television-dataset

ilke

2022-08-06

```
library(mice)
library(tidyverse)
library(psych)
library(funModeling)
library(d3Tree)
library(d3Tree)
library(magrittr)
library(DataExplorer)
library(maps)
library(plotly)
library(DT)
library(tidytext)
library(gridExtra)
library(dplyr)
library(factoextra)
library(randomForest)
library(corrplot)
library(plyr)
library(scales)
library(readr)
library(ggthemes)
library(ggplot2)
library(tidyverse)
library(lubridate)
library(funModeling)
library(Hmisc)
library(pls)
library(elasticnet)
library(broom)
library(glmnet)
library(MASS)
library(ISLR)
library(PerformanceAnalytics)
library(funModeling)
library(Matrix)
library(readxl)
library(tidyverse)
library(funModeling)
library(magrittr)
library(DataExplorer)
library(maps)
library(plotly)
library(DT)
library(tidytext)
library(gridExtra)
library(dplyr)
library(naniar)
library(factoextra)
library(randomForest)
library(corrplot)
library(plyr)
library(scales)
library(readr)
library(ggthemes)
library(ggplot2)
library(tidyverse)
library(tidyselect)
```

1.veri aktarımı

```
getwd()
```

```
## [1] "/home/ilke/Documents/github/r"
```

```
setwd("/home/ilke/Downloads")

df<- read.csv("TELEVISION.csv",sep=",",header=TRUE,stringsAsFactors = FALSE)
```

2.veriye ilk bakış

```
colnames(df)
```

```
##  [1] "Product_Name"     "Stars"            "Ratings"          "Reviews"
##  [5] "current_price"    "MRP"              "channel"          "Operating_system"
##  [9] "Picture_qualtiy"  "Speaker"          "Frequency"        "Image_url"
```

```
rownames(df)
```

```
##   [1] "1"   "2"   "3"   "4"   "5"   "6"   "7"   "8"   "9"   "10"  "11"  "12"
##  [13] "13"  "14"  "15"  "16"  "17"  "18"  "19"  "20"  "21"  "22"  "23"  "24"
##  [25] "25"  "26"  "27"  "28"  "29"  "30"  "31"  "32"  "33"  "34"  "35"  "36"
##  [37] "37"  "38"  "39"  "40"  "41"  "42"  "43"  "44"  "45"  "46"  "47"  "48"
##  [49] "49"  "50"  "51"  "52"  "53"  "54"  "55"  "56"  "57"  "58"  "59"  "60"
##  [61] "61"  "62"  "63"  "64"  "65"  "66"  "67"  "68"  "69"  "70"  "71"  "72"
##  [73] "73"  "74"  "75"  "76"  "77"  "78"  "79"  "80"  "81"  "82"  "83"  "84"
##  [85] "85"  "86"  "87"  "88"  "89"  "90"  "91"  "92"  "93"  "94"  "95"  "96"
##  [97] "97"  "98"  "99"  "100" "101" "102" "103" "104" "105" "106" "107" "108"
## [109] "109" "110" "111" "112" "113" "114" "115" "116" "117" "118" "119" "120"
## [121] "121" "122" "123" "124" "125" "126" "127" "128" "129" "130" "131" "132"
## [133] "133" "134" "135" "136" "137" "138" "139" "140" "141" "142" "143" "144"
## [145] "145" "146" "147" "148" "149" "150" "151" "152" "153" "154" "155" "156"
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## [193] "193" "194" "195" "196" "197" "198" "199" "200" "201" "202" "203" "204"
## [205] "205" "206" "207" "208" "209" "210" "211" "212" "213" "214" "215" "216"
## [217] "217" "218" "219" "220" "221" "222" "223" "224" "225" "226" "227" "228"
## [229] "229" "230" "231" "232" "233" "234" "235" "236" "237" "238" "239" "240"
## [241] "241" "242" "243" "244" "245" "246" "247" "248" "249" "250" "251" "252"
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## [289] "289" "290" "291" "292" "293" "294" "295" "296" "297" "298" "299" "300"
## [301] "301" "302" "303" "304" "305" "306" "307" "308" "309" "310" "311" "312"
## [313] "313" "314" "315" "316" "317" "318" "319" "320" "321" "322" "323" "324"
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## [349] "349" "350" "351" "352" "353" "354" "355" "356" "357" "358" "359" "360"
## [361] "361" "362" "363" "364" "365" "366" "367" "368" "369" "370" "371" "372"
## [373] "373" "374" "375" "376" "377" "378" "379" "380" "381" "382" "383" "384"
## [385] "385" "386" "387" "388" "389" "390" "391" "392" "393" "394" "395" "396"
## [397] "397" "398" "399" "400" "401" "402" "403" "404" "405" "406" "407" "408"
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## [421] "421" "422" "423" "424" "425" "426" "427" "428" "429" "430" "431" "432"
## [433] "433" "434" "435" "436" "437" "438" "439" "440" "441" "442" "443" "444"
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## [469] "469" "470" "471" "472" "473" "474" "475" "476" "477" "478" "479" "480"
## [481] "481" "482" "483" "484" "485" "486" "487" "488" "489" "490" "491" "492"
## [493] "493" "494" "495" "496" "497" "498" "499" "500" "501" "502" "503" "504"
## [505] "505" "506" "507" "508" "509" "510" "511" "512" "513" "514" "515" "516"
## [517] "517" "518" "519" "520" "521" "522" "523" "524" "525" "526" "527" "528"
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## [565] "565" "566" "567" "568" "569" "570" "571" "572" "573" "574" "575" "576"
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## [589] "589" "590" "591" "592" "593" "594" "595" "596" "597" "598" "599" "600"
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## [625] "625" "626" "627" "628" "629" "630" "631" "632" "633" "634" "635" "636"
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## [781] "781" "782" "783" "784" "785" "786" "787" "788" "789" "790" "791" "792"
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## [805] "805" "806" "807" "808" "809" "810" "811" "812" "813" "814" "815" "816"
## [817] "817" "818" "819" "820" "821" "822" "823" "824" "825" "826" "827" "828"
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## [841] "841" "842" "843" "844" "845" "846" "847" "848" "849" "850" "851" "852"
## [853] "853" "854" "855" "856" "857" "858" "859" "860" "861" "862" "863" "864"
## [865] "865" "866" "867" "868" "869" "870" "871" "872" "873" "874" "875" "876"
## [877] "877" "878" "879" "880" "881" "882" "883" "884" "885" "886" "887" "888"
```

```
nrow(df)
```

```
## [1] 888
```

```
ncol(df)
```

```
## [1] 12
```

```
head(df)
```

```
##   Product_Name Stars Ratings Reviews current_price    MRP
## 1        Croma   4.2    1773     217         ₹7990 ₹20000
## 2        Adsun   3.8    6742     930         ₹8699 ₹21999
## 3           LG   4.4   38870    3443        ₹16499 ₹21990
## 4      OnePlus   4.3  101256    9189        ₹16499 ₹21999
## 5       Xiaomi   4.3    3120     305        ₹15499 ₹24999
## 6      SAMSUNG   4.4   53639    4811        ₹15999 ₹22900
##                                   channel               Operating_system
## 1                HD Ready 1366 x 768 Pixels               20 Speaker Output
## 2            Netflix|Disney+Hotstar|Youtube Operating System: Android Based
## 3 Netflix|Prime Video|Disney+Hotstar|Youtube         Operating System: WebOS
## 4 Netflix|Prime Video|Disney+Hotstar|Youtube       Operating System: Android
## 5 Netflix|Prime Video|Disney+Hotstar|Youtube       Operating System: Android
## 6            Netflix|Disney+Hotstar|Youtube         Operating System: Tizen
##              Picture_qualtiy             Speaker          Frequency
## 1         60 Hz Refresh Rate  2 x HDMI | 2 x USB    1 Year Warranty
## 2 HD Ready 1366 x 768 Pixels 20 W Speaker Output 60 Hz Refresh Rate
## 3 HD Ready 1366 x 768 Pixels 10 W Speaker Output 50 Hz Refresh Rate
## 4 HD Ready 1366 x 768 Pixels 20 W Speaker Output 60 Hz Refresh Rate
## 5 HD Ready 1366 x 768 Pixels 20 W Speaker Output 60 Hz Refresh Rate
## 6 HD Ready 1366 x 768 Pixels 20 W Speaker Output 60 Hz Refresh Rate
##
Image_url
## 1          https://rukminim1.flixcart.com/image/312/312/ku1k4280/television/p/f/6/crel7369-croma-original-imag
7969pxhrwp2k.jpeg?q=70
## 2           https://rukminim1.flixcart.com/image/312/312/krntoy80/television/u/d/y/a-3200s-adsun-original-imag
5edguuyn54fh.jpeg?q=70
## 3                        https://rukminim1.flixcart.com/image/312/312/l0fm07k0/television/7/x/9/-original-imag
c8fnpx39evgc.jpeg?q=70
## 4 https://rukminim1.flixcart.com/image/312/312/kzfvzww0/television/e/b/b/32hd2a00-32-y1s-oneplus-original-imag
bgcewfqywgk7.jpeg?q=70
## 5           https://rukminim1.flixcart.com/image/312/312/l2ghgnk0/television/u/a/c/l32m7-5ain-mi-original-imag
dsdwqf6bkmkz.jpeg?q=70
## 6  https://rukminim1.flixcart.com/image/312/312/kbs9k7k0/television/c/j/3/samsung-ua32t4340akxxl-original-imaf
t25qdysfsq7k.jpeg?q=70
```

```
str(df)
```

```
## 'data.frame':    888 obs. of  12 variables:
##  $ Product_Name    : chr  "Croma" "Adsun" "LG" "OnePlus" ...
##  $ Stars           : chr  "4.2" "3.8" "4.4" "4.3" ...
##  $ Ratings         : int  1773 6742 38870 101256 3120 53639 101256 0 5830 101256 ...
##  $ Reviews         : int  217 930 3443 9189 305 4811 9189 0 698 9189 ...
##  $ current_price   : chr  "₹7990" "₹8699" "₹16499" "₹16499" ...
##  $ MRP             : chr  "₹20000" "₹21999" "₹21990" "₹21999" ...
##  $ channel         : chr  "HD Ready 1366 x 768 Pixels" "Netflix|Disney+Hotstar|Youtube" "Netflix|Prime Video|D
isney+Hotstar|Youtube" "Netflix|Prime Video|Disney+Hotstar|Youtube" ...
##  $ Operating_system: chr  "20 Speaker Output" "Operating System: Android Based" "Operating System: WebOS" "Ope
rating System: Android" ...
##  $ Picture_qualtiy : chr  "60 Hz Refresh Rate" "HD Ready 1366 x 768 Pixels" "HD Ready 1366 x 768 Pixels" "HD R
eady 1366 x 768 Pixels" ...
##  $ Speaker         : chr  "2 x HDMI | 2 x USB" "20 W Speaker Output" "10 W Speaker Output" "20 W Speaker Outpu
t" ...
##  $ Frequency       : chr  "1 Year Warranty" "60 Hz Refresh Rate" "50 Hz Refresh Rate" "60 Hz Refresh Rate" ...
##  $ Image_url       : chr  "https://rukminim1.flixcart.com/image/312/312/ku1k4280/television/p/f/6/crel7369-cro
ma-original-imag7969pxhrwp2k.jpeg?q=70" "https://rukminim1.flixcart.com/image/312/312/krntoy80/television/u/d/y/a
-3200s-adsun-original-imag5edguuyn54fh.jpeg?q=70" "https://rukminim1.flixcart.com/image/312/312/l0fm07k0/televisi
on/7/x/9/-original-imagc8fnpx39evgc.jpeg?q=70" "https://rukminim1.flixcart.com/image/312/312/kzfvzww0/television/
e/b/b/32hd2a00-32-y1s-oneplus-original-imagbgc"| __truncated__ ...
```

```
glimpse(df)  #veri seti genel yapı hakkında bilgi
```

```
## Rows: 888
## Columns: 12
## $ Product_Name     <chr> "Croma", "Adsun", "LG", "OnePlus", "Xiaomi", "SAMSUNG…
## $ Stars            <chr> "4.2", "3.8", "4.4", "4.3", "4.3", "4.4", "4.3", "4.2…
## $ Ratings          <int> 1773, 6742, 38870, 101256, 3120, 53639, 101256, 0, 58…
## $ Reviews          <int> 217, 930, 3443, 9189, 305, 4811, 9189, 0, 698, 9189, …
## $ current_price    <chr> "₹7990", "₹8699", "₹16499", "₹16499", "₹15499", "₹159…
## $ MRP              <chr> "₹20000", "₹21999", "₹21990", "₹21999", "₹24999", "₹2…
## $ channel          <chr> "HD Ready 1366 x 768 Pixels", "Netflix|Disney+Hotstar…
## $ Operating_system <chr> "20 Speaker Output", "Operating System: Android Based…
## $ Picture_qualtiy  <chr> "60 Hz Refresh Rate", "HD Ready 1366 x 768 Pixels", "…
## $ Speaker          <chr> "2 x HDMI | 2 x USB", "20 W Speaker Output", "10 W Sp…
## $ Frequency        <chr> "1 Year Warranty", "60 Hz Refresh Rate", "50 Hz Refre…
## $ Image_url        <chr> "https://rukminim1.flixcart.com/image/312/312/ku1k428…
```

```
psych::headTail(df)  #ilk 4 son 4 gözlem
```

```
##     Product_Name Stars Ratings Reviews current_price    MRP
## 1          Croma   4.2    1773     217         ₹7990 ₹20000
## 2          Adsun   3.8    6742     930         ₹8699 ₹21999
## 3             LG   4.4   38870    3443        ₹16499 ₹21990
## 4        OnePlus   4.3  101256    9189        ₹16499 ₹21999
## ...         <NA>  <NA>     ...     ...          <NA>   <NA>
## 885        Croma     0       0       0         ₹9194 ₹20000
## 886     T-Series     0       0       0        ₹26999 ₹33990
## 887        Adsun   3.8    6742     930         ₹6199 ₹12999
## 888         SONY   4.4       0       0        ₹52949 ₹72990
##                                             channel
## 1                           HD Ready 1366 x 768 Pixels
## 2                       Netflix|Disney+Hotstar|Youtube
## 3            Netflix|Prime Video|Disney+Hotstar|Youtube
## 4            Netflix|Prime Video|Disney+Hotstar|Youtube
## ...                                              <NA>
## 885                         HD Ready 1366 x 786 Pixels
## 886 Netflix|Prime Video|Apple TV|Disney+Hotstar|Youtube
## 887                         HD Ready 1366 x 768 Pixels
## 888             Ultra HD (4K) 3840 x 2160 pixels Pixels
##                    Operating_system            Picture_qualtiy
## 1                 20 Speaker Output         60 Hz Refresh Rate
## 2   Operating System: Android Based HD Ready 1366 x 768 Pixels
## 3           Operating System: WebOS HD Ready 1366 x 768 Pixels
## 4         Operating System: Android HD Ready 1366 x 768 Pixels
## ...                            <NA>                       <NA>
## 885               20 Speaker Output         60 Hz Refresh Rate
## 886      Full HD 1920 x 1080 Pixels          16 Speaker Output
## 887             20 W Speaker Output         60 Hz Refresh Rate
## 888        10W + 10W Speaker Output         50 Hz Refresh Rate
##                Speaker          Frequency
## 1    2 x HDMI | 2 x USB    1 Year Warranty
## 2   20 W Speaker Output 60 Hz Refresh Rate
## 3   10 W Speaker Output 50 Hz Refresh Rate
## 4   20 W Speaker Output 60 Hz Refresh Rate
## ...                <NA>               <NA>
## 885  2 x HDMI | 2 x USB   3 Years Warranty
## 886  50 Hz Refresh Rate 2 x HDMI | 2 x USB
## 887  1 x HDMI | 2 x USB           A+ Grade
## 888  2 x HDMI | 2 x USB             1 YEAR
##
Image_url
## 1                                                  https://rukminim1.flixcart.com/image/312/312/ku1k4280/tele
vision/p/f/6/crel7369-croma-original-imag7969pxhrwp2k.jpeg?q=70
## 2                                                   https://rukminim1.flixcart.com/image/312/312/krntoy80/tel
evision/u/d/y/a-3200s-adsun-original-imag5edguuyn54fh.jpeg?q=70
## 3                                                                        https://rukminim1.flixcart.com/image/312/312
/l0fm07k0/television/7/x/9/-original-imagc8fnpx39evgc.jpeg?q=70
## 4                                             https://rukminim1.flixcart.com/image/312/312/kzfvzww0/television/e/
b/b/32hd2a00-32-y1s-oneplus-original-imagbgcewfqywgk7.jpeg?q=70
## ...
<NA>
## 885                                               https://rukminim1.flixcart.com/image/312/312/ku8pbbk0/televisi
on/d/i/p/crel7369-3yr-croma-original-imag7escqzvf4g5e.jpeg?q=70
## 886 https://rukminim1.flixcart.com/image/312/312/kz4gh3k0/television/p/v/8/t-series-smart-43-movie-plus-bezel-
less-43-inch-109-cm-full-hd-original-imagb7e74mgzweb3.jpeg?q=70
## 887                                                   https://rukminim1.flixcart.com/image/312/312/krntoy80/tel
evision/h/i/m/a-2400n-adsun-original-imag5ecpqjfzews3.jpeg?q=70
## 888                                                 https://rukminim1.flixcart.com/image/312/312/kfvfwy80/televi
sion/g/m/7/sony-kd-43x8000h-original-imafw8d6evas4yxh.jpeg?q=70
```

```
summary(df)
```

```
##  Product_Name          Stars              Ratings          Reviews
##  Length:888         Length:888         Min.   :     0   Min.   :    0.0
##  Class :character   Class :character   1st Qu.:     0   1st Qu.:    0.0
##  Mode  :character   Mode  :character   Median :     0   Median :    0.0
##                                        Mean   :  5661   Mean   :  771.8
##                                        3rd Qu.:  6698   3rd Qu.:  904.0
##                                        Max.   :663035   Max.   :67204.0
##                                        NA's   :3        NA's   :3
##  current_price          MRP              channel          Operating_system
##  Length:888         Length:888         Length:888         Length:888
##  Class :character   Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character   Mode  :character
##
##
##
##
##  Picture_qualtiy      Speaker           Frequency          Image_url
##  Length:888         Length:888         Length:888         Length:888
##  Class :character   Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character   Mode  :character
##
##
##
##
```

```
class(df$Stars)
```

```
## [1] "character"
```

3. veri ön işleme/ temizleme

İlgilenmeyeceğim sütunlar veri setinden silindi.

```
df$Image_url <- NULL

df$Frequency <- NULL

df$curr <- NULL
```

```
df$current_price<- str_replace(df$current_price, "[₹]", "")

df$MRP<- str_replace(df$MRP, "[₹]", "")
```

uygun değişken tiplerine dönüştürüldü.

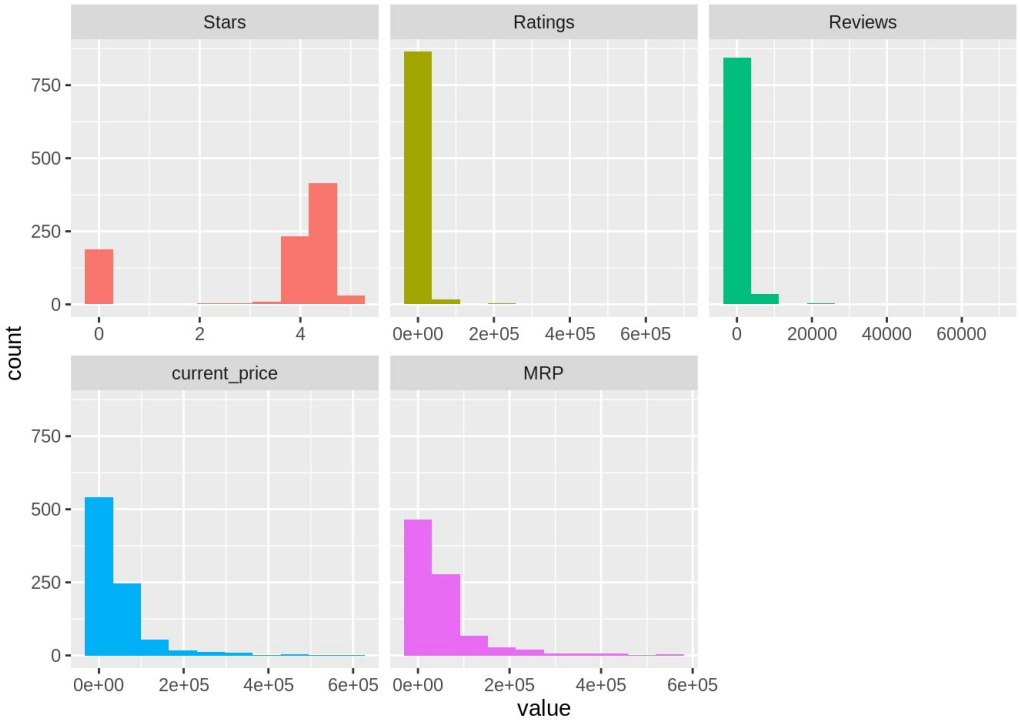
```
df$Ratings <- as.integer(df$Ratings)

df$Reviews <- as.integer(df$Reviews)

df$current_price <- as.numeric(df$current_price)

df$MRP <- as.integer(df$MRP)

df$Stars <- as.numeric(df$Stars)
```

```
## Warning: NAs introduced by coercion
```

```
df$Product_Name <- as.factor(df$Product_Name)


glimpse(df)
```

```
## Rows: 888
## Columns: 10
## $ Product_Name     <fct> Croma, Adsun, LG, OnePlus, Xiaomi, SAMSUNG, OnePlus, …
## $ Stars            <dbl> 4.2, 3.8, 4.4, 4.3, 4.3, 4.4, 4.3, 4.2, 4.4, 4.3, 4.4…
## $ Ratings          <int> 1773, 6742, 38870, 101256, 3120, 53639, 101256, 0, 58…
## $ Reviews          <int> 217, 930, 3443, 9189, 305, 4811, 9189, 0, 698, 9189, …
## $ current_price    <dbl> 7990, 8699, 16499, 16499, 15499, 15999, 15499, 11990,…
## $ MRP              <int> 20000, 21999, 21990, 21999, 24999, 22900, 19999, 2500…
## $ channel          <chr> "HD Ready 1366 x 768 Pixels", "Netflix|Disney+Hotstar…
## $ Operating_system <chr> "20 Speaker Output", "Operating System: Android Based…
## $ Picture_qualtiy  <chr> "60 Hz Refresh Rate", "HD Ready 1366 x 768 Pixels", "…
## $ Speaker          <chr> "2 x HDMI | 2 x USB", "20 W Speaker Output", "10 W Sp…
```

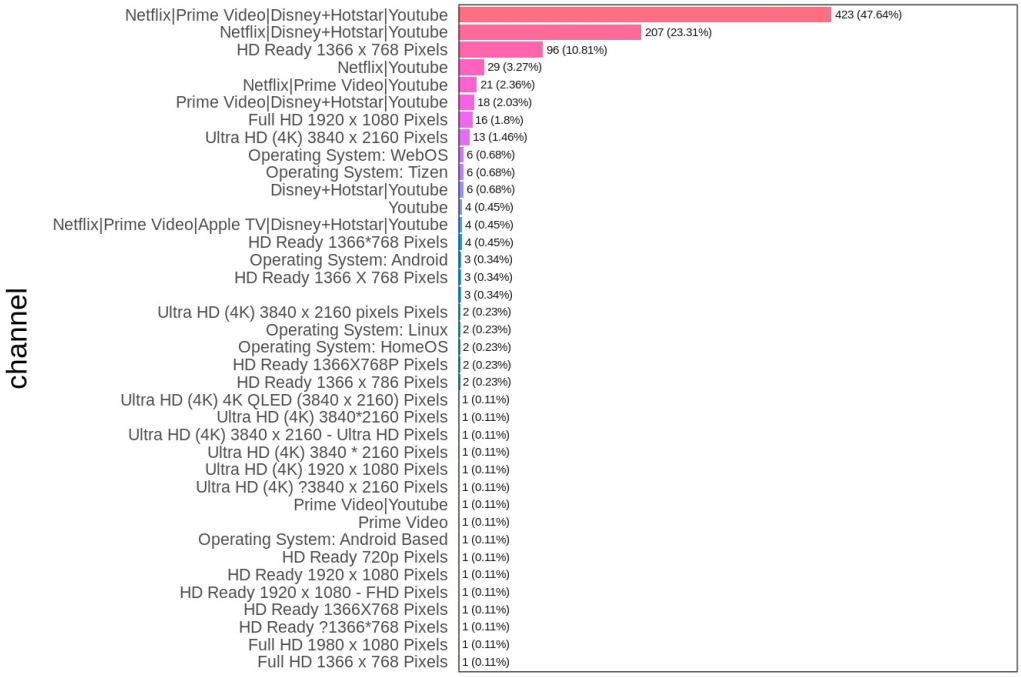
```
library(funModeling)
profiling_num(df)   #sürekli değişkenlerin özet bazı istatistiklerini verir
plot_num(df)  #genel histogram
```

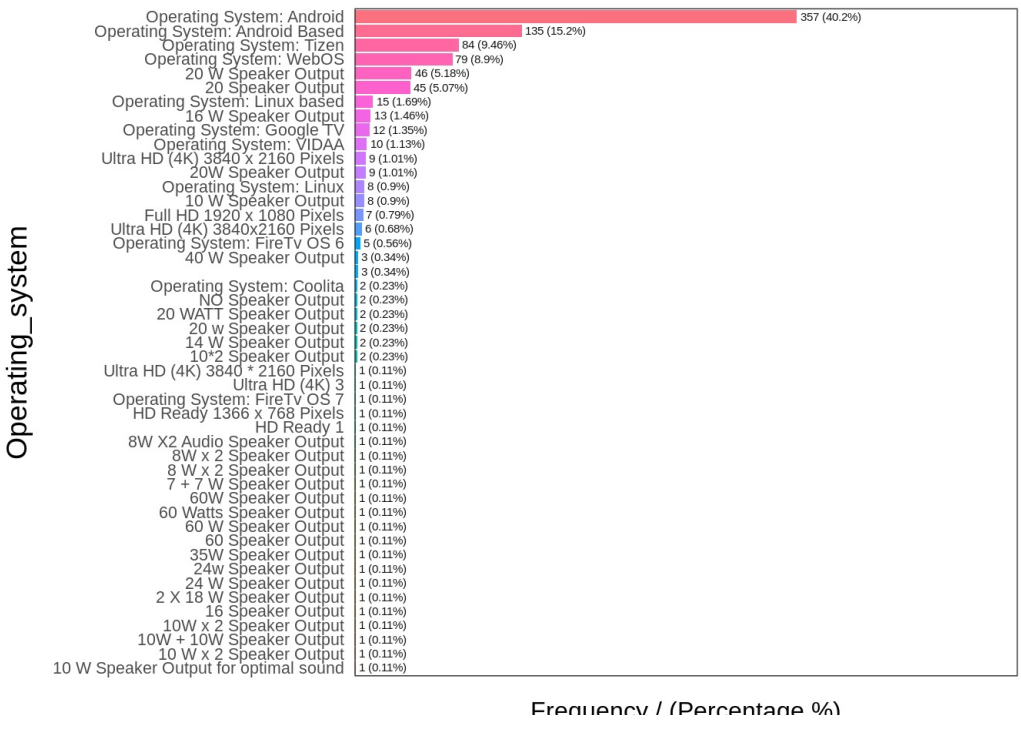


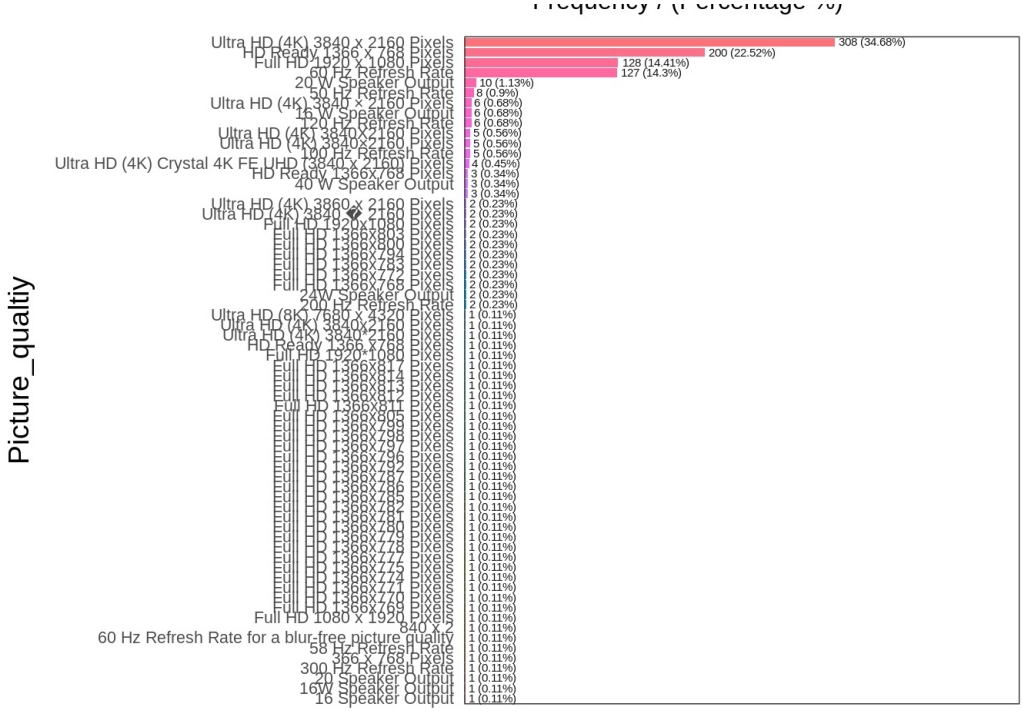

```
freq(df)      #detaylı data frame,grafikler verir
```

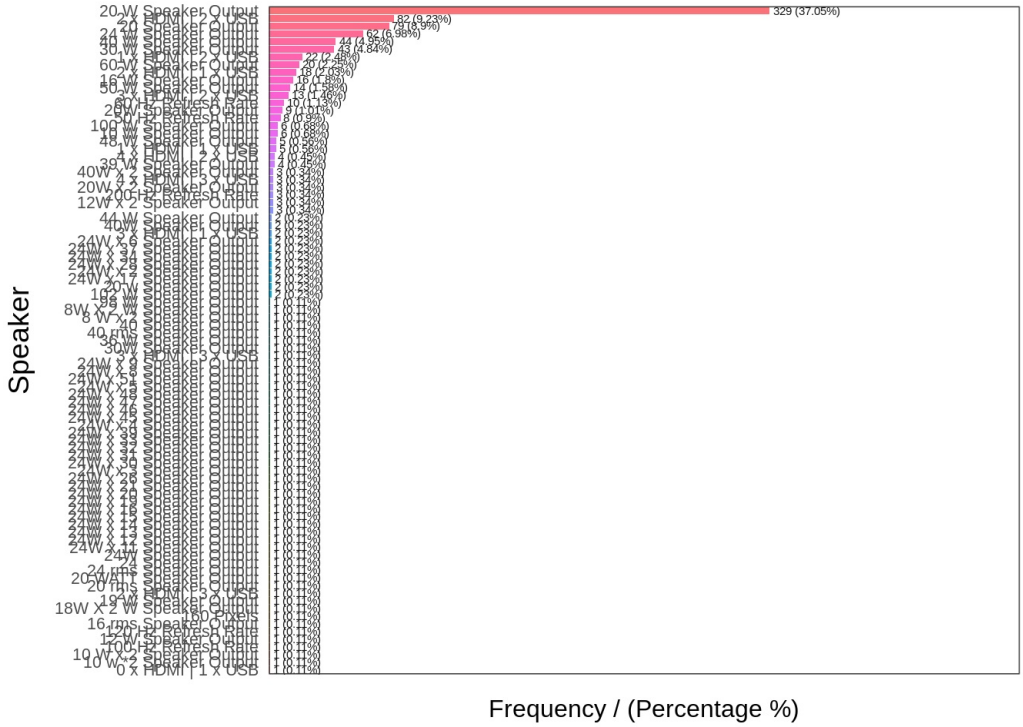
https://rukminim1.flixcart.com/image/312/312/television/e/s/r/micromax-40-canvas-s-original-imaerywuznsqc7pk.jpeg?
https://rukminim1.flixcart.com/image/312/312/kwpam4w0/television/z/o/q/ua32t4450-ua32t4450-samsung-original-imag9bht3khyggpu.jpeg?
4 x HDMI | 3 x

Frequency










```
df[df==""] <- NA

#eksik gözlem tespit için boş gözlemlere NA eklendi.
```

eksik verilerin yapısını inceleme

ho: eksik veriler rastgele dağılmıştır. h1: eksik veriler rastgele dağılmamıştır.

```
test<- mcar_test(df)
test
```

```
## # A tibble: 1 × 4
##   statistic    df p.value missing.patterns
##       <dbl> <dbl>   <dbl>            <int>
## 1      2.73     1  0.0987                2
```

```
#p.value<0.5 ho kabul edilemez.
# sonuç: %5 anlamlılık düzeyinde eksik veriler rastgele dağılmamıştır.
```

```
#testin sonucunun doğruluğunu anlayabilmek ve çözüm bulabilmek için aşağıdaki adımlar izlendi.

sum(is.na(df))       #toplam
```

```
## [1] 27
```

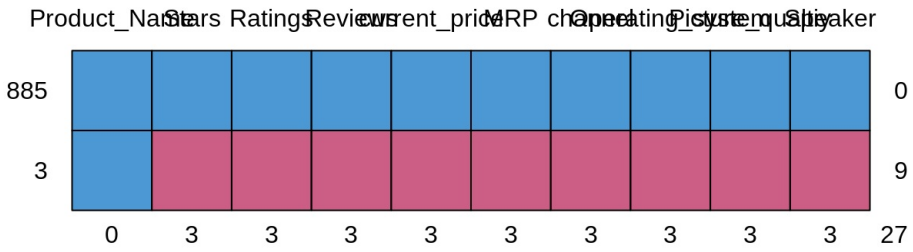
```
colSums(is.na(df))
```

```
##     Product_Name            Stars          Ratings          Reviews
##                0                3                3                3
##    current_price              MRP          channel Operating_system
##                3                3                3                3
##  Picture_qualtiy          Speaker
##                3                3
```

```
which(is.na(df))
```

```
##  [1] 1164 1255 1485 2052 2143 2373 2940 3031 3261 3828 3919 4149 4716 4807 5037
## [16] 5604 5695 5925 6492 6583 6813 7380 7471 7701 8268 8359 8589
```

```
#eksik veriler azdır.

md.pattern(df) #eksikliklerin aynı satırlarda olduğunu gördük. (rastgele değil) (bazı ürünler için verilerin eksi
klikten ziyade yokluk olduğunu görüyoruz.)
```




```
##     Product_Name Stars Ratings Reviews current_price MRP channel
## 885            1     1       1       1             1   1       1
## 3              1     0       0       0             0   0       0
##                0     3       3       3             3   3       3
##     Operating_system Picture_qualtiy Speaker
## 885                1               1       1  0
## 3                  0               0       0  9
##                    3               3       3 27
```

```
df[!complete.cases(df), ] #en az bir tane eksik olanlari dondurerek eksik satırları tespit ettikç veri setinden s
ilerek eksik gözlem sorununu ortadan kaldırabiliriz.
```

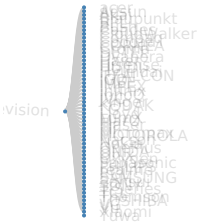
```
##
Product_Name
## 276
4 x HDMI | 3 x USB
## 367 https://rukminim1.flixcart.com/image/312/312/kwpam4w0/television/z/o/q/ua32t4450-ua32t4450-samsung-origina
l-imag9bhf3khyggpu.jpeg?q=70
## 597                 https://rukminim1.flixcart.com/image/312/312/television/e/s/r/micromax-40-canvas-s-origina
l-imaerywuznsqc7pk.jpeg?q=70
##     Stars Ratings Reviews current_price MRP channel Operating_system
## 276    NA      NA      NA            NA  NA    <NA>             <NA>
## 367    NA      NA      NA            NA  NA    <NA>             <NA>
## 597    NA      NA      NA            NA  NA    <NA>             <NA>
##     Picture_qualtiy Speaker
## 276            <NA>    <NA>
## 367            <NA>    <NA>
## 597            <NA>    <NA>
```

eksik veri silme

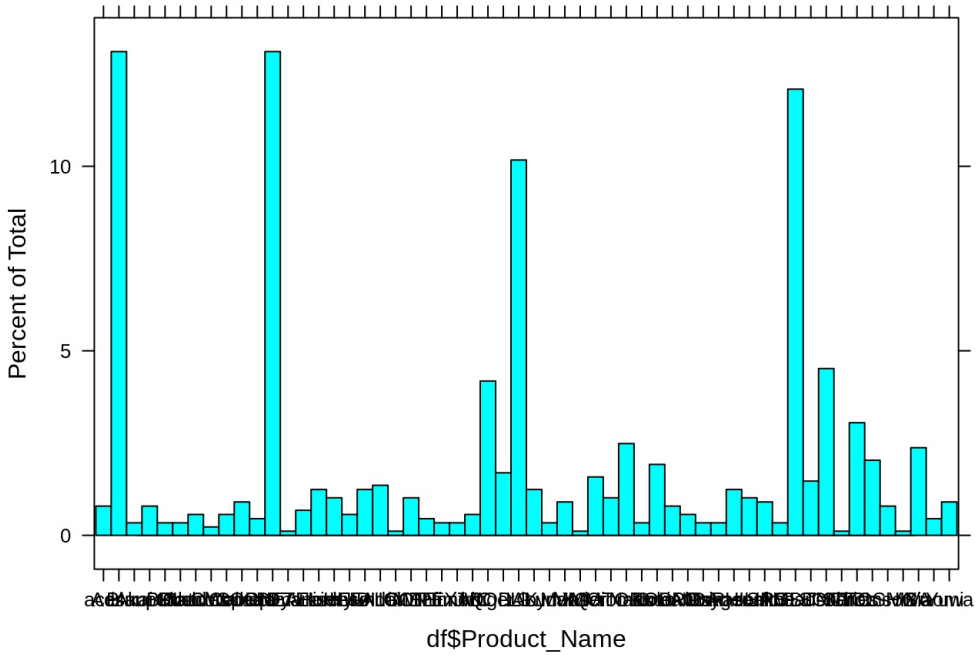
```
df=na.omit(df)
```

veriyi daha iyi anlayabilmek

```
d3tree(list(root = df2tree(rootname ='television',
                           struct = as.data.frame(df)),
                           layout = 'collapse'))
```



```
histogram(df$Product_Name)
```

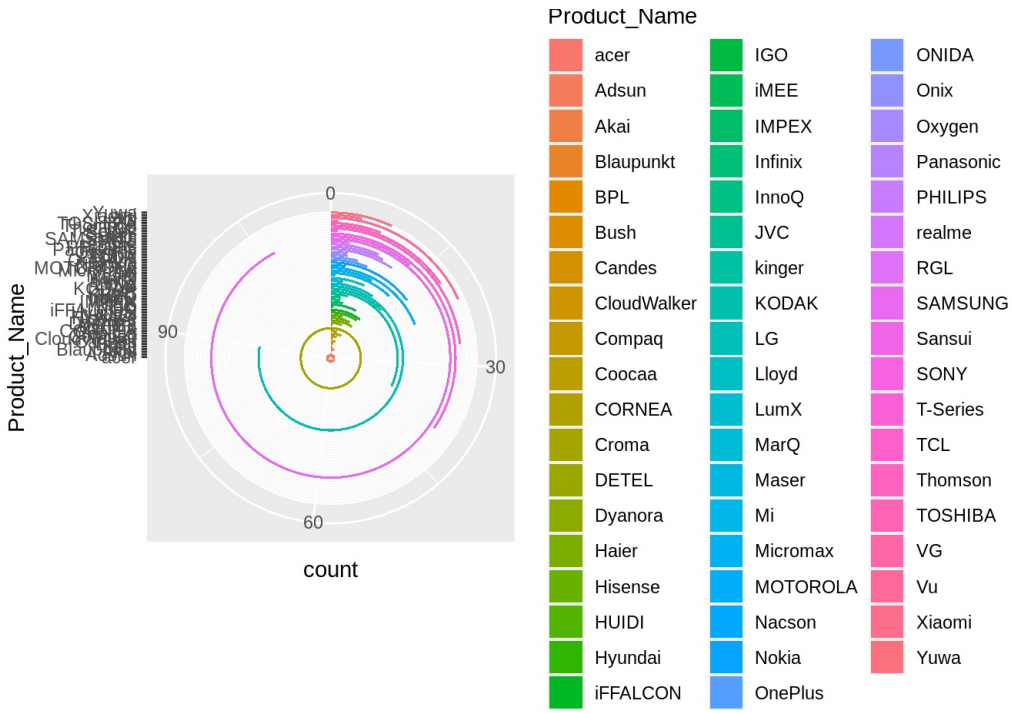



```
markaadedi<- df %>% group_by(Product_Name) %>% tally() %>% arrange(n, decreasing=T)

markaadedi
```

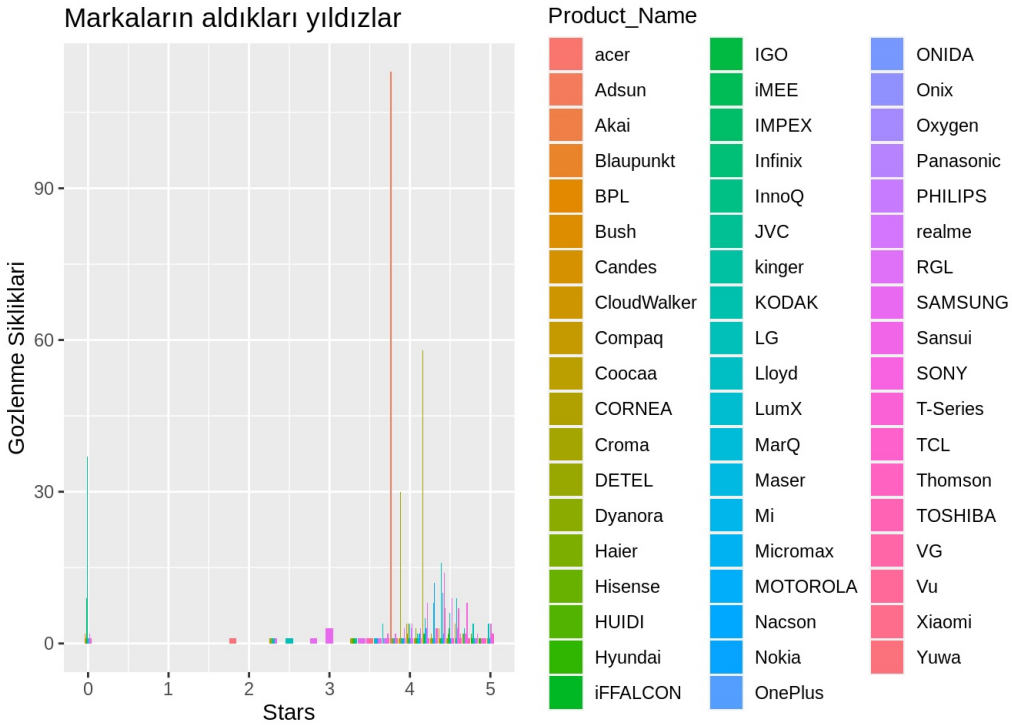
```
## # A tibble: 56 × 2
##    Product_Name     n
##    <fct>        <int>
##  1 Adsun          116
##  2 Croma          116
##  3 SAMSUNG        107
##  4 LG              90
##  5 SONY            40
##  6 kinger          37
##  7 TCL             27
##  8 MOTOROLA        22
##  9 Vu              21
## 10 Thomson         18
## # … with 46 more rows
## # ℹ Use `print(n = ...)` to see more rows
```

```
#en fazla 3 ürün ADSUN,CROMA ve Samsung markasına aittir.
```

```
ggplot(df,aes(Product_Name, fill=Product_Name))+
  geom_bar()+
  coord_polar(theta = "y")
```

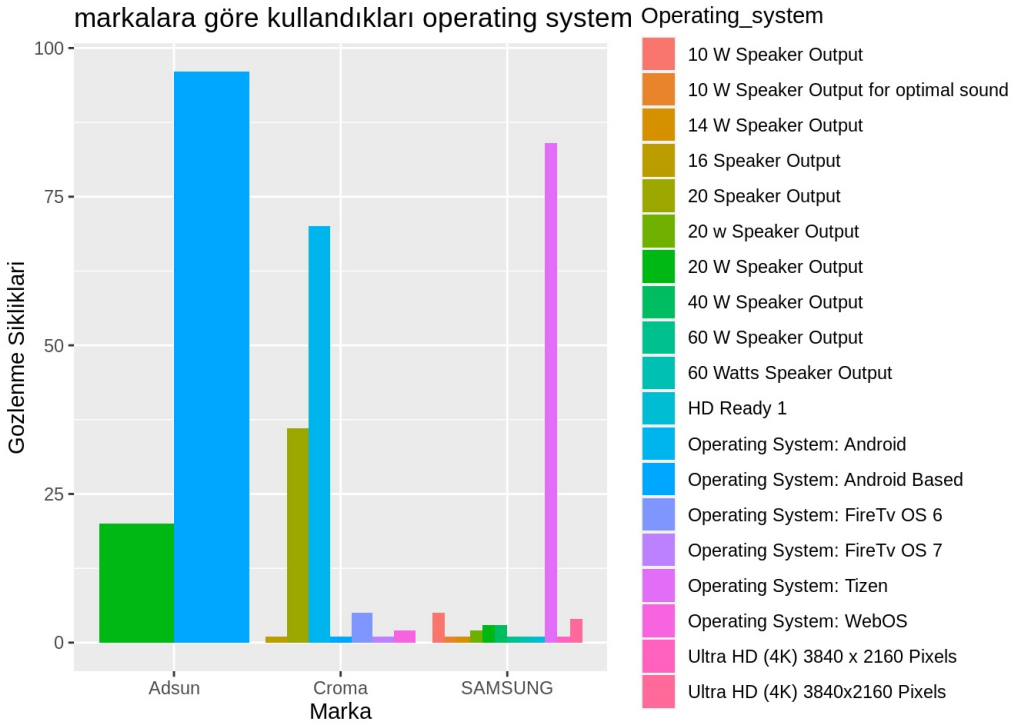



```
ggplot(df, aes(Stars, fill = Product_Name)) +
  geom_bar(position = position_dodge()) +
  ggtitle("Markaların aldıkları yıldızlar") +
  xlab("Stars") +
  ylab("Gozlenme Sikliklari")
```




```
#en çok ürünü olan 3 marka
df3<- df %>%
  filter(Product_Name == "Adsun" |
         Product_Name == "Croma" |
         Product_Name == "SAMSUNG")
```

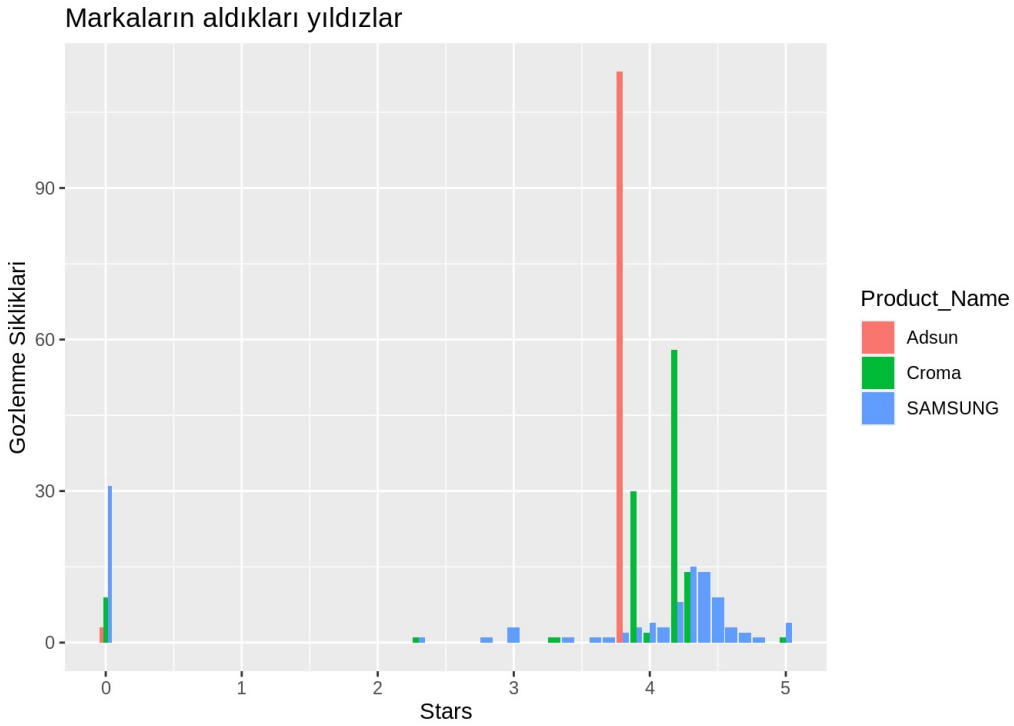
```
ggplot(df3, aes(Product_Name, fill = Operating_system)) +
  geom_bar(position = position_dodge()) +
  ggtitle("markalara göre kullandıkları operating system") +
  xlab("Marka") +
  ylab("Gozlenme Sikliklari")
```



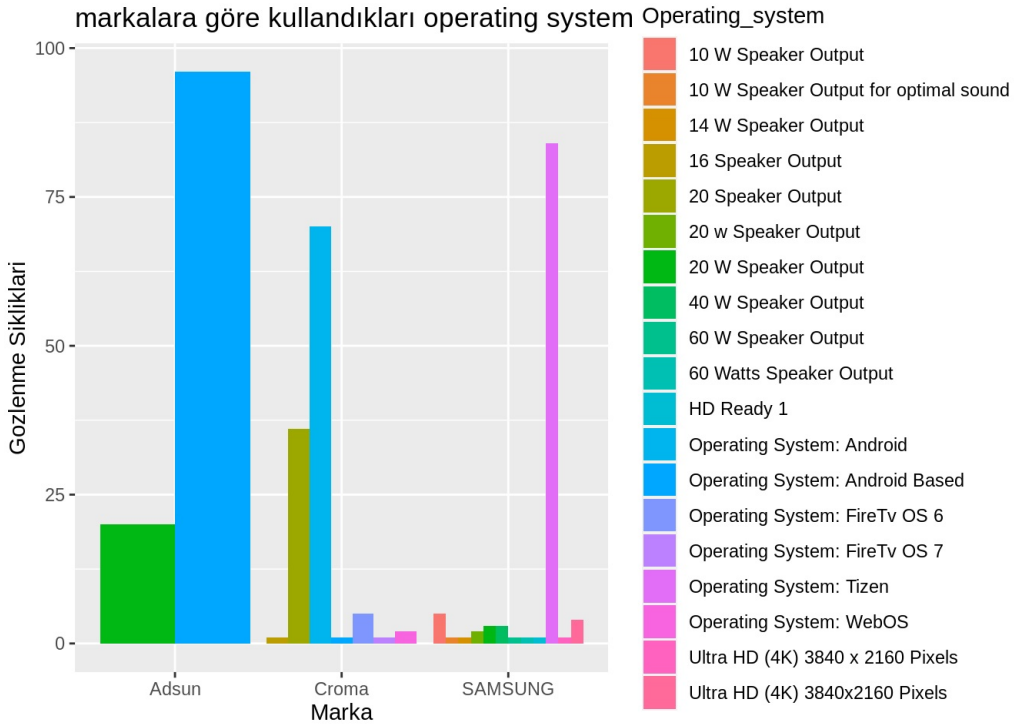

```
a<- df %>% dplyr::select(Product_Name, Stars) %>%
  filter(Product_Name== "Adsun") %>%
  summarise(adsun_ortalama = mean(Stars))

b<- df %>% dplyr::select(Product_Name, Stars) %>%
  filter(Product_Name== "Croma") %>%
  summarise(croma_ortalama = mean(Stars))

c<- df %>% dplyr::select(Product_Name, Stars) %>%
  filter(Product_Name== "SAMSUNG") %>%
  summarise(Samsung_ortalama = mean(Stars))


d<- df %>% dplyr::select(Product_Name, Stars) %>%
  filter(Product_Name== "LG") %>%
  summarise(Lg_ortalama = mean(Stars))



data.frame(a,b,c,d)  #en çok ürünü bulunan 4markanın ortalama aldığı yıldızlar
```

```
##   adsun_ortalama croma_ortalama Samsung_ortalama Lg_ortalama
## 1       3.701724       3.787931         2.996262    3.273333
```

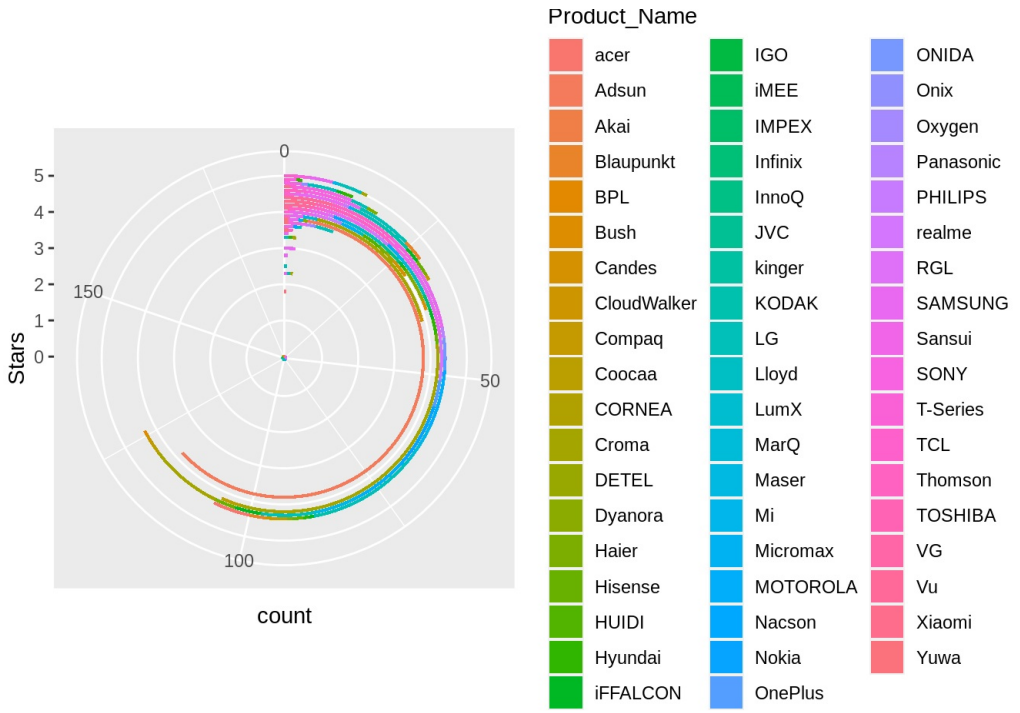
```
ggplot(df3, aes(Stars, fill = Product_Name)) +
  geom_bar(position = position_dodge()) +
  ggtitle("Markaların aldıkları yıldızlar") +
  xlab("Stars") +
  ylab("Gozlenme Sikliklari")
```




```
ggplot(df3, aes(Product_Name, fill = Operating_system)) +
  geom_bar(position = position_dodge()) +
  ggtitle("markalara göre kullandıkları operating system") +
  xlab("Marka") +
  ylab("Gozlenme Sikliklari")
```

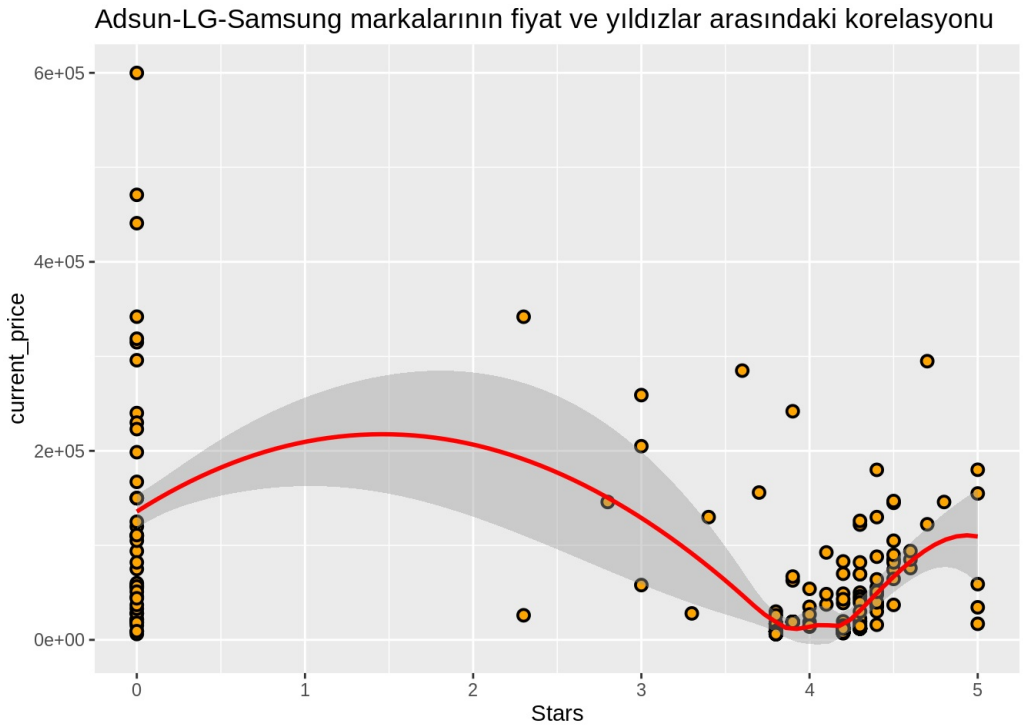



```
ggplot(df,aes(Stars, fill=Product_Name))+
  geom_bar()+
  coord_polar(theta = "y")
```



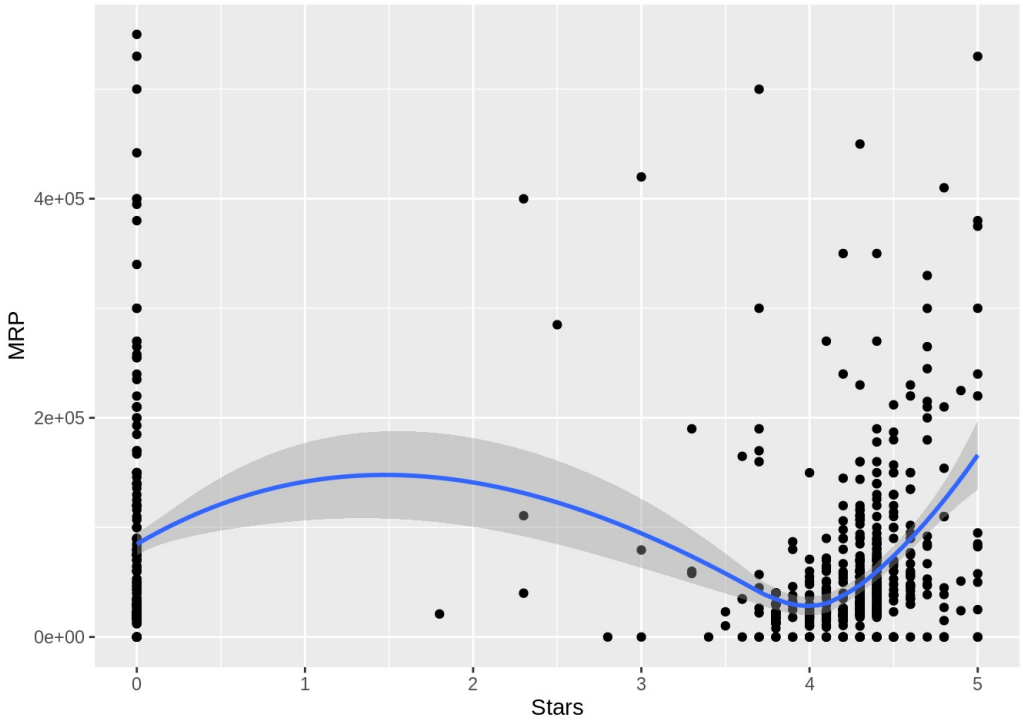

```
ggplot(df3, aes(Stars , current_price)) +
  geom_point(size = 2,
             shape = 21,
             stroke = 1,
             color = "black",
             fill = "orange") +
  geom_smooth(color = "red") +
  ggtitle("Adsun-LG-Samsung markalarının fiyat ve yıldızlar arasındaki korelasyonu")
```

```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```




```
ggplot(data = df) +
  geom_point(mapping = aes(x = Stars, y = MRP))+
  geom_smooth(mapping = aes(x =Stars, y = MRP))
```

```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```


MRP
4e+05
2e+05
0e+00
0
1
2
3
4
5
Stars