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Opinion mining of Phone Sitting Feature

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by

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Abstract

This report aims to evaluate opinion mining of customers about phone sitting features in cell phones in different brands across the world by using data mining techniques. Therefore, Data for the report has been collected from data scrapping in Qoura which collects opinion of customers. The collected information from the data base has evaluated by using sentiment analysis. The collected information from Qoura transforms the content and extracts data from API's. In relation to this, information obtains from the research contributed for providing useful information for these features. The collected information from application scrapping has been analysed through sentiment analysis. The application used in this project is python for analysing the data. This working contributed for developing understanding of customer's feedback on this features through which they get benefited from it. The outcomes of the project provide information that most of the customer provides positive sentiments about Mobile phone sitting features by using data scraping method as this method provide the process of having data in addition On the other hand, negative sentiments of customers specify that they prefer not limit screen time as it support for managing their work. This contributed for developing an understanding of mobile phone sitting feature and to know users consumptions.

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Introduction

This research report aims to analyse the opinions of mobile phone users about phone sitting feature of cell phones in different brands. This aim of the study has been attained through analysis of opinions of different mobile phones users across the world which includes analysis of customers' opinions about this feature and its effectiveness. Mobile phone sitting feature allow users to recognize time duration of their usage of phone in entire day. Through this users can minimize their consumption and avoid spending too much time on using cell phones in entire day. Through this individual can increase their physical activity and avoid over usage of phones which in turn minimize chances for severe consequences.

Problem Description

The users of cellular phones found to be addicted to its usage which increases their risk to severe health consequences and they expose to different diseases. This is due to the reason that they increase their usage time on phones which gradually reduce time for other physical activities. Comparison of Youngers and older individuals revealed that their life expectancy has reduced as they sit more hours per day on usage of phones. Mobile phone intervenes in the life off individual life in any form which basically initiated from the simple text message and communication tool to increase in different notifications, promotions and in minimum time ((Rozgonjuk, Kattago & Täht, 2018). In this aspect, reviews of cell phone users regarding mobile phone sitting feature represented the usage of value in phones.

More specifically, several studies have been conducted for evaluating the impact of cell phone usage on the life of individual and their health. It is identified that increase personal assistance features in phones results in minimizing in-activities among various users of phones. For identification of this intervention in phones, it has been recognize that this feature found to be supportive for recognition of difference among group of mobile phone users and their linkage with the non-users. In relation to this, if any issue occur in usage of phone and activities of individual behaviour. However, the relationship found to be effective in mobile phone usage and sitting time is not defined clearly from any study.

From the general perspective, it is found that there are several benefits for the physical activities if it is organized through mobile phones. Moreover, it is found that that mobile phones usage and sitting times as usage of mobile impact varies among individuals to individuals as per their usage and its frequency. From the analysis, it is found that most of the individuals considered that sitting features of phones is effective for reducing their on screen time. Surprisingly, there are various individuals who are not aware of these features and didn't utilize it. This research contributed for identification of opinions of individual regarding this feature and role of this features on the consumption level of consumers.

Background

Traditionally developed behaviour of individuals has been changed significantly with and increase with an increase in opportunities for activities. Cell phone users who used to have higher times spend on using screen as compared to other have less physically active and they might suffer from severe health issues. Higher usage of cell phones does not specifically influence in-activities as these cellular devices are portable. Severe health issues occur in case users get still while using the phones. In this regards, findings from different studies suggested that relationship between usage of cell phones sitting times and activities varies significantly (Saini, et al, 2020). In relation to this, individuals has different opinions regarding phone sitting time feature in different aspects as per purpose of their usage and no of times they have used the cell phones. Moreover, it is found that individuals on jobs need to have idea about number of hours worked on screen such as computer and free time that they have spent on streaming, scrolling social and watching videos. Mostly individual spent their time with the screen either at home or at work which can be in any form. In this regard, it has been found that increase in social media interactions among people are mostly done through cell phones.

Now a days, cell phones is considered as the crucial tool/ device for communication among individuals whenever they need to connect with anyone from their workplace, family, friend and relative. This become the part of life and through this it become easier to get the phone and spend too much time by staring at few inch screens by scrolling down the social media, watching stories of friends and celebrities and watching videos

(Saini, Kaur, Bhatia & Luhach, 2019). The minimum phone sitting time found to be 4 hours. The underlying reason for this is that smart phones get the attention and distract individual easily. Moreover, people usually enjoy spending most of their time on usage of phones instead of doing any other activity. Due to increase in on screen time and higher level of in-activities, people starts enabling siting time feature on phones for minimizing their interactions and reduce time on screen through which they can participate in other activities. Furthermore, mobile phone sitting feature is supported with features of other devices in order to reduce interaction of users and reduce their sitting time significantly on usage of mobile phones.

Research Objectives

The aim of this research is to evaluate the opinion of individuals about mobile phone sitting time feature and its impact on the life of individuals. For attaining the aim of the research following research objectives has been developed:

- To identify customer opinions about mobile phone sitting features in different cell phones brands.
- To determine the impact of mobile phone usage on individual life and health.
- To analyse effectiveness of mobile phone sitting features on reducing on screen time of individuals.

Significance of research

This research contributed for developing and in-depth understanding of mobile phone sitting feature and its effectiveness for the users. This research provides quality of information to the mobile phone brands about whether they should continue adding this feature in phone or not. In addition to this, the research data collection includes the end users of mobile phones which provide how this features changes consumer pattern of usage. Furthermore, this research also provides information about the phone features and how it can be further improved among different brands and models of cell phones.

Expected outcomes

The project aims to evaluate the opinion of user about mobile phones sitting time features in different brands of mobile.

- The working of this research provides the quality of results by evaluating the comparison of each brands feature and which one provides the better one.

- Along with this, it provides the usefulness of these features in mobile including the usefulness of this features and how frequently users of mobile phones enable this option in their phones.
- Moreover, the research will provide the information that whether this feature of cell phones is preferred by the users or not.
- In addition to this, the tangible deliverables of this research will include informational research report, outcomes from the results.
- These outcomes of the research will contributed in decision making process of the company and support for future plans of business including research and development and design of cell phones.

Chapter 2: Literature Review

2.1 Overview

Interventions of mobile phones lead to different potential possibilities for promotion of different activities and minimizing sitting. The impact of mobile phones usage is inevitable with higher subscriptions across the world. Even within the US mobile phone ownership increases significantly. Due to small size and ease of use for different mobile devise specified those which can be taken at any place and in turn lead to increase in on screen time for the users. Due to small in size people are using these devices for multiple usages including texting, emailing, playing games and using the devices while standing and participating in different activities. Mobile phone usage also provide incentive for the users that is being active through app that provides several reminders and notifications for monitoring and tracking activity level which engages specifically as these devices are used more often.

2.2 What is screen time?

Screen time is considered to be the period of use of digital technology devices, whether on devices such as smartphones and tablets, or on computers, video games or television. With the increasingly prominent presence of these devices in the routine of modern society, children are being exposed early to the risks that excess technology poses to mental, emotional and physical health (Radesky & Christakis, 2016).

The uncontrolled use of electronic devices can even bring a lot of damage to the development of babies. But in children over eight years of age, the situation is more complicated, because it directly affects brain functions, weakens vision and compromises intellectual development. Therefore, parents and educators need to be aware of these issues and prioritize educational and preventive measures aimed exclusively at this group of preschool-age children (Oeldorf-Hirsch & Chen, 2022). The family and the school should seek strategies that favour the reduction of screen time by age in order to ensure the health of the little ones.

2.3 Screen Time feature in phone

Apple never ceases to amaze us with new features and functions, and one of those amazing features is the screen time passcode. It allows users to check the time spent on a certain app or type of app. It can be used on multiple devices if using the same

iCloud account and in this way; individual can monitor what their kids are doing on their devices and even set a timer for a certain app in a day. Screen Time Passcode should not be confused with passcode used to unlock iPhone (Ohme et al., 2021). That would be a different password and would only be used to unlock screen time options and make changes. The screen time password will only be verified by the user when the user attempts to perform one of the following actions: change settings and idle times, change the timeout for a specific app, turn off share screen devices, modify the communication application limits, and disable any usage time option.

2.4 More Screen Exposure During Covid-19

With parents working from home and without a support network, children's exposure to screens has increased dramatically. Staying in isolation and working from home was a big challenge for adults during the pandemic, especially with constant video conferences and lots of overtime. For the children, the reality was not very different, as they had to move away from their friends and the school environment, they could not play outdoors and they ran out of creativity when choosing games (Zimmermann, 2021). Because of all the stress caused by isolation, many parents loosened the rules regarding the use of electronics in the house, mainly because of the video classes. With the new routine, screen time is no longer just synonymous with fun to become an obligation.

Technology acted as a kind of crutch for many parents who had no one to leave their children with, mainly due to social isolation and school closures. It is increasingly difficult for parents to limit children's access to screens, it is possible to observe this reality among children of different ages. Their relationship with electronics has changed a lot. Before, they had school and other extracurricular activities that took up most of the day. Individual didn't even need to regulate much and let them use their cell phones more freely on the weekend.

2.5 Impact of continuous Screen Exposure

The current technology available for screens and media in general offers benefits, but can also pose health risks for children and adolescents. Exposure to computer screens, cell phones and tablets individual can affect sleep, attention, learning, the hormonal

system (at risk of obesity), mood regulation (at risk of depression and anxiety), hearing, vision. There are also risks of exposure to risky behaviour groups and unknown contacts, with the possibility of access to self-harm behaviours, suicide attempts and crimes of paedophilia and pornography (Hale & Guan, 2015). It is essential that caregivers and educators prioritize activities that help to harness the potential of these children and, therefore, the conscious use of screens is essential. Schools are a source of knowledge and play an important role in providing good examples for parents and caregivers.

Exposure time for Children

The media exposure recommendation for children under two is zero time, as research evidence shows that social interactions with caregivers are much more effective and stimulating for language, intelligence, social interaction, and skill development. They also provide moments of global learning, problem-solving skills and emotional control skills, making the child a healthier and more resilient adult. For children aged 2 to 5 years, the recommendation is 1 hour per day of stay, in total, in front of televisions, cell phones, tablets and video games (Foerster et al., 2019. Above this age, a time of up to 2 hours is recommended. Access must be monitored and allowed only to what is released for each age, respecting the indicative classification, in addition to avoiding content of violence, sexual and inappropriate behaviour.

Monitoring

Jiang et al., (2014) recommends that schools and families can work together with health teams to strictly monitor screen exposure time at home and at school, so that the sum does not exceed the recommended limit. It is also recommended to program the devices to access only high quality content with demonstrated learning effectiveness, discussed as a team in the pedagogical planning. This suggests active involvement of parents, caregivers and teachers in both digital reading and book reading, which enhances children's learning through experience; and guidance to family members on the relevance of clearly established and enforced house rules and limits for children.

2.6 Impact of Mobile phone usage

The impact of mobile phone usage has broader aspect which may arises due to higher time in sitting which may have positive and negative influence on the life of individual (Wang et al., 2019). However, it has been identified that most of the users of cell phones presented that additional features of cell phones provide positive benefits for the users due to which some studies specified that mobile phone usage provide more negative influence on the life of individuals than its benefits. This is due to fact people have higher connectivity and mental involvement by users. In addition to this, Saini, Kaur, Bhatia and Luhach (2019) in the view that mobile phone has created positive impact on users of mobile phones as most of the individual consider this device as an efficient way to connect with others and those who care about.

Additional Feature in Mobile phone

It has been found that some users consider that there is no improvement due to additional feature in mobile phone (Li et al., 2019). Moreover, there is no connection of mobile with close relatives and friends. Moreover, around more than 50% of cell phone users indicates that it make them easier to make plan and routine for routine tasks and become highly productive with the use of sitting feature (Myo, Wettayaprasit, & Aiyarak, 2018). On the other hand, users of mobile phones specified that it become difficult for them to have the free time during their working hours as they can only spend more time on phones at weekend or any other holiday. This will contributed for providing them to focus on their work with undivided attention without impact of any external noises or disturbance (Rathan et al., 2018).

2.7 Sitting feature influence on users

Regardless of this, individuals were in the view that cell phones created no impact on their life in any negative ways. In relation to this, negative influence of cell phone is due to their over usage as some phones are design in way to minimize negative impact of cell phones (Sinche, et al., 2017). One of the main features of cell phones is the sitting feature for mobile phone is contributed to reduce mobile usage and limit their time by continuously sending them reminders for users. Furthermore, cell phones messages are the most challenging factor which effect productivity of users during working hours. It has been found that more than 55% of business owners consider that smartphones

influence productivity at work and more than 80% of workers with cell phones keep an eye on their phones during working hours (Genc-Nayebi & Abran, 2017).

2.8 Alternative features of Mobile phone

Night Mode

The main advantage of night mode is to allow a more comfortable reading for our eyes. It is being used more and more: the cell phone's night mode. The background becomes dark and the letters light. Although it was created to be used at night, more and more people are using it during the day as well. That's because the night mode is less tiring on the eyes. The main advantage is to allow a more comfortable reading for our eyes. “Night mode dims the screen so you have less waking up. Bright light stimulates awakening and you can lose sleep.” It has been found that three types of night mode colors: reddish, yellowish and what changes the light tones of the background for dark. Some cell phones already have this as an option in the configuration, but it is also possible to download applications with this feature (Ivanova, 2018). In addition to using night mode, some actions can minimize the risks of screens in the eyes: Remember to blink because the muscle stays still for a long time, tires and dry; Take breaks every 30 minutes and look away. This is a way to stretch the eye muscles; Good posture in front of the screen improves visual performance.

Power Saving Mode

Power saving mode is a feature of the mobile phone with the aim of prolonging the current battery charge duration. Its activation is manual, through the device settings. When turned on, the mode interrupts, reduces or suspends some activities and features of the cell phone that contribute to the consumption of the battery, extending the time needed to charge it, but still allowing the use of the device's primary functions.
The list of services affected by economy mode varies between operating systems and interfaces. These involve, for example, applications running in the background, automatic updates, transactions, visual effects, screen brightness and services such as GPS, backup and synchronization. There is a cache clearing every time the application is blocked, for example. On compatible devices, 5G usage is also reduced or stopped during power saving. Through One UI, Samsung's interface, there are additional options to reduce CPU speed or disable Always on Display (Löffler, Giron & Hurtienne, 2017).

On Android, individual can view an estimate of the additional charge duration with the mode on and compare it to the current situation. On iOS, the battery indicator changes to yellow, signalling that Low Power Mode is being used, and stops when the charge level reaches at least 80%.

For even more urgent situations, Android devices offer ultra battery saving mode. This function further restricts the resources used, limiting some important activities such as calling, sending SMS and connecting to the network. During this period, the user needs to choose which apps to use. The interface itself is changed, which causes this mode to be activated only in more specific situations.

Minimizing Risk factor

In contemporary society, screens — which were once restricted to televisions — have evolved into a range of practical, portable devices. Every day, new technological tools and digital resources are incorporated into the routine of different age groups, which also includes young individuals (Lissak, 2018). The rational use of technology represents a chance to stimulate individual development and prevent the biological and psychosocial changes from being harmed (Chang et al., 2018). Therefore, having this care is of paramount importance and helps to protect intellectual capacity and the development of motor skills.

2.9 Users Consumption of Cell phones

It has been identified that individuals tend to spend most of their time on phones whether they are at work or at house. In this aspect, in some places phones may be harmful for the individual with higher health risk and physical integrity. Regardless of this, individual with no professional's background may lead to idleness due to usage of cell phones which is connected with hand bracelet that shows notification on cell phones but it lead to minimize physical activities of individuals (Iyer et al., 2017). With mobile sitting feature, users of mobile phones sit for the longer time period while working. For instance, issues notification lead to movement which sands individual stills with this individual reduces physical activity (Li & Trocan, 2017). Cellphones companies prefer to have mobile sitting feature which is an approach for improving to protect health and owner of these devices.

2.10 Impact of Mobile Phone Usage on Physical Activities

There is main concern about the possible influence of information and communication Technologies (ICTs) which not new. Currently technology has capacity for distracting and invading individual from their problems but this lead to addiction and become unhealthy escape from the situations in real life. The pace of technologies development leads to changes in mobile phone usage continuously. Mobile phones come up with new features each day including improved camera, more application and extended capacity. These provide various services linked with leisure including television, listening to music and playing different games. In same mummer it provides information and provides facility for socializing through using social networks. This makes mobile phone more attractive for the individuals from different age groups (Zagalaz-Sánchez et al., 2019). This is causing higher chance for occurrence of different problems and situation with higher dependence on devices due to several reasons (Rozgonjuk et al., 2018). With the passage of time smartphones users make the usage of phones as normal practices which leave playful part of their offer for providing them more professional and personal usage. This generally happens in educational context.

Moderating Role of Self-control

With increase in development of internet based smart devices, there is prevalence of phones which increased continuously across the world. The smartphones usage provides conveniences to digital lifestyle bring much problematic usage of smartphones which emerged among young individuals across the world. With this, specialised features of phones that provide convenience to users which allow users to call receive and connect with other individuals. Mobile phone users surf the internet, playing games and updating social networking sites which is connected to the world anywhere and anytime. More importantly, the literatures analysis revealed that more than 80% of peopled reported sitting features when using their devices and inactive behaviour are linked with various negative impact including obesity, metabolic syndrome and cardiovascular disease. Through mobile phone prevalence and usage it provides linked with change in behaviour. It is essential for expanding consumer behaviour understanding for behavioural implications related to phone usage.

In relation to this, problematic usage of phones generally defines as addictive behaviour or limitation for controlling behaviour for using cell phones (Xiang et al., 2020). Addictive behaviour of users results from failure of self-regulation. Poor self-control may limit individual capacity for minimizing their cravings and restrict addiction. This is due to lack of self-control which is linked with problematic usage of phones. In this regard, low self-control predicted higher consumption of smartphones but it is linked with addiction of phones (Berger et al., 2018). This shows relationship of phone addiction with different symptoms and mood changes.

2.11 Literature Findings

The literature analysis revealed from the information of different companies and their practices for influencing customers that sitting feature of phones found to be effective for reducing consumption continuous usage of phone by users. However, customers have different perspective and opinions regarding cell phone sitting feature of phones. The findings from the literature specified that these devices is linked low motivation level and practices in their usage. The focus of this work is to identify problematic usage of phones. The literature found that problematic usage of phone linked with behavior and self-control of users. This shows positive relations with mobile phone usage and age of individual. The result develops and understanding for behavior is linked with mobile phone problematic usage.

Chapter 3: Project Description

3.1 Research Process

The applied process for analyzing and obtaining the data is summarized and discussed in the following;

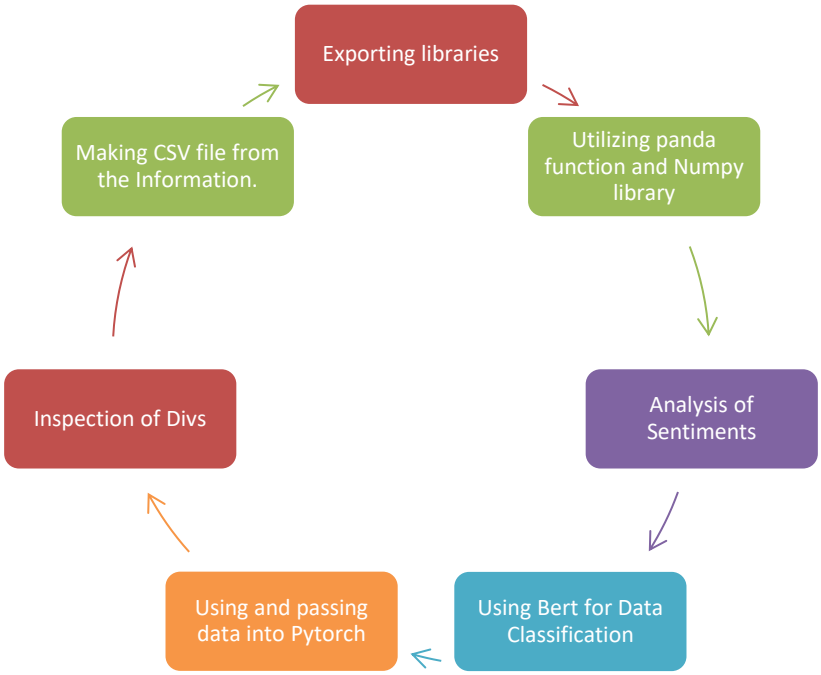


Figure 1: Data analysis Process

1. Initially all libraries are exported that is required for the analysis in notebook. After that researcher load the Qoura Data that is saved in .csv file. Researcher used script for saving the data in order to scrape out the data from Qoura.
2. Panda functions are used such as Hat is used for displacing dataset. Pandas are used for summing up all the null values in these columns. Then numpy library is used researcher make the count plot that colors each class in our data.
3. The data scrap from qoura includes some number range between 1 to 5. 1 and 2 describes that qoura answer to question is negative sentiments, 3 is for neutral sentiments and 4 and 5 describes positive sentiments
4. Then researcher sum up the score of 1 & 2 as both belongs to negative then it is codded as negative class, 3 is coded as neutral class and 4 & 5 is coded as positive class. Word cloud package is used that calculates frequency of words in corpus and plot it in a word cloud plot

Data pre-processing

5. Bert model is used for classification; in which research applies some preprocessing in data. Special tokens were added for separation of sentences from training to testing. It will be helpful for data classification.
6. Then sequences of these frequencies have been passed which is made in equal length that is done by including padding. Then it made arrays of 0 and 1. Zero dontes padded token and 1 denotes unpadded tokens that is our corpus token. This is called attention masking in bird classification. This will implement Bert approach Pytorch for using and passing data into pytorch. This data analysis need special kind of data generator therefore wrapper has been developed around pytorch that will in validating the applied model.
7. Once the model is strain within plot the training and validation accuracy. Also reevaluate the model by using pre-existing pytorch package. Then this model is used for predicting some information. From these prediction conclusion matrix has been developed which contributed for understanding whether this model is classifying each class correctly or falsely.
8. For scrapping, beautifulsoup4 package of python, which scrap out all html from given URL and provide some function which help in filtering and finding required html results.
9. So this has given URL of qoura, these hit a get request to that URL and in return we will see whole html of that URL, whether it's a core of page or different website in Qoura page. In the end it inspected all the Html and we know that answer which we have to find in a dive of that has a class name of divs question title
10. This link have question so we can collection and answer is in div called UIQTEXT expanded which has answer so have find all the div with these attributes and we collected all the answers of question. Then those questions are saved and make a csv file out of it.

3.2 Sources of Data

Data for the analysis of customer opinions in this research has been collected through survey questionnaire in order to identify the impact of mobile phone sitting feature on usage of phones. Along with this, secondary sources also analyze including reviews of different brands and its enable feature of phones for the users. This can be reviewed for identifying the impact of mobile phone sitting feature on phone users. In this aspect, consumer opinions will be extracted from the review section in different e-commerce and mobile companies' online in order to find the effectiveness and usefulness of this data. The source of data will include consumer reviews on amazon and other mobile selling websites for identifying the impact and review of mobile phone sitting features for consumers. This includes evaluation of customer opinions for mobile sitting features along with overall features review for different phones and models of cell phones.

3.3 Data Analysis

The collected data from the survey questionnaire will be collected into coding of the data. Furthermore, after converting the opinions into quantitative aspect data will be analyzed through Python to identify effectiveness of mobile phone sitting features for the users. Similarly, mobile phone sitting features for mobile phone companies will be analyzed. This will contributed for providing information regarding usefulness of these features for the users and its impact on overall credibility and value building for mobile phone brands.

Data Validation and Accuracy

Data validation includes process for making accuracy and quality of data. In this repot, this research Qoura data is validated through restricting the information with specific key term. This is applied for developing several checks for scrapping data in Quora for logical consistency of stored data in Quora. This information is verified by considering the information which is already found and understood in source.

3.4 Data Pre processing

The focus of this report is on evaluation of opinions of users regarding mobile phone screen time which includes in different brands of cell phones. In order to execute this, research has been conducted by collecting opinions of users from online sites by implementing descriptive research design. The sitting features of mobile phones usually enable users for recognizing their usage time on cellphones during an entire day. The

purpose of this feature is to keep track of usage and gradually minimize mobile usage duration. The applied methodology contributed for identifying users' opinion for this features and its impact on their daily usage for phones.

3.5 Research Design

The applied research design is descriptive which contributed for obtaining the information by systematically defining the opinions of population. The applied process for obtaining the mobile phone users opinions for sitting features is app scraping which include the process by using bots for extracting opinions and other relevant information from the application (Nayak & Singh, 2021). This scraping is not limited to only screen scraping, as it extract backend code and relevant data stored in database. Through this entire information from the application replicated through scrapping.

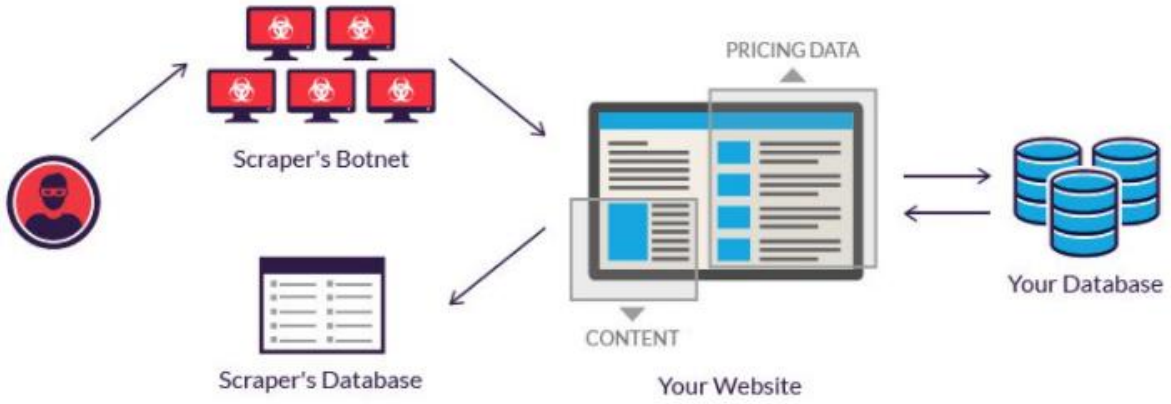


Figure 1: Scrapping Process

Application scrapping can be used for multiple purposes which are primarily based on data harvesting. The main purpose of application scraping relates with research core purpose for extracting mobile phones users on screen time features and applications.

3.6 Data Mining Techniques

Data for the analysis of customer opinions in this research has been collected through secondary sources by application scrapping in order to identify the impact of mobile phone sitting feature on usage of phones. Along with this, other secondary sources have also been analyze including reviews of different brands and its enable feature of phones for the users. This can be reviewed for identifying the impact of mobile phone sitting feature on phone users. In this aspect, consumer opinions have been extracted from

application with on screen time feature in order to find the effectiveness and usefulness of this data. The source of data include consumer reviews on “Qoura” and other mobile selling websites for identifying the impact and review of mobile phone sitting features for consumers. This includes evaluation of customer opinions for mobile sitting features along with overall features review for different brands phones and models of cell phones.

3.7 Data Analysis

The collected data from secondary sources include variety of consumers’ opinions about this feature. Furthermore, after converting the opinions into quantitative aspect data has been analyzed through Python to identify effectiveness of mobile phone sitting features for the users through application scrapping. For application scrapping different tools such as software has been used which programmed for extracting information through databases (Glez-Peña, Lourenço, López-Fernández, Reboiro-Jato, & Fdez-Riverola, 2014). This includes information and transforming content, storing the information and extract data from APIs. Similarly, mobile phone sitting features for mobile phone companies has been evaluated. This has contributed for providing information regarding usefulness of these features for the users and its impact on overall credibility and value building for mobile phone brands. The collected information through mobile scraping has been analyzed through sentiment analysis. This analysis contains contextual mining of information which recognizes and extracts qualitative data from different applications (Feldman, 2013). This approach contributed to researcher for understanding the social opinions about the sitting features and its effectiveness for mobile phone users by monitoring online conversations of users.

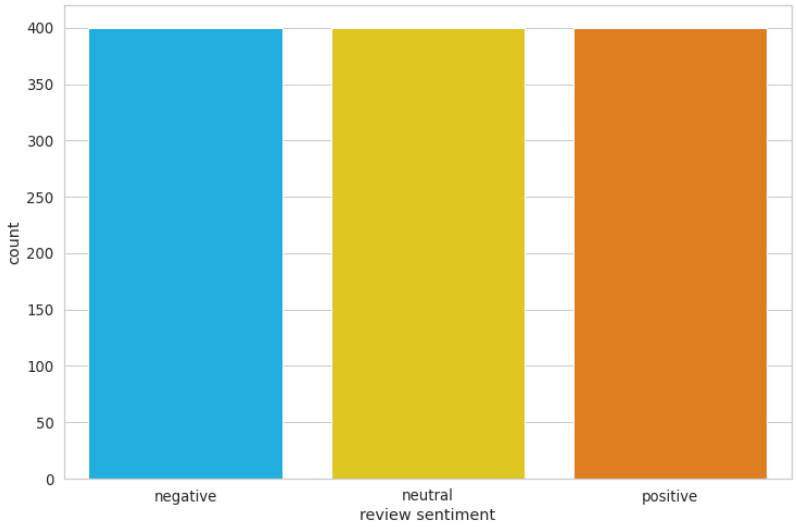
Chapter 4: Analysis of Results

4.1 Overview

The purpose of this research is to evaluate the opinion of mobile phone sitting features on users. This section is based on analysis of collected data. Data has been collected through app scrapping which evaluates mobile phone reviews on different sites and application. Data of this research consist of opinions of cell phones users on mobile phone sitting features. Collected data through mobile scrapping has been analyzed by using python. The collected information has been analyzed and presented in this section of the report regarding usefulness of mobile phone sitting time features. The applied analysis techniques are sentiment analysis which contains contextual mining of information for recognizing and extracting information from different applications. This contributed for developing understanding of phone users' opinions about sitting and its effectiveness for minimizing phone on screen time or overconsumption. It has been found that Mobile phone nowadays have a native function to help the user spend less time on the cell phone, using it consciously and without excesses. Digital wellness features, available from iOS 12 and Android 9 onwards, allow user to track how long each app is used, as well as setting daily limits for specific apps or categories and turning off notifications.

4.2 Sentiment Analysis

The data mined from Quora comes with the opinion sentiment of 1 to 5 range, 1 & 2 being the negative opinions 3 being neutral and 4 & 5 being the positive opinions, then these are further pruned into categories as negative positive neutral instead of numbers, as seen below.



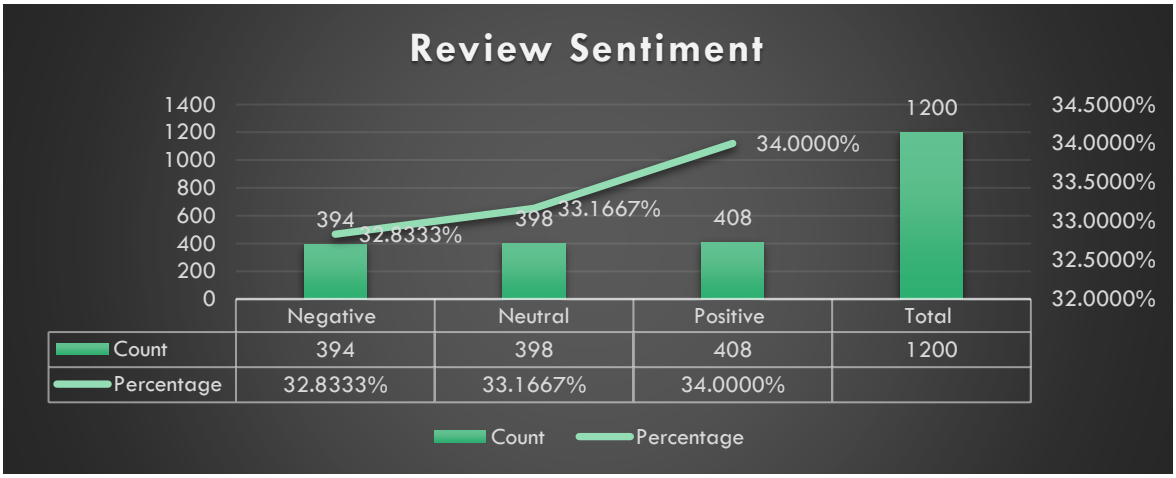


Figure 2: Sentiment Analysis

The analysis of from the sentiment analysis revealed that opinions about onscreen time features of mobile have various ranges from positive to negative. An interesting to note here is that every opinion has been examined and users is in view that some have positive, negative and neutral impact of onscreen time feature of phone. In relation to this, devices such as smartphones have become increasingly integrated into most people's lives. There are several features that help in carrying out day-to-day tasks, communication and organization, for example. According to the Regional Center for Studies for the Development of the Information Society 58% of the mobile phone users accessed the internet exclusively through cell phones in 2019. The combination of internet and mobility generated a new communicative context, which can be named as

“The era of smartphones”. However, specialized literature also points out damage to mental health caused by excessive cell phone use, in addition to impacting daily life, taking time for other activities, affecting relationships, increasing anxiety and stress, causing insomnia. Moreover, it has the greatest influence comes from the emotional part of people:

In addition to sentiment analysis, app scrapping revealed that there have the word counts in all the content of the opinions in percentage, it is found that 1 word is repeated mostly and other words have share the same frequency more or less.

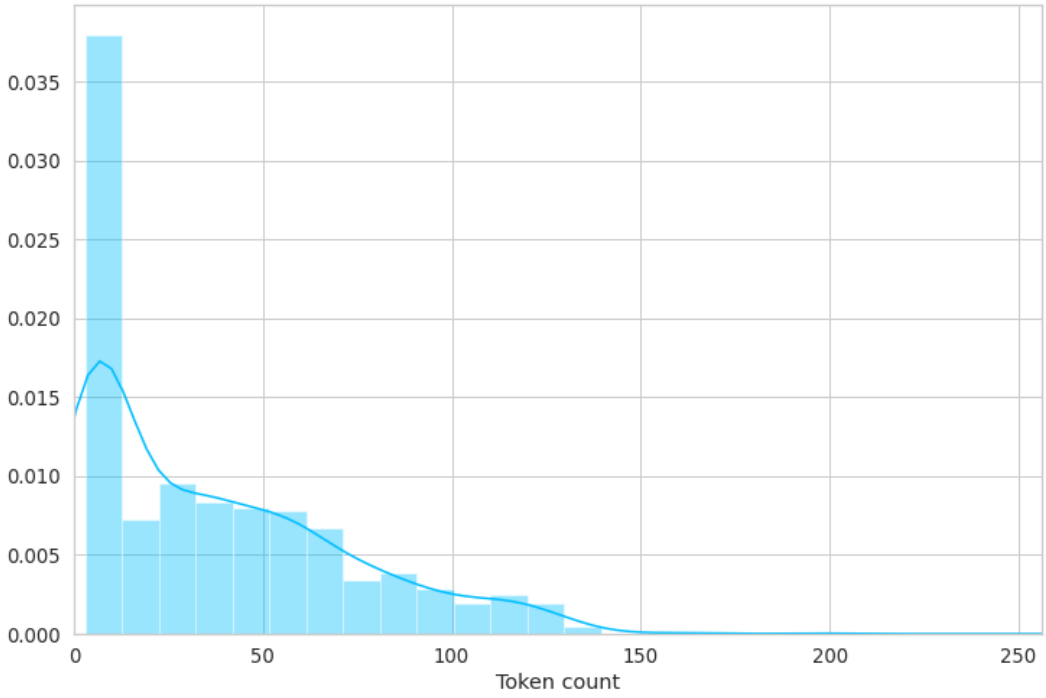


Figure 3: Frequency of words

Not necessarily the time people spend using cell phones is harmful to mental health, but the different types of use. It is important to help people know how to use the devices properly, increasing the feeling of happiness, socialization and preventing damage to health, the researchers prepared some useful guidelines on what science says about the phenomena. The impact smartphones have on mental health will depend on the type of use. The problem here is not just how much is used, but what for (motivation).

The device can be used to promote quality of life and health, for example to help control habits, such as encouraging the practice of physical activities and relaxation techniques. In addition to this, researcher train its Bert based NLP sentiment classifier and it trains pretty well, starting from a low accuracy model it moves quickly and adapts the tokens and their pattern and gives a good training accuracy and a decent validation accuracy.

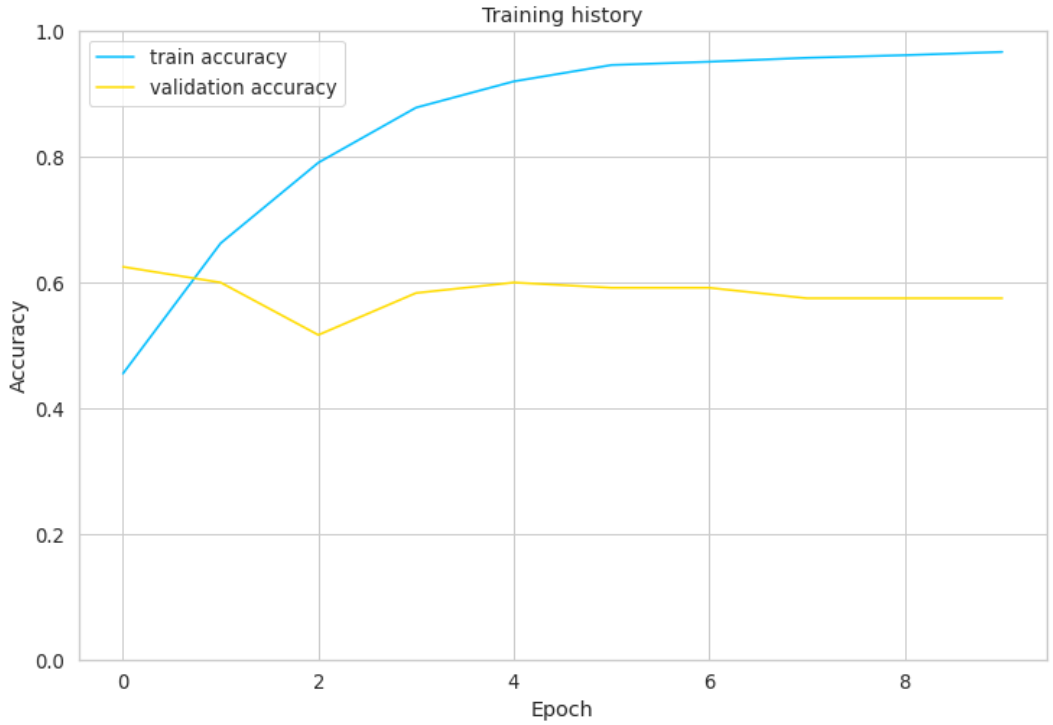


Figure 4: Validation vs Accuracy

It has been found that there is direct relationship between accuracy and epoch as with increasing accuracy; epoch also increases as per training history. Moreover, validation accuracy shows stable association between these two elements. In case cell phone use is necessary, as people's presence is often required, share the use individual will make. Depending on the context and the moment, it is interesting that individual can talk about their usage they are making so that the other person with individual doesn't feel ignored or disrespected.

Furthermore, researcher made a word cloud map of the tokens, which consist of most repetitive words being the larger in size and vice versa that is presented in the following figure:

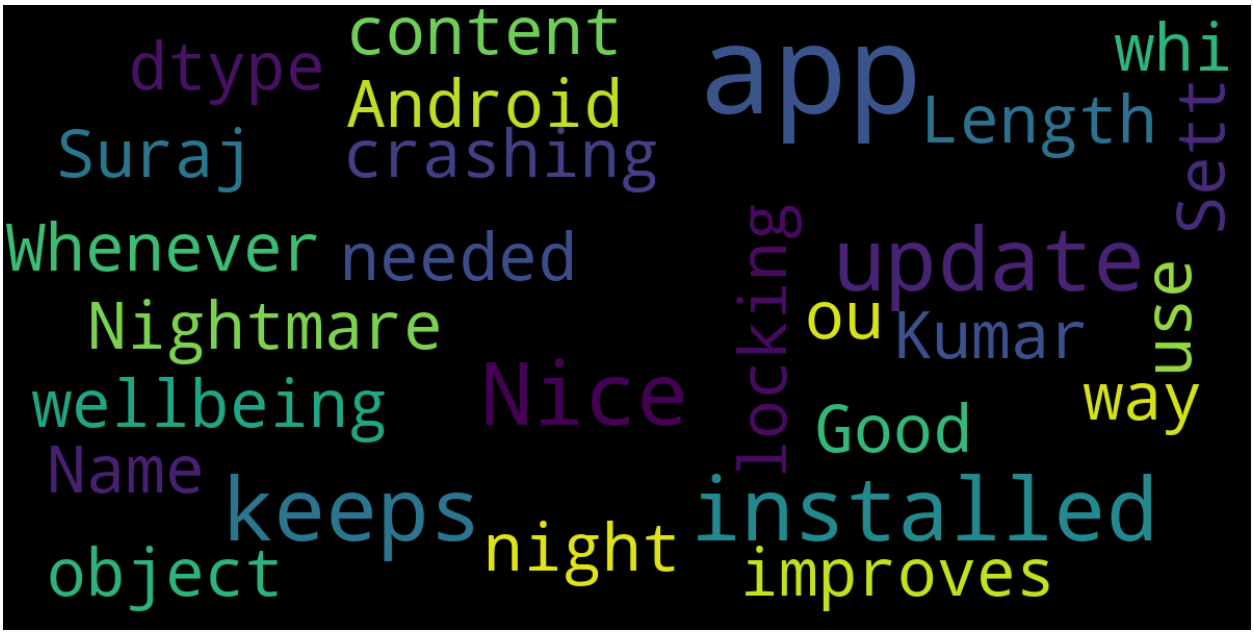


Figure 5: Word cloud

The ideal is not to use cell phones at any time: people need to understand that the moment individual use smartphones will also represent a healthy use or not. For example, at a family lunch, where everyone is gathered around the table, it is not appropriate to use the cell phone for work purposes or even to connect with a friend who is far away. Additional, researcher refer to a most common words that has been used in word cloud referring to people being physically present, but absent due to the use of smartphones. For healthy use, also take care of when user will use smartphones. Usage time can be one of the biggest risk factors and needs even more attention at a time when many people are working and studying at a distance.

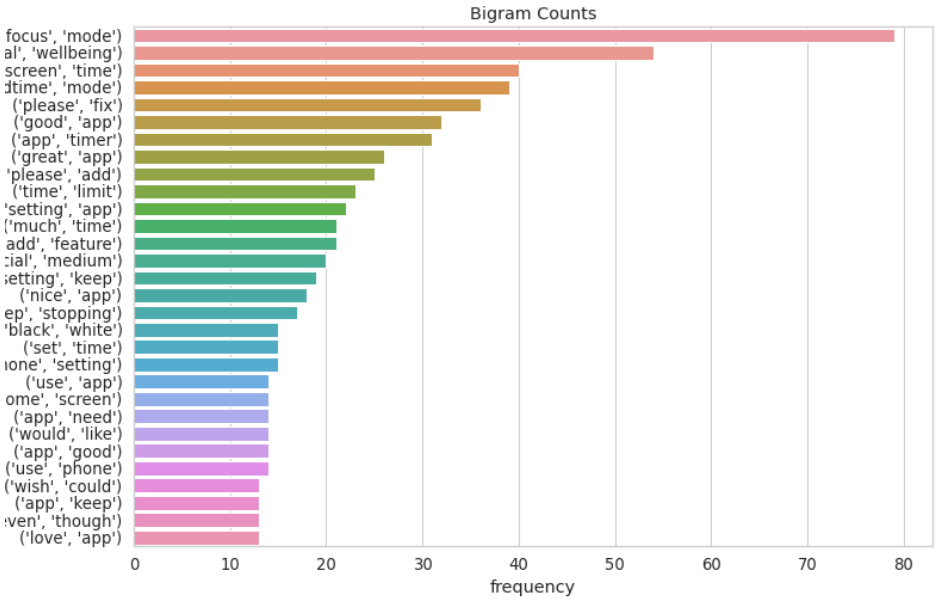


Figure 6: Word Pair Frequency

Another analysis has been done is word pair analysis which indicates use of common words by users such as focus and mood. It can be interpreted that most of the users focuses on usage of cellphone in order to change their mood. Another pair of words is wellbeing which specified the influence of usage of cell phones on health and wellbeing of users. This specified that impact of cell phones usage on social life also. In relation to this, mobile phone scree time features may vary significantly as idle time feature allows user to set a time to prevent user from using the phone. By enabling this feature, user can allow some apps and by default user will receive phone calls. All other unimportant apps will stop working during the idle timeout. The length of time, along with specific days, can be set.

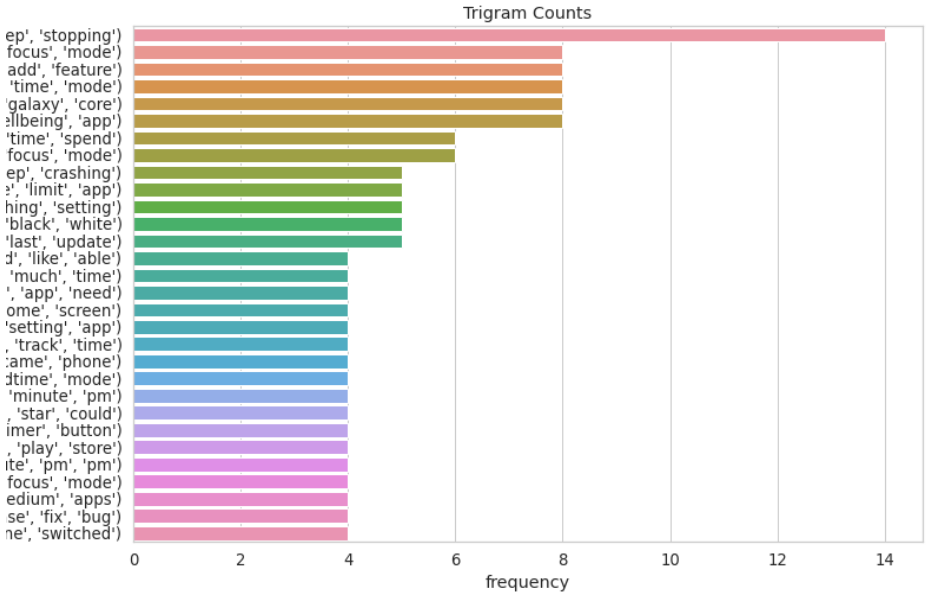


Figure 7: Triple Pair Frequency

In addition to this, world triple frequency also been calculated in this research which revealed frequency of occurrence of words in opinions of consumers. Any app user install on their device will be automatically categorized by phone into a specific category such as Games, Health, Reading, Entertainment, etc. Users can set time limits for a specific category or a specific app. For example, if user set a game time limit of one hour, all game apps running on user device will have a cumulative time of only one hour per day. Also, user won't be able to play any of them. It allows users to set communication limits for contact apps like the Phone app, Face Time, and Messages. After configuring screen time settings on the device, after spending considerable time deciding time limits, it is essential to lock these settings so that no one can change them. And this is done using screen time passcode on devices.

Chapter 5: Conclusion

5.1 Conclusion

Individual usually use the phone automatically or unnecessarily. This happens when there is no clear and specific objective for using the smartphone, realizing a certain loss of control regarding this technology, which is called passive use. In this way, individual end up not noticing the passage of time and important things are left aside whether talking to user family, working, studying or even sleeping and resting.

Usually, automatic use is triggered to dribble some negative emotion (boredom, sadness, frustration) or even some difficult situation loneliness, discomfort in difficult conversations. The way people deal with their emotions can influence the way they use technology. The challenge is to make a controlled use of technology, as smartphones will be increasingly present in the daily lives of the population. Accepting this and understanding which ways to use them without harm is a fundamental task nowadays. Cellphone users may fail to limit screen time. Individual can choose not to limit its screen time, because they have to work or do something else. In that case, it suggests thinking of a plan B for the feeling of zoning that follows, with some physical activity, reassurance, a snack, or all of the above.

5.2 Recommendations

Spending time on device is great and important, but as they say too much of anything is bad. The Screen Time password feature is really useful for setting limits on various apps and categories. This can help control our children's screen time as well as ourselves. But users can have the screen time passcode and just require entering it to bypass the set time; this would work as a reminder that user have already spent the time allotted daily for the specific app on device.

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