***ANALYSIS OF INTERNET USAGE IN THE UK***

**CONTEXT**

1. **BACKGROUND AND AIM**
2. **STUDY DESIGN**
3. **SETTING**
4. **MEASUREMENT**
5. **INTRODUCTION**
6. **METHOD**
   1. **DATA**
   2. **RESULTS**

**v. CONCLUSION**

**vi. LIMITATIONS**

1. **CITATIONS**

**BACKGROUND AND AIM:**

The Internet usage in the United Kingdom has increased to about 92% in 2020 which is a significant increase from 84% in 2014. According to the Office of National Statistics,UK more than 54% of the adults aging more than 75 years and over are the recent internet users, this is almost double compared to user proportion of 2013. The purpose of this study is to evaluate profitable projects in the telecommunication sector in UK and to examine the investments and advertisements that take into account age, gender, ethnicity, economic situation, etc. of the target audience.

**STUDY DESIGN:**

Data obtained from the Office of National Statistics, UK was used to estimate internet usage based on age, gender, ethnicity, etc.

**SETTING:**

United Kingdom 2014-2021.

**MEASUREMENT:**

Age(16 to 75+), period(2014-2021), gender (men,women), Disability under Equality Act, Ethnicity (9 groups) and Economic Status (8 Groups).

**INTRODUCTION:**

The United Kingdom has seen a significant increase in its internet usage over the past decade, with 62 million internet users and a projection of 64 million in the next five years. With a higher penetration rate than any other nation, the UK has a substantial advantage over other nations as well.With more than 68 million inhabitants of the United Kingdom connected to telecommunications, the sector generates an income of approximately 32 billion pounds, covering about 71% of households with a telephone connection and about 5.43 million users with a broadband connection.

**METHOD:**

**DATA:**

The internet usage in the UK based on age, gender ,ethnicity etc is published by the office of national statistics which is a annual survey done in Great Britain with a sample size of 40000 responding UK households per Quarter. Each year in this release represents the period Quarter 1(Jan to Mar) only. The Estimates are derived from the Labour Force Survey (LFC), but they are not seasonally adjusted. The Sample from each Quarter is collected in 5 waves with 3 months intervals and approximately 20% of the sample is placed each quarter. Then the data is calibrated by weighing calibration where population weighing data is compared to the sub regional population estimates and then adjusted for age and sex estimated by region. The income is weighed separately in order to get precise data.

The internet users data consists of recent and Lapsed data of internet users based on age, gender, ethnicity, disability under equality act and economic status every year from the period of January to March from 2014 to 2021.

**VARIABLES:**

There are dependent and independent variables. The dependent Variable is the number of internet users where increase is observed and the Independent Variable were used for the analysis.

The Independent Variable consists of Age groups(16-24, 25-34, 35-44, 45-54, 55-64, 65-74 and 75+) and the time period (2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021), Ethnicity(9 groups), Economic Status(8 groups), Gender(2 groups), Disability (2 groups) and Nation(United Kingdom).

**METHODS OF STATISTICS EMPLOYED:**

A Linear Regression method is used to plot and understand the data and graphs. The Regression models used to describe the relationship between the variables by setting a line in the data that is observed. Linear Regression Model uses a straight line where as Logistic Regression and Non-Linear Regression models use a curved line. Regression allows user to estimate how the dependent variable changes when the independent variable changes.

The Equation for Linear Regression Method is the formula of a straight line which is used to predict the relation between the two variables which is

Where a is the intercept and b is the Gradient or slope

Here y and x are the variables y is the dependent variable and independent variable, a and b are the intercept and slope which are determined from the graph.

Statistician’s more often use the simple straight line equation but with betas;

*Yi=*0+1*X*i

In Linear Regression we try to determine the *ith*individual, *Yi*  using the individual’s predictor variable *Xi*

*Yi=*0+1*X*i+i

Which Comprises a deterministic components involving the two regression Coefficients ( 0 and 1 ) and a random component involving the residual (error) term ( i ).

**RESULTS:**

*Internet users based on the age group;*

Table 1 consists of the data of the internet users in the UK where there are 7 age groups from period 2014 to 2021.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Age group \ years** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| 16-24 | 7,145 | 7,088 | 7,075 | 7,074 | 7,155 | 7,129 | 7,036 | 6,992 |
| 25-34 | 7,903 | 8,162 | 8,457 | 8,660 | 8,582 | 8,720 | 8,815 | 8,894 |
| 35-44 | 8,074 | 7,986 | 7,952 | 7,900 | 8,053 | 8,129 | 8,118 | 8,145 |
| 45-54 | 7,430 | 7,694 | 8,005 | 8,290 | 8,498 | 8,686 | 8,803 | 8,814 |
| 55-64 | 5,434 | 5,624 | 5,821 | 6,060 | 6,361 | 6,607 | 6,888 | 7,189 |
| 65-74 | 2,799 | 3,153 | 3,562 | 3,939 | 4,390 | 4,721 | 5,031 | 5,264 |
| 75+ | 898 | 1,057 | 1,371 | 1,534 | 1,632 | 1,925 | 2,050 | 2,262 |
| **All adults** | **39,684** | **40,764** | **42,243** | **43,457** | **44,671** | **45,917** | **46,742** | **47,560** |

***TABLE 1***

From the Table 1 we can plot the graphs that can plot the Graph 1 in order to prove the Regression Method .Consider two Hypothesis H0 and Ha where H0 is the Null Hypothesis and the Ha is the alternative Hypothesis.

*PLOT 1-graph showing the increasing users every year*

The p-value is 0.9895 which is clearly more than 0.05 that means we can neglect the null hypothesis and consider Ha ,which is an alternative hypothesis and we can see a trend in the graph plotting.

PLOT-2 shows the Linear straight line trend which confirms us the regression model is Linear Regression Model.

*Internet users based on sex:*

The Table 2 shows the recent and Lapsed internet users with respective to their Sex(2 5groups) i.e Men and Women.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Used in the last 3 months** | | | | | | | |
| **Age** | **years** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| **16-24** | Men | 3,643 | 3,610 | 3,593 | 3,590 | 3,638 | 3,622 | 3,594 | 3,561 |
|  | Women | 3,503 | 3,477 | 3,482 | 3,484 | 3,517 | 3,507 | 3,443 | 3,431 |
| **25-34** | Men | 3,989 | 4,136 | 4,272 | 4,408 | 4,276 | 4,340 | 4,402 | 4,454 |
|  | Women | 3,914 | 4,026 | 4,186 | 4,252 | 4,307 | 4,380 | 4,413 | 4,440 |
| **35-44** | Men | 4,010 | 3,969 | 3,939 | 3,925 | 3,975 | 4,018 | 4,011 | 4,025 |
|  | Women | 4,064 | 4,016 | 4,013 | 3,976 | 4,078 | 4,111 | 4,107 | 4,120 |
| **45-54** | Men | 3,661 | 3,803 | 3,945 | 4,058 | 4,182 | 4,270 | 4,314 | 4,310 |
|  | Women | 3,770 | 3,891 | 4,059 | 4,232 | 4,315 | 4,416 | 4,489 | 4,504 |
| **55-64** | Men | 2,710 | 2,807 | 2,877 | 3,004 | 3,118 | 3,240 | 3,375 | 3,516 |
|  | Women | 2,724 | 2,817 | 2,944 | 3,056 | 3,244 | 3,367 | 3,513 | 3,673 |
| **65-74** | Men | 1,472 | 1,652 | 1,847 | 1,984 | 2,183 | 2,323 | 2,471 | 2,580 |
|  | Women | 1,327 | 1,501 | 1,715 | 1,955 | 2,207 | 2,398 | 2,560 | 2,684 |
| **75+** | Men | 554 | 587 | 769 | 846 | 858 | 998 | 1,033 | 1,159 |
|  | Women | 344 | 471 | 603 | 688 | 774 | 926 | 1,017 | 1,103 |
| **All** | **Men** | **20,039** | **20,564** | **21,242** | **21,814** | **22,229** | **22,812** | **23,200** | **23,606** |
|  | **Women** | **19,645** | **20,200** | **21,001** | **21,643** | **22,442** | **23,105** | **23,542** | **23,954** |

Table 2-showing the recent and lapsed internet users with respect to their respective genders

From the Table 2 we can plot a Histogram showing the Men and Women users between all Age Ranges and between the time period of 2014 to 2021

The data sample provided has two groups Men and Women within age ranges and years and PLOT 3 has been plotted taking the entire summations of both men users and women users.

PLOT 2-graph showing year wise total users respective to their gender

The Plot 2 shows the year wise users data respective to their gender and we can see the hike in men users and also increasing trend in the women users.

The Plot 3 showing the Linear curve in men and women users which clearly states the trend in increasing order.

*Internet users based on Disability under Equality Act.:*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Years** |  | **2017** | **2018** | **2019** | **2020** | **2021** | **totals** |
| **All** | **Equality Act Disabled1** | **7,413** | **8,038** | **8,586** | **8,984** | **9,543** |  |
|  | **Not Equality Act Disabled2** | **36,044** | **36,633** | **37,330** | **37,758** | **38,017** |  |
| 16-24 | Equality Act Disabled | 697 | 752 | 824 | 834 | 824 | **3,931** |
|  | Not Equality Act Disabled | 6,377 | 6,403 | 6,306 | 6,202 | 6,168 | **31,456** |
| 25-34 | Equality Act Disabled | 864 | 923 | 1,026 | 1,031 | 1,144 | **4,988** |
|  | Not Equality Act Disabled | 7,796 | 7,660 | 7,694 | 7,785 | 7,750 | **38,685** |
| 35-44 | Equality Act Disabled | 1,091 | 1,127 | 1,185 | 1,194 | 1,207 | **5,804** |
|  | Not Equality Act Disabled | 6,809 | 6,926 | 6,945 | 6,924 | 6,937 | **34,541** |
| 45-54 | Equality Act Disabled | 1,421 | 1,562 | 1,591 | 1,634 | 1,732 | **7,940** |
|  | Not Equality Act Disabled | 6,869 | 6,936 | 7,095 | 7,169 | 7,082 | **35,151** |
| 55-64 | Equality Act Disabled | 1,472 | 1,594 | 1,651 | 1,725 | 1,845 | **8,287** |
|  | Not Equality Act Disabled | 4,588 | 4,767 | 4,956 | 5,163 | 5,344 | **24,818** |
| 65-74 | Equality Act Disabled | 1,198 | 1,330 | 1,477 | 1,643 | 1,721 | **7,369** |
|  | Not Equality Act Disabled | 2,741 | 3,060 | 3,245 | 3,388 | 3,543 | **15,977** |
| 75+ | Equality Act Disabled | 672 | 751 | 834 | 923 | 1,070 | **4,250** |
|  | Not Equality Act Disabled | 862 | 881 | 1,091 | 1,128 | 1,192 | **5,154** |

Table 3- showing the internet users based on the disability under Equality Act

The Table 3 shows the total users who comes under Equality Act Disability and Not Equality Act Disability and also shows the respective total of the Equality act disabled and non equality act disabled with respect to their Age Ranges.

**EQUALITY ACT:** Under Equality act disability is when one person have physical or mental impairment that has a substantial and long term negative effect on one’s abilities to do daily activities. Equality act was passed down in 2010 and doesn’t apply to Northern Ireland part of the United Kingdom.

The plot 4 is plotted based on the total users under Equality Disability act and non equality disability act with respect to their age range.

PLOT 4- TOTAL USERS UNDER EQUALITY DISABILITY ACT AND NON EQUALITY DISABILITY ACT WITH RESPECT TO THEIR AGES

From the above plot it is clear that there is a decrease in the internet usage of non equality disabled personnel aging above 25 to 34 years old .

And there is a slight increase in the users equality act disabled until the age ranges of 45-54 and then decreases until 75+ then there’s slight increase.

This data clearly depicts the more number of users aging between 16 to right until 54.

*Internet users based on their Ethnicity/Ethnic Group;*

In this data there are nine ethnic groups stated and based on them the data is depicted. The Following Table 4 shows the user data based on their ethnicity in the united kingdom.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Used in the last 3 months** | | | | | | | |
| **Ehnic group/Year** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| White | 35,546 | 36,430 | 37,585 | 38,601 | 39,498 | 40,526 | 40,885 | 41,825 |
| Mixed/multiple ethnic background | 343 | 401 | 406 | 471 | 471 | 490 | 591 | 510 |
| Indian | 875 | 906 | 954 | 1,025 | 1,086 | 1,090 | 1,094 | 1,087 |
| Pakistani | 475 | 527 | 593 | 653 | 684 | 715 | 759 | 779 |
| Bangladeshi | 171 | 195 | 213 | 239 | 252 | 247 | 316 | 320 |
| Chinese | 249 | 220 | 250 | 226 | 251 | 267 | 275 | 303 |
| Other Asian background | 423 | 466 | 465 | 467 | 464 | 569 | 562 | 576 |
| Black/African/Caribbean/Black British | 940 | 981 | 1,098 | 1,063 | 1,186 | 1,253 | 1,394 | 1,352 |
| Other ethnic group | 616 | 617 | 655 | 684 | 746 | 711 | 838 | 784 |

TABLE 4 – Recent and Lapsed internet user s in the UK based on their ethnic group

Table 4 is a report of data from the year 2014 to 2021 users of internet in united kingdom based on their ethnicity .

PLOT 5 is plotted from the ta ble 4 data of internet users based on ethnic groups.

We can observe in that plot 5 is that the ethnic group White has continuous increase in internet usage from the year 2014 till 2021 and also it is noted that the white ethnic community population is more compared to all the other ethnic groups.

PLOT 5 – Internet usage in united kingdom based on the ethnic group

The above plot depicts the increase in the internet users number based on their ethnicity through the time period 2014 to 2021. Although the population of other ethnicities is small compared to White community.

*Internet users based on the economic status;*

Internet users in the united kingdom based on the economic status which is under eight groups and the Table 5 shows the data.

Table 5 consists of data of internet users based on their economic status which is further divided into Employee,Self-Employed, Government employement and training programmes, unpaid family workers, unemployed, student, Retired and Inactive.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Economic status/year** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| Employee | 23,147 | 23,390 | 24,056 | 24,599 | 25,463 | 25,971 | 26,346 | 26,848 |
| Self-employed | 3,493 | 3,788 | 3,865 | 4,266 | 4,288 | 4,510 | 4,621 | 4,543 |
| Government employment & training programmes | 118 | 87 | 144 | 116 | 94 | 86 | 92 | 57 |
| Unpaid family worker | 84 | 82 | 84 | 107 | 107 | 90 | 105 | 106 |
| Unemployed | 2,217 | 2,363 | 2,318 | 2,061 | 1,719 | 1,610 | 1,479 | 1,340 |
| Student | 2,470 | 2,426 | 2,422 | 2,428 | 2,460 | 2,391 | 2,443 | 2,459 |
| Retired | 4,084 | 4,493 | 5,047 | 5,497 | 5,885 | 6,404 | 6,812 | 7,318 |
| Inactive | 4,070 | 4,134 | 4,307 | 4,383 | 4,658 | 4,855 | 4,844 | 4,889 |
| **Total** | **39,684** | **40,764** | **42,243** | **43,457** | **44,671** | **45,917** | **46,742** | **47,560** |

TABLE 5- Internet users based on the economic status

The Table 5 shows the sample data of internet users new and laced based on the economic status and occupation through the years 2014 to 2021.

The PLOT 6 is plotted from the above table and can be observed that the employee category of the economic satus data has the highest increase in the internet usage in uk and also has the highest proportion compared other occupations.

It is also noted that the Retired group has significant increase in user percentage from 2014 to 2021 with highest growth rate.

PLOT 6- INTERNET USER DATA BASED ON THE ECONOMIC STATUS DETAILS IN UNITED KINGDOM

CONCLUSIONS:

The following points are the conclusions that I have come to after assessing the sample data regarding internet usage in united kingdom.

According to the data in Recent and Lased internet users based on their age groups I conclude that the further investments and advertisements to be done towards promoting product for age groups 55-64 and 65-74 and 75+ as they show promising growth and the company to be newly entering United kingdom telecom sector should first ply safe by entering into promising growing group.

From the sex based data report on internet usage in UK we can observe that the same can be said to as the growth is good and promising for age groups 55-64 and 75+ as there is stable growth for both men and women regarding internet usage.

From the data on users falling under equality act and non equality act there are no steady but decreasing growth in the users of internet in the uk.

From the data report on internet usage depending on the ethnicity we can observe that the white community has a vast majority compared to any other ethnicity and the growth of the white ethnic internet users is significantly stable compared to any other ethnicity.

From the data on internet usage based on economic status we can conclude that the growth in the increasing users of self employed and retired personnel is promising and linear in its terms.

**LIMITATIONS:**

* Limited sample size
* The study does not allows to determine the changes happened due to change in population or change in service sectors.
* This study follows others using similar data and groups the age, period and cohort properties of survey respondents into time intervals of different lengths

**CITATIONS:**

1. Internet usage study 2021; [www.ons.gov.co.uk](http://www.ons.gov.co.uk/)
2. Slsregression.pdf; <https://www.statstutor.ac.uk/resources/uploaded/slregression.pdf>
3. Internet users 2020; [www.ons.gov.co.uk](http://www.ons.gov.co.uk/)