Assignment\_4

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#a. # Read mydata.

mydata <- read.csv("Pharmaceuticals.csv")  
mydata

## Symbol Name Market\_Cap Beta PE\_Ratio ROE ROA  
## 1 ABT Abbott Laboratories 68.44 0.32 24.7 26.4 11.8  
## 2 AGN Allergan, Inc. 7.58 0.41 82.5 12.9 5.5  
## 3 AHM Amersham plc 6.30 0.46 20.7 14.9 7.8  
## 4 AZN AstraZeneca PLC 67.63 0.52 21.5 27.4 15.4  
## 5 AVE Aventis 47.16 0.32 20.1 21.8 7.5  
## 6 BAY Bayer AG 16.90 1.11 27.9 3.9 1.4  
## 7 BMY Bristol-Myers Squibb Company 51.33 0.50 13.9 34.8 15.1  
## 8 CHTT Chattem, Inc 0.41 0.85 26.0 24.1 4.3  
## 9 ELN Elan Corporation, plc 0.78 1.08 3.6 15.1 5.1  
## 10 LLY Eli Lilly and Company 73.84 0.18 27.9 31.0 13.5  
## 11 GSK GlaxoSmithKline plc 122.11 0.35 18.0 62.9 20.3  
## 12 IVX IVAX Corporation 2.60 0.65 19.9 21.4 6.8  
## 13 JNJ Johnson & Johnson 173.93 0.46 28.4 28.6 16.3  
## 14 MRX Medicis Pharmaceutical Corporation 1.20 0.75 28.6 11.2 5.4  
## 15 MRK Merck & Co., Inc. 132.56 0.46 18.9 40.6 15.0  
## 16 NVS Novartis AG 96.65 0.19 21.6 17.9 11.2  
## 17 PFE Pfizer Inc 199.47 0.65 23.6 45.6 19.2  
## 18 PHA Pharmacia Corporation 56.24 0.40 56.5 13.5 5.7  
## 19 SGP Schering-Plough Corporation 34.10 0.51 18.9 22.6 13.3  
## 20 WPI Watson Pharmaceuticals, Inc. 3.26 0.24 18.4 10.2 6.8  
## 21 WYE Wyeth 48.19 0.63 13.1 54.9 13.4  
## Asset\_Turnover Leverage Rev\_Growth Net\_Profit\_Margin Median\_Recommendation  
## 1 0.7 0.42 7.54 16.1 Moderate Buy  
## 2 0.9 0.60 9.16 5.5 Moderate Buy  
## 3 0.9 0.27 7.05 11.2 Strong Buy  
## 4 0.9 0.00 15.00 18.0 Moderate Sell  
## 5 0.6 0.34 26.81 12.9 Moderate Buy  
## 6 0.6 0.00 -3.17 2.6 Hold  
## 7 0.9 0.57 2.70 20.6 Moderate Sell  
## 8 0.6 3.51 6.38 7.5 Moderate Buy  
## 9 0.3 1.07 34.21 13.3 Moderate Sell  
## 10 0.6 0.53 6.21 23.4 Hold  
## 11 1.0 0.34 21.87 21.1 Hold  
## 12 0.6 1.45 13.99 11.0 Hold  
## 13 0.9 0.10 9.37 17.9 Moderate Buy  
## 14 0.3 0.93 30.37 21.3 Moderate Buy  
## 15 1.1 0.28 17.35 14.1 Hold  
## 16 0.5 0.06 -2.69 22.4 Hold  
## 17 0.8 0.16 25.54 25.2 Moderate Buy  
## 18 0.6 0.35 15.00 7.3 Hold  
## 19 0.8 0.00 8.56 17.6 Hold  
## 20 0.5 0.20 29.18 15.1 Moderate Sell  
## 21 0.6 1.12 0.36 25.5 Hold  
## Location Exchange  
## 1 US NYSE  
## 2 CANADA NYSE  
## 3 UK NYSE  
## 4 UK NYSE  
## 5 FRANCE NYSE  
## 6 GERMANY NYSE  
## 7 US NYSE  
## 8 US NASDAQ  
## 9 IRELAND NYSE  
## 10 US NYSE  
## 11 UK NYSE  
## 12 US AMEX  
## 13 US NYSE  
## 14 US NYSE  
## 15 US NYSE  
## 16 SWITZERLAND NYSE  
## 17 US NYSE  
## 18 US NYSE  
## 19 US NYSE  
## 20 US NYSE  
## 21 US NYSE

# a. Set 3 to 11 as numerical variables (1 to 9) and normalize data.

library(tidyverse)

## ── Attaching packages ─────────────────────────────────────── tidyverse 1.3.2 ──  
## ✔ ggplot2 3.3.6 ✔ purrr 0.3.4   
## ✔ tibble 3.1.7 ✔ dplyr 1.0.10  
## ✔ tidyr 1.2.1 ✔ stringr 1.4.0   
## ✔ readr 2.1.2 ✔ forcats 0.5.2   
## ── Conflicts ────────────────────────────────────────── tidyverse\_conflicts() ──  
## ✖ dplyr::filter() masks stats::filter()  
## ✖ dplyr::lag() masks stats::lag()

mydata1 <- scale(mydata[, 3:11])  
mydata1

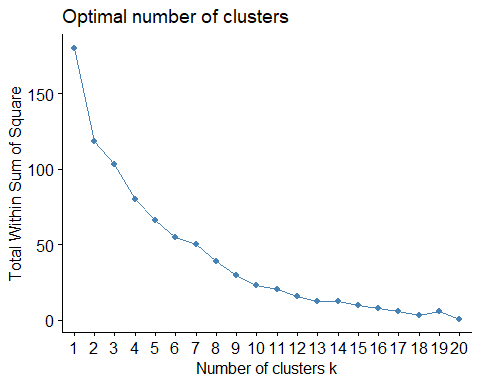
## Market\_Cap Beta PE\_Ratio ROE ROA Asset\_Turnover  
## [1,] 0.1840960 -0.80125356 -0.04671323 0.04009035 0.2416121 0.0000000  
## [2,] -0.8544181 -0.45070513 3.49706911 -0.85483986 -0.9422871 0.9225312  
## [3,] -0.8762600 -0.25595600 -0.29195768 -0.72225761 -0.5100700 0.9225312  
## [4,] 0.1702742 -0.02225704 -0.24290879 0.10638147 0.9181259 0.9225312  
## [5,] -0.1790256 -0.80125356 -0.32874435 -0.26484883 -0.5664461 -0.4612656  
## [6,] -0.6953818 2.27578267 0.14948233 -1.45146000 -1.7127612 -0.4612656  
## [7,] -0.1078688 -0.10015669 -0.70887325 0.59693581 0.8617498 0.9225312  
## [8,] -0.9767669 1.26308721 0.03299122 -0.11237924 -1.1677918 -0.4612656  
## [9,] -0.9704532 2.15893320 -1.34037772 -0.70899938 -1.0174553 -1.8450624  
## [10,] 0.2762415 -1.34655112 0.14948233 0.34502953 0.5610770 -0.4612656  
## [11,] 1.0999201 -0.68440408 -0.45749769 2.45971647 1.8389364 1.3837968  
## [12,] -0.9393967 0.48409069 -0.34100657 -0.29136529 -0.6979905 -0.4612656  
## [13,] 1.9841758 -0.25595600 0.18013789 0.18593083 1.0872544 0.9225312  
## [14,] -0.9632863 0.87358895 0.19240011 -0.96753478 -0.9610792 -1.8450624  
## [15,] 1.2782387 -0.25595600 -0.40231769 0.98142435 0.8429577 1.8450624  
## [16,] 0.6654710 -1.30760129 -0.23677768 -0.52338423 0.1288598 -0.9225312  
## [17,] 2.4199899 0.48409069 -0.11415545 1.31287998 1.6322239 0.4612656  
## [18,] -0.0240846 -0.48965495 1.90298017 -0.81506519 -0.9047030 -0.4612656  
## [19,] -0.4018812 -0.06120687 -0.40231769 -0.21181593 0.5234929 0.4612656  
## [20,] -0.9281345 -1.11285216 -0.43297324 -1.03382590 -0.6979905 -0.9225312  
## [21,] -0.1614497 0.40619104 -0.75792214 1.92938746 0.5422849 -0.4612656  
## Leverage Rev\_Growth Net\_Profit\_Margin  
## [1,] -0.21209793 -0.52776752 0.06168225  
## [2,] 0.01828430 -0.38113909 -1.55366706  
## [3,] -0.40408312 -0.57211809 -0.68503583  
## [4,] -0.74965647 0.14744734 0.35122600  
## [5,] -0.31449003 1.21638667 -0.42597037  
## [6,] -0.74965647 -1.49714434 -1.99560225  
## [7,] -0.02011273 -0.96584257 0.74744375  
## [8,] 3.74279705 -0.63276071 -1.24888417  
## [9,] 0.61983791 1.88617085 -0.36501379  
## [10,] -0.07130879 -0.64814764 1.17413980  
## [11,] -0.31449003 0.76926048 0.82363947  
## [12,] 1.10620040 0.05603085 -0.71551412  
## [13,] -0.62166634 -0.36213170 0.33598685  
## [14,] 0.44065173 1.53860717 0.85411776  
## [15,] -0.39128411 0.36014907 -0.24310064  
## [16,] -0.67286239 -1.45369888 1.02174835  
## [17,] -0.54487226 1.10143723 1.44844440  
## [18,] -0.30169102 0.14744734 -1.27936246  
## [19,] -0.74965647 -0.43544591 0.29026942  
## [20,] -0.49367621 1.43089863 -0.09070919  
## [21,] 0.68383297 -1.17763919 1.49416183  
## attr(,"scaled:center")  
## Market\_Cap Beta PE\_Ratio ROE   
## 57.6514286 0.5257143 25.4619048 25.7952381   
## ROA Asset\_Turnover Leverage Rev\_Growth   
## 10.5142857 0.7000000 0.5857143 13.3709524   
## Net\_Profit\_Margin   
## 15.6952381   
## attr(,"scaled:scale")  
## Market\_Cap Beta PE\_Ratio ROE   
## 58.6029595 0.2567406 16.3102568 15.0849752   
## ROA Asset\_Turnover Leverage Rev\_Growth   
## 5.3213988 0.2167948 0.7813103 11.0483351   
## Net\_Profit\_Margin   
## 6.5620482

# Trying to find the optimal k.

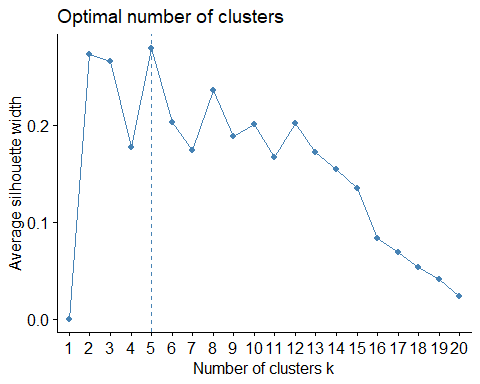
library(factoextra)

## Welcome! Want to learn more? See two factoextra-related books at https://goo.gl/ve3WBa

wss <- fviz\_nbclust(mydata1,kmeans,method="wss",k.max=20)  
wss

 # I find the optimal K=2 by using the wss method.

silhouete <- fviz\_nbclust(mydata1,kmeans,method="silhouette",k.max=20)  
silhouete

 # I find the optimal K=5 with the silhouete method.

# Running the kmeans k=2.

cluster.kmean <- kmeans(mydata1,centers=2,nstart=2)  
cluster.kmean

## K-means clustering with 2 clusters of sizes 11, 10  
##   
## Cluster means:  
## Market\_Cap Beta PE\_Ratio ROE ROA Asset\_Turnover  
## 1 0.6733825 -0.3586419 -0.2763512 0.6565978 0.8344159 0.4612656  
## 2 -0.7407208 0.3945061 0.3039863 -0.7222576 -0.9178575 -0.5073922  
## Leverage Rev\_Growth Net\_Profit\_Margin  
## 1 -0.3331068 -0.2902163 0.6823310  
## 2 0.3664175 0.3192379 -0.7505641  
##   
## Clustering vector:  
## [1] 1 2 2 1 2 2 1 2 2 1 1 2 1 2 1 1 1 2 1 2 1  
##   
## Within cluster sum of squares by cluster:  
## [1] 43.30886 75.26049  
## (between\_SS / total\_SS = 34.1 %)  
##   
## Available components:  
##   
## [1] "cluster" "centers" "totss" "withinss" "tot.withinss"  
## [6] "betweenss" "size" "iter" "ifault"

# Data Transformation

mydata2 <- cbind(mydata,cluster.kmean$cluster)  
colnames(mydata2) <- c("Symbol","Name","Market\_Cap","Beta","PE\_Ratio","ROE",   
 "ROA", "Asset\_Turnover","Leverage", "Rev\_Growth",   
 "Net\_Profit\_Margin", "Median\_Recommendation","Location",  
 "Exchange", "Groups")  
mydata2$Groups <- as.factor(mydata2$Groups)

# Getting a condensed value for each of the attribute in each cluster.

fit <- kmeans(mydata1, 2)  
aggregate(mydata1,by=list(fit$cluster),FUN=mean)

## Group.1 Market\_Cap Beta PE\_Ratio ROE ROA Asset\_Turnover  
## 1 1 0.6733825 -0.3586419 -0.2763512 0.6565978 0.8344159 0.4612656  
## 2 2 -0.7407208 0.3945061 0.3039863 -0.7222576 -0.9178575 -0.5073922  
## Leverage Rev\_Growth Net\_Profit\_Margin  
## 1 -0.3331068 -0.2902163 0.6823310  
## 2 0.3664175 0.3192379 -0.7505641

Cluster\_Number<- data.frame(mydata1, fit$cluster)  
Cluster\_Number

## Market\_Cap Beta PE\_Ratio ROE ROA Asset\_Turnover  
## 1 0.1840960 -0.80125356 -0.04671323 0.04009035 0.2416121 0.0000000  
## 2 -0.8544181 -0.45070513 3.49706911 -0.85483986 -0.9422871 0.9225312  
## 3 -0.8762600 -0.25595600 -0.29195768 -0.72225761 -0.5100700 0.9225312  
## 4 0.1702742 -0.02225704 -0.24290879 0.10638147 0.9181259 0.9225312  
## 5 -0.1790256 -0.80125356 -0.32874435 -0.26484883 -0.5664461 -0.4612656  
## 6 -0.6953818 2.27578267 0.14948233 -1.45146000 -1.7127612 -0.4612656  
## 7 -0.1078688 -0.10015669 -0.70887325 0.59693581 0.8617498 0.9225312  
## 8 -0.9767669 1.26308721 0.03299122 -0.11237924 -1.1677918 -0.4612656  
## 9 -0.9704532 2.15893320 -1.34037772 -0.70899938 -1.0174553 -1.8450624  
## 10 0.2762415 -1.34655112 0.14948233 0.34502953 0.5610770 -0.4612656  
## 11 1.0999201 -0.68440408 -0.45749769 2.45971647 1.8389364 1.3837968  
## 12 -0.9393967 0.48409069 -0.34100657 -0.29136529 -0.6979905 -0.4612656  
## 13 1.9841758 -0.25595600 0.18013789 0.18593083 1.0872544 0.9225312  
## 14 -0.9632863 0.87358895 0.19240011 -0.96753478 -0.9610792 -1.8450624  
## 15 1.2782387 -0.25595600 -0.40231769 0.98142435 0.8429577 1.8450624  
## 16 0.6654710 -1.30760129 -0.23677768 -0.52338423 0.1288598 -0.9225312  
## 17 2.4199899 0.48409069 -0.11415545 1.31287998 1.6322239 0.4612656  
## 18 -0.0240846 -0.48965495 1.90298017 -0.81506519 -0.9047030 -0.4612656  
## 19 -0.4018812 -0.06120687 -0.40231769 -0.21181593 0.5234929 0.4612656  
## 20 -0.9281345 -1.11285216 -0.43297324 -1.03382590 -0.6979905 -0.9225312  
## 21 -0.1614497 0.40619104 -0.75792214 1.92938746 0.5422849 -0.4612656  
## Leverage Rev\_Growth Net\_Profit\_Margin fit.cluster  
## 1 -0.21209793 -0.52776752 0.06168225 1  
## 2 0.01828430 -0.38113909 -1.55366706 2  
## 3 -0.40408312 -0.57211809 -0.68503583 2  
## 4 -0.74965647 0.14744734 0.35122600 1  
## 5 -0.31449003 1.21638667 -0.42597037 2  
## 6 -0.74965647 -1.49714434 -1.99560225 2  
## 7 -0.02011273 -0.96584257 0.74744375 1  
## 8 3.74279705 -0.63276071 -1.24888417 2  
## 9 0.61983791 1.88617085 -0.36501379 2  
## 10 -0.07130879 -0.64814764 1.17413980 1  
## 11 -0.31449003 0.76926048 0.82363947 1  
## 12 1.10620040 0.05603085 -0.71551412 2  
## 13 -0.62166634 -0.36213170 0.33598685 1  
## 14 0.44065173 1.53860717 0.85411776 2  
## 15 -0.39128411 0.36014907 -0.24310064 1  
## 16 -0.67286239 -1.45369888 1.02174835 1  
## 17 -0.54487226 1.10143723 1.44844440 1  
## 18 -0.30169102 0.14744734 -1.27936246 2  
## 19 -0.74965647 -0.43544591 0.29026942 1  
## 20 -0.49367621 1.43089863 -0.09070919 2  
## 21 0.68383297 -1.17763919 1.49416183 1

# I only find two clusters 1 & 2.

# Running the kmeans k=5.

cluster.kmean <- kmeans(mydata1,centers=5,nstart=2)  
cluster.kmean

## K-means clustering with 5 clusters of sizes 5, 3, 4, 7, 2  
##   
## Cluster means:  
## Market\_Cap Beta PE\_Ratio ROE ROA Asset\_Turnover  
## 1 -0.57238455 -0.6220844 0.86927480 -0.7381675 -0.7242993 1.554312e-16  
## 2 -0.87051511 1.3409869 -0.05284434 -0.6184015 -1.1928478 -4.612656e-01  
## 3 1.69558112 -0.1780563 -0.19845823 1.2349879 1.3503431 1.153164e+00  
## 4 0.08926902 -0.4618336 -0.32086149 0.3260892 0.5396003 6.589509e-02  
## 5 -0.96686975 1.5162611 -0.57398880 -0.8382671 -0.9892673 -1.845062e+00  
## Leverage Rev\_Growth Net\_Profit\_Margin  
## 1 -0.2991312 0.3682951 -0.8069490  
## 2 1.3664470 -0.6912914 -1.3200002  
## 3 -0.4680782 0.4671788 0.5912425  
## 4 -0.2559803 -0.7230135 0.7343816  
## 5 0.5302448 1.7123890 0.2445520  
##   
## Clustering vector:  
## [1] 4 1 1 4 1 2 4 2 5 4 3 2 3 5 3 4 3 1 4 1 4  
##   
## Within cluster sum of squares by cluster:  
## [1] 22.069459 15.595925 9.284424 16.655937 2.855389  
## (between\_SS / total\_SS = 63.1 %)  
##   
## Available components:  
##   
## [1] "cluster" "centers" "totss" "withinss" "tot.withinss"  
## [6] "betweenss" "size" "iter" "ifault"

# Data Transformation

mydata2 <- cbind(mydata,cluster.kmean$cluster)  
colnames(mydata2) <- c("Symbol","Name","Market\_Cap","Beta","PE\_Ratio","ROE",   
 "ROA", "Asset\_Turnover","Leverage", "Rev\_Growth",   
 "Net\_Profit\_Margin", "Median\_Recommendation","Location",  
 "Exchange", "Groups")  
mydata2$Groups <- as.factor(mydata2$Groups)

# Getting a condensed value for each of the attribute in each cluster.

fit <- kmeans(mydata1, 5)  
aggregate(mydata1,by=list(fit$cluster),FUN=mean)

## Group.1 Market\_Cap Beta PE\_Ratio ROE ROA  
## 1 1 -0.5723845 -0.6220844 0.8692748 -0.73816748 -0.7242993  
## 2 2 0.1310555 -0.6065044 -0.2480181 0.05887283 0.5391529  
## 3 3 -0.9090570 1.4110965 -0.2613021 -0.70634774 -1.1114156  
## 4 4 1.6955811 -0.1780563 -0.1984582 1.23498791 1.3503431  
## 5 5 -0.1614497 0.4061910 -0.7579221 1.92938746 0.5422849  
## Asset\_Turnover Leverage Rev\_Growth Net\_Profit\_Margin  
## 1 1.776140e-16 -0.2991312 0.3682951 -0.8069490  
## 2 1.537552e-01 -0.4126158 -0.6472425 0.6077516  
## 3 -1.014784e+00 1.0319661 0.2701808 -0.6941793  
## 4 1.153164e+00 -0.4680782 0.4671788 0.5912425  
## 5 -4.612656e-01 0.6838330 -1.1776392 1.4941618

Cluster\_Number<- data.frame(mydata1, fit$cluster)  
Cluster\_Number

## Market\_Cap Beta PE\_Ratio ROE ROA Asset\_Turnover  
## 1 0.1840960 -0.80125356 -0.04671323 0.04009035 0.2416121 0.0000000  
## 2 -0.8544181 -0.45070513 3.49706911 -0.85483986 -0.9422871 0.9225312  
## 3 -0.8762600 -0.25595600 -0.29195768 -0.72225761 -0.5100700 0.9225312  
## 4 0.1702742 -0.02225704 -0.24290879 0.10638147 0.9181259 0.9225312  
## 5 -0.1790256 -0.80125356 -0.32874435 -0.26484883 -0.5664461 -0.4612656  
## 6 -0.6953818 2.27578267 0.14948233 -1.45146000 -1.7127612 -0.4612656  
## 7 -0.1078688 -0.10015669 -0.70887325 0.59693581 0.8617498 0.9225312  
## 8 -0.9767669 1.26308721 0.03299122 -0.11237924 -1.1677918 -0.4612656  
## 9 -0.9704532 2.15893320 -1.34037772 -0.70899938 -1.0174553 -1.8450624  
## 10 0.2762415 -1.34655112 0.14948233 0.34502953 0.5610770 -0.4612656  
## 11 1.0999201 -0.68440408 -0.45749769 2.45971647 1.8389364 1.3837968  
## 12 -0.9393967 0.48409069 -0.34100657 -0.29136529 -0.6979905 -0.4612656  
## 13 1.9841758 -0.25595600 0.18013789 0.18593083 1.0872544 0.9225312  
## 14 -0.9632863 0.87358895 0.19240011 -0.96753478 -0.9610792 -1.8450624  
## 15 1.2782387 -0.25595600 -0.40231769 0.98142435 0.8429577 1.8450624  
## 16 0.6654710 -1.30760129 -0.23677768 -0.52338423 0.1288598 -0.9225312  
## 17 2.4199899 0.48409069 -0.11415545 1.31287998 1.6322239 0.4612656  
## 18 -0.0240846 -0.48965495 1.90298017 -0.81506519 -0.9047030 -0.4612656  
## 19 -0.4018812 -0.06120687 -0.40231769 -0.21181593 0.5234929 0.4612656  
## 20 -0.9281345 -1.11285216 -0.43297324 -1.03382590 -0.6979905 -0.9225312  
## 21 -0.1614497 0.40619104 -0.75792214 1.92938746 0.5422849 -0.4612656  
## Leverage Rev\_Growth Net\_Profit\_Margin fit.cluster  
## 1 -0.21209793 -0.52776752 0.06168225 2  
## 2 0.01828430 -0.38113909 -1.55366706 1  
## 3 -0.40408312 -0.57211809 -0.68503583 1  
## 4 -0.74965647 0.14744734 0.35122600 2  
## 5 -0.31449003 1.21638667 -0.42597037 1  
## 6 -0.74965647 -1.49714434 -1.99560225 3  
## 7 -0.02011273 -0.96584257 0.74744375 2  
## 8 3.74279705 -0.63276071 -1.24888417 3  
## 9 0.61983791 1.88617085 -0.36501379 3  
## 10 -0.07130879 -0.64814764 1.17413980 2  
## 11 -0.31449003 0.76926048 0.82363947 4  
## 12 1.10620040 0.05603085 -0.71551412 3  
## 13 -0.62166634 -0.36213170 0.33598685 4  
## 14 0.44065173 1.53860717 0.85411776 3  
## 15 -0.39128411 0.36014907 -0.24310064 4  
## 16 -0.67286239 -1.45369888 1.02174835 2  
## 17 -0.54487226 1.10143723 1.44844440 4  
## 18 -0.30169102 0.14744734 -1.27936246 1  
## 19 -0.74965647 -0.43544591 0.29026942 2  
## 20 -0.49367621 1.43089863 -0.09070919 1  
## 21 0.68383297 -1.17763919 1.49416183 5

# b.

Cluster 1 2, 3, 5, 18, 20 It has the highest Market capitalization, ROE, ROA, Asset Turnover and lowest leverage. Cluster 2 1, 4, 7, 10, 16, 19 It has the least Beta(risk), high ROE, high ROA, good revenue growth and high Net Profit Margin. Cluster 3 6, 8, 9, 12, 14 It has a low market cap, high Beta(risk), lowest asset turnover, good profit and highest revenue growth. Cluster 4 11, 13, 15, 17 It has the highest Beta, low market cap, low ROE, low ROA, least revenue growth and least net profit margin. Cluster 5 21 It has the highest market cap with high Asset turnover, low Beta(risk) and a greater profit margin.

# c.

Cluster 1- It indicates “advised best-buy” pattern, based on its highest Market capitalization, ROE, ROA, Asset Turnover, and lowest leverage. Cluster 2- It indicates “hold or buy” pattern, due to highest Price earning ratio, strong asset turnover ratio with lowest or negative beta. Cluster 3- It shows “hold” recommendation because of strong Assets turnover ratio, and the company could use their assets efficiently to generate the revenue with highest net profit margin and lowest leverage. Cluster 4 It has no pattern. Cluster 5 It has no pattern.

# d.

Cluster 1 can be named as ’ Advised best-buy investment’, because it has an average asset turnover and average revenue growth. With highest PE Ratio among all the clusters.  
Cluster2 can be named as ‘Advised stable investment’ as it has the least Beta(risk), high ROE, high ROA, good revenue growth and high Net Profit Margin. Cluster 3 can be named as ‘Advised less investment’，as it has a low market cap, high Beta(risk), lowest asset turnover, good profit and highest revenue growth. Cluster 4 can be named as ‘Advised least investment’, for it has the highest Beta, low market cap, low ROE, low ROA, least revenue growth and least net profit margin. Cluster 5 can be named as ‘Advised safest investment’，as it has the highest market cap with high Asset turnover, low Beta(risk) and a profit margin greater than all other clusters.