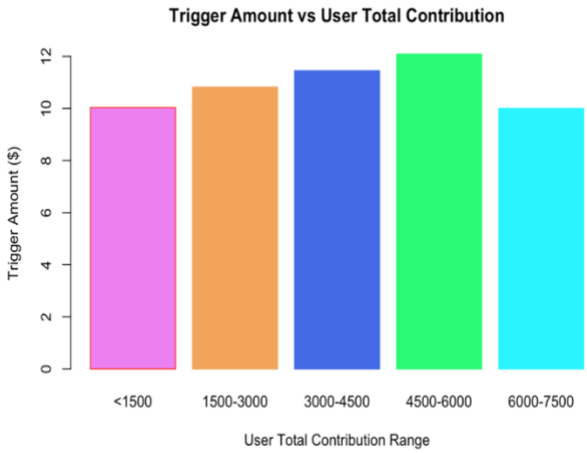

Figure 4: A bar plot highlighting how users with less contributors have a high trigger amount

The negatively skewed relationship illustrated by the box plot in figure 3 describes how users with higher total contributions have higher median monthly income. Although there are clear outliers within <1500 range, the monthly median income sits at $6420.50. This is significantly lower than the median of 6000-7500 range at $19439. In comparison to figure 4, we can observe that all contribution ranges have similar trigger amounts around $10-12. It is evidently concerning that the <1500 group has the same mean trigger amount as the 6000-7500 group.

With low-income individuals having less financial freedom (York, 2022), it is advised to provide suitable trigger amounts to these users to ensure financial stability with monthly income.

Factor 2: Financial Literacy in Younger Users

Financial literacy is an important aspect in ensuring users can understand the value an importance of super funds.

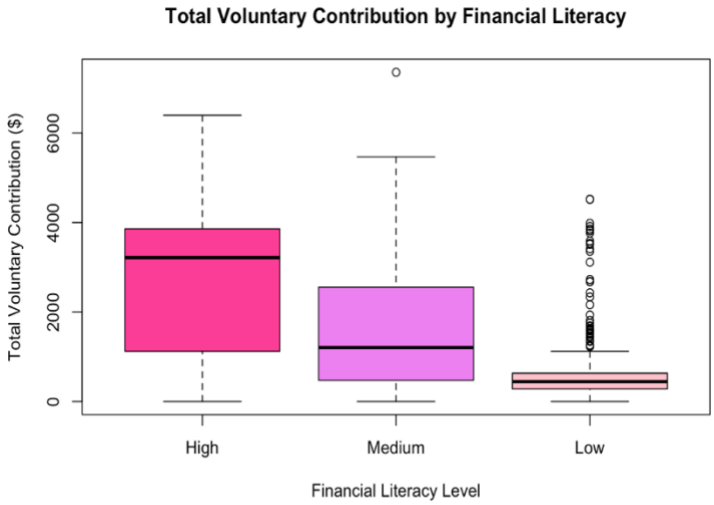

Figure 5: A box plot showcasing relationship between financial literacy and total contribution amount

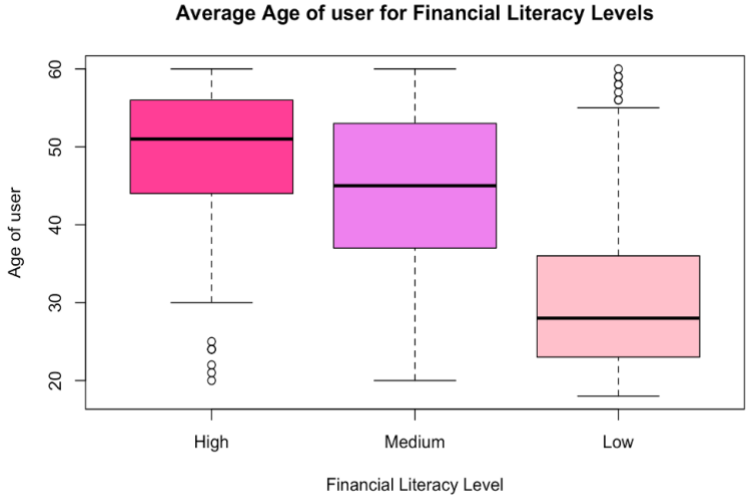

Figure 6: Box plot representing the age of users and financial literacy levels

The box plot in figure 5 highlights the total voluntary contributions in accordance with the user's financial literacy level. Figure 5 being positively skewed showcases how the users with low financial literacy have less contributions. The median total contribution by high financial literacy users was $3215 in comparison to $278 from low financial literacy users. Financial literacy is a key skill which encourages investment in the future (Chu et al., 2016). It is evident from figure 5 that financial literacy is proportional to total contributions.

In comparison, the box plot in figure 6 highlights which age group has the highest and lowest financial literacy. For low financial literacy, quartile 1 and quartile 3 are 22 and 34 respectively. This suggests that ages 22-34 have a lower financial literacy and hence, are more likely to contribute less as inferred from figure 5. Resultingly, it is advised to educate ages 22-34 about the advantages of super.

Factor 3: Contribution ability of Renters

House ownership impacts the ability of users to spend and contribute money to their super. With renters “spending 10 times as much on housing as petrol” (Coates and Moloney, 2022), it is essential to observe the behaviour of users who are renting.

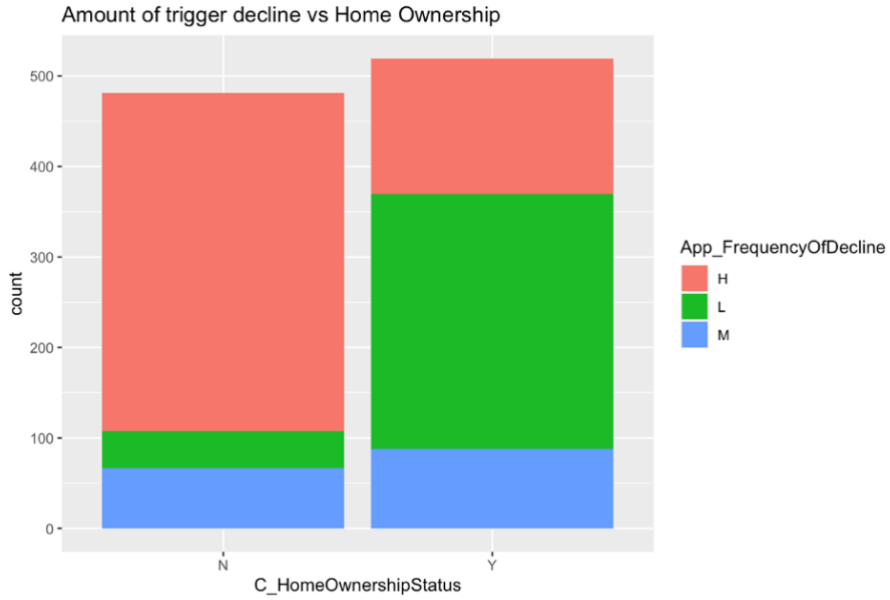

Figure 7: A stacked bar plot representing decline rates of owners and renters

Figure 7 shows a difference between decline rates of homeowners and renters. 77.7% of renters have a high decline rate, which is double that of owners. This decline rate could be the outcome of pressure from high rent expense.

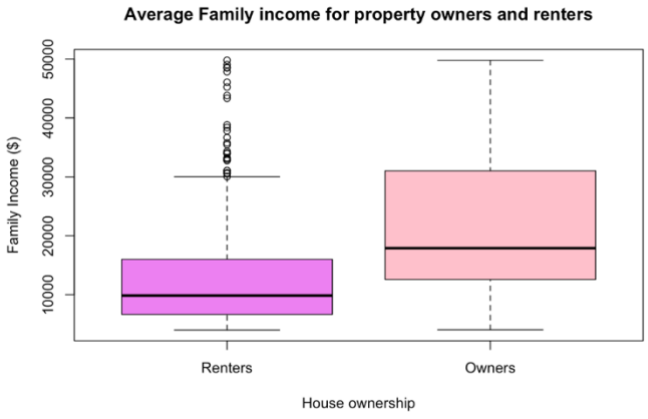

Figure 8: Box plot showing the difference in income of renters and owners

Figure 8 shows renters have a lower median family income than owners. This suggests that renters have a harder time being consistent with their trigger amounts as the rent expense is high and the family income is low. It is advised to lower trigger amounts for these users.

Recommendations

Income greatly impacts an individual's ability to invest (Kisman, 2021). Factor 1 and 3 both suggest the need of appropriating trigger amounts for users with income in the lower quartile. User engagement and voluntary contribution can be maximised by advising a trigger amount appropriate to income. Resultingly, the transactions are taken in small bursts rather than a big amount leaving the user room for financial stability.

Financial literacy is an essential aspect of securing money for retirement (Lusardi, 2009). Factor 2 emphasises the need of raising financial literacy skills within ages 22-34. An approach MoneySoft can take is to provide educational assistance over the app, teaching the basics and importance of super funds.

References

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https://www.researchgate.net/publication/349070760_Investment_Decisions_The_Results_of_Knowledge_Income_and_Self-Control [Accessed 5 Oct. 2022].

Appendix

Figure 1:

```
data <- read.csv("z5360526_z5360526-Assessment1Data.csv")
totalContribution <- data$C_TotalVoluntarySuperContribution
sum_range1 <- sum(totalContribution <= 1500)
sum_range2 <- sum(totalContribution <= 3000) - sum_range1
sum_range3 <- sum(totalContribution <= 4500) - sum_range2 - sum_range1
sum_range4 <- sum(totalContribution <= 6000) - sum_range3 - sum_range2 - sum_range1
sum_range5 <- sum(totalContribution <= 7500) - sum_range4 - sum_range3 - sum_range2 -
sum_range1
sum_range1
sum_range2
sum_range3
sum_range4
sum_range5
count <- c(sum_range1, sum_range2, sum_range3, sum_range4, sum_range5)
pie (count, labels = c("60.7%", "19.4%", "16.6%", "2.4%", "0.9%"), main = "Distribution of
Total Customer Voluntary Contribution", col = c("violet", "sandybrown", "royalblue",
"springgreen", "turquoise1") )
legend(0.9, 0.8, legend=c("Less than 1500", "Between 1500 and 3000", "Between 3000 and
4500", "Between 4500 and 6000", "Between 6000 and 7500"), col=c("violet", "sandybrown",
"royalblue", "springgreen", "turquoise1"), lty = 1, cex = 0.8)
```

Figure 2:

```
data <- read.csv("z5360526_z5360526-Assessment1Data.csv")
data_total <- data[, 16]
data_income <- data[, 5]
plot(data_income, data_total, pch = 19, frame = FALSE, ann = FALSE)
title(xlab = "Monthly Income ($)", ylab = "Total Contribution ($)", main = "Monthly income and
Total Contribution")
lines(lowess(data_income, data_total), col = "purple", lwd = 6)
```

Figure 3

```
data <- read.csv("z5360526_z5360526-Assessment1Data.csv")
range1 <- data[data$C_TotalVoluntarySuperContribution < 1500, ]
range1 <- range1[ ,5]
range2 <- data[data$C_TotalVoluntarySuperContribution >= 1500 &
data$C_TotalVoluntarySuperContribution < 3000, ]
range2 <- range2[ ,5]
range3 <- data[data$C_TotalVoluntarySuperContribution >= 3000 &
data$C_TotalVoluntarySuperContribution < 4500, ]
range3 <- range3[ ,5]
range4 <- data[data$C_TotalVoluntarySuperContribution >= 4500 &
data$C_TotalVoluntarySuperContribution < 6000, ]
range4 <- range4[ ,5]
range5 <- data[data$C_TotalVoluntarySuperContribution >= 6000 &
data$C_TotalVoluntarySuperContribution < 7500, ]
range5 <- range5[ ,5]
boxplot(range1, range2, range3, range4, range5,  main = "Monthly Income based on User
Contribution Range", ylab = "Monthy Income ($)",
```

```
	col=c("violet", "sandybrown", "royalblue", "springgreen", "turquoise1"), border = "Black",
xlab = "Total Contribution Range ($)", names = c("<1500", "1500-3000", "3000-4500", "4500-
6000", "6000-7500")
	)
```

figure 4:

```
data <- read.csv("z5360526_z5360526-Assessment1Data.csv")
range1 <- data[data$C_TotalVoluntarySuperContribution < 1500, ]
range1 <- range1[ ,20]
range1
range2 <- data[data$C_TotalVoluntarySuperContribution >= 1500 &
data$C_TotalVoluntarySuperContribution < 3000, ]
range2 <- range2[ ,20]
range3 <- data[data$C_TotalVoluntarySuperContribution >= 3000 &
data$C_TotalVoluntarySuperContribution < 4500, ]
range3 <- range3[ ,20]
range4 <- data[data$C_TotalVoluntarySuperContribution >= 4500 &
data$C_TotalVoluntarySuperContribution < 6000, ]
range4 <- range4[ ,20]
range5 <- data[data$C_TotalVoluntarySuperContribution >= 6000 &
data$C_TotalVoluntarySuperContribution < 7500, ]
range5 <- range5[ ,20]
range1
range1 <- sum(range1)/NROW(range1)
range2 <-sum(range2)/NROW(range2)
range3 <- sum(range3)/NROW(range3)
range4 <- sum(range4)/NROW(range4)
range5 <- sum(range5)/NROW(range5)
range1
c <- c(range1, range2, range3, range4, range5)
barplot(c, xlab = "User Total Contribution Range", ylab = "Trigger Amount ($)", col =
c("violet", "sandybrown", "royalblue", "springgreen", "turquoise1"), names = c("<1500",
"1500-3000", "3000-4500", "4500-6000", "6000-7500"), border = c("red","sandybrown",
"royalblue", "springgreen", "turquoise1"), main = "Trigger Amount vs User Total
Contribution")
```

figure 5:

```
data <- read.csv("z5360526_z5360526-Assessment1Data.csv")
data <- read.csv("z5360526_z5360526-Assessment1Data.csv")
range2 <- data[data$C_FinancialLiteracy == "H", ]
range2 <- range2[ ,16]
NROW(range2)
median(range2)
range3 <- data[data$C_FinancialLiteracy == "M", ]
range3 <- range3[ ,16]
NROW(range3)
range4 <- data[data$C_FinancialLiteracy == "L", ]
range4 <- range4[ ,16]
NROW(range4)
boxplot(range2, range3, range4,  main = "Total Voluntary Contribution by Financial Literacy",
ylab = "Total Voluntary Contribution ($)",
	col = c("violetred1", "violet", "pink"), border = "Black", xlab = "Financial Literacy Level",
names = c("High", "Medium", "Low"))
```

figure 6:

```
data <- read.csv("z5360526_z5360526-Assessment1Data.csv")
range2 <- data[data$C_FinancialLiteracy == "H", ]
range2 <- range2[ ,2]
NROW(range2)
range3 <- data[data$C_FinancialLiteracy == "M", ]
range3 <- range3[ ,2]
NROW(range3
range4 <- data[data$C_FinancialLiteracy == "L", ]
range4 <- range4[ ,2]
NROW(range4)
boxplot(range2, range3, range4,  main = "Average Age of user for Financial Literacy Levels",
ylab = "Age of user",
      col = c("violetred1", "violet", "pink"), border = "Black", xlab = "Financial Literacy Level",
names = c("High", "Medium", "Low"))
```

Figure 7:

```
data <- read.csv("z5360526_z5360526-Assessment1Data.csv")
library(ggplot2)
library(scales)
library(dplyr)
p1 <- ggplot(data, aes(x = C_HomeOwnershipStatus , fill = App_FrequencyOfDecline))
p1 <- p1 + geom_bar(stat="count")
p1 <- p1 + ggtitle("Amount of trigger decline vs Home Ownership")
p1
```

Figure 8:

```
renters <- data[data$C_HomeOwnershipStatus == "N", ]
NROW(renters)
renters <- data[data$App_FrequencyOfDecline == "H", ]
renters <- renters[ ,6]
avg <- sum(renters)/NROW(renters)
avg
owners <- data[data$C_HomeOwnershipStatus == "Y", ]
owners <- owners[ ,6]
NROW(renters)
avg2 <- sum(owners)/NROW(owners)
avg2
boxplot(renters, owners, names = c("Renters", "Owners"), main = "Average Family income
for property owners and renters", col = c("violet", "pink"), xlab = "House ownership", ylab =
"Family Income ($)")
```