

A STUDY ON CUSTOMER SATISFACTION TOWARDS GOOGLE MAPS AND ITS NAVIGATION SYSTEM

Submitted in partial fulfilment of the requirements for the award of

Bachelor of Business Administration

By

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SCHOOL OF BUSINESS ADMINISTRATION

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade “A” by NAAC | 12B Status by UGC | Approved by AICTE
Jeppiaar Nagar, RAJIV GANDHI SALAI, CHENNAI - 600 11**

May – 2022



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the Bonafide work of **KALLAMMAGARI BHARATH KUMAR 39280014** who have done the Project work entitled “**A study on customer satisfaction towards google maps and its navigation system**” under my supervision from December 2021 to march 2022.

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Submitted for Viva voce Examination held on_____.

Internal Examiner

External Examiner

DECLARATION

I, **Kallammagari Bharath Kumar 39280014** hereby declare that the Project Report entitled “**A Study on Customer satisfaction towards google maps and its navigation system**” done by me under the guidance of Ms. SHEEBA T, M.Com., M.Phil., NET, MBA, SET at SATHYABAMAINSTITUTE OF SCIENCE AND TECHNOLOGY, CHENNAI is submitted in partial fulfilment of the requirements for the award of Master of BusinessAdministration degree.

DATE:

PLACE: Chennai

K. Bharath Kumar

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ABSTRACT

Now a days the usage of Google maps and navigation system has increased rapidly due to more urbanization and new technologies in different industries like development in automobile industry, and revolution in telecom industry. These are changes in India enables people to use google maps and all services more efficiently in their day-to-day activities. The people in the country were very much adapted to the new technology in order to be updated with the promising trends in the market. The aim of this study was to examine the customer satisfaction of google maps. And this research succeeded in finding how far the customers and users of google maps is satisfied with its services and finding their opinion on google maps. The Research has found out factors influence the adoption of google maps such as easy to understand application, convenience, accuracy, chance of more information, technology development in other industries like integration of maps in vehicles by automobile industry. The study has adopted descriptive research design. The primary data is collected from 145 respondents who are the customers and users of google maps by using a questionnaire. Collected data were analysed with the help of Percentage analysis and Statistical Package for Social Science(SPSS) most of the urban people are showing interest and depending more on google maps in urban areas to navigate from one place to another, find out best shops and search unknown location and knowing about that place but people living in small towns, rural areas are using maps for limited purpose and some people are not even know about it and 0% usage in some remote areas due to illiteracy. To solve this issue, google is trying its best to integrate more graphical user interface in its app and website. The study suggests the google maps management that as google maps facing many allegations related to user data privacy, navigation inaccuracy and outdated information about business, maps has to take some appropriate measures to acquire the trust and satisfaction of Consumers on google maps which leads to the rapid adoption and acceptance and usage of Mobile banking.

Keywords : Google maps, Navigation system, Perceived ease of use, Trust, Website convenience, intention to adoption, urbanization, user friendly interface, unique services.

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Chapter -1

INTRODUCTION

1.1 INTRODUCTION

Google maps is the one of the fastest growing web mapping applications. The usage of Google maps application is growing rapidly. it is attracting more users with its user-friendly interface and accurate information related to different locations in the world. the application is owned by Google company, after google acquisition the application got many updates and many improvements which brought many users in less time to the application. The Google used new application programming interface (API) to bring these many changes in the application and make the application more accessible to everyone. Later more web mapping applications used this google API to develop their applications. Most interesting thing is the google kept its API as open source that means any one can use this API for free. This is the application which was developed by some others and later handed over by google. The google maps application is not only web mapping platform but also offers street maps, 360 interactive panoramic views of street (street view), real time traffic level, satellite imagery, aerial photography and route planning for travelling by foot, car, bike , public transport

Google Maps is a Web-based service that provides detailed information about geographical regions and sites around the world. In addition to conventional road maps, Google Maps offers aerial and satellite views of many places. In some cities, Google Maps offers street views comprising photographs taken from vehicles. In August 2013, it was determined to be the world's most popular smartphone app, with over 54% of global smartphone owners using it. In May 2017, the app has reported to have 2 billion users on Android, along with several other Google services including YouTube, chrome, google search, and google play. As we all know android is the operating system (OS) which is developed by google and google maps also owned by google, all android mobiles will have google maps application as default map application. And the years progresses the people also habituated to use google maps as google made many changes to application. In this way the google maps got good response from users and became more popular in less time. Hence some times small decisions will bring drastic change in our lives. Besides google maps the google company acquired many small companies and developed well.

Google Maps has over 20 petabytes of data, which is equal to approximately 21 million gigabytes, or around 20,500 terabytes. Depending on data availability, aerial and satellite images are updated every two weeks. Google employs automatic face and license plate blurring technology to protect people's privacy in Street View, and users can even request additional blurring. The satellite imagery for both Google Maps and Google Earth comes from a broad range of sources and third-party providers. Governments can petition satellite owners to blur certain sensitive geographical areas, as well. Google has worked with thousands of business owners in eight countries to bring Street View technology inside buildings. The Street View team has taken tens of millions of images since the Street View project began in 2007, and they've driven more than 5 million unique miles of road. Google originally

started with fewer camera lenses and lower quality imagery, but now the Street View camera systems have 15 lenses and can produce photos at about 65 megapixel resolution. When Street View was still in the experimental stage, the team packed several computers in the back of an SUV and placed cameras, lasers and a GPS device on the roof.

History

The google maps history is very interesting from a common software engineer in Australia to google.

In Australia at Sydney city a software engineer named Noel Gorden one day got a intelligent thought to create a digital map which can be accessible in smartphones and desktops which is very convenient to use. He got this idea and within no time as he is already a software engineer, he started to implement his idea. Actually, they are team of 4 members started a company called “where 2 technologies” , among team of 4 Noel is also one of them remaining partners are lars, jens elistrup, Rasmussen and Stephen ma. These are all partners combined together and started working hard on this project after their regular office hours and they setup this company in Noel’s rented apartment spare bedroom. After some days the other 2 partners try to negotiate with google cofounder larry page to sell their innovative idea. After negotiation larry page asked where 2 owners make a change that is, actually at that time the maps is an application which required to download and install in mobiles and laptop and Larry page ask to make this application online by creating web version of google maps. after some days the whole team with their whole efforts succeeded in creating web version of google maps.

acquisition

the google co-founder larry page accepted to acquire google maps in 2004, after the deal made, the entire team behind future of google maps as it owned google maps and the four founders of 2 where technology including Noel became as employees of google. With this the google maps is the 2nd ever acquisition of google. at a later time the google acquire many companies which are developing maps related tools like acquired a geospatial data visualization company for satellite imagery system, and in 2004 acquired “zipdash” company which provide Realtime traffic analysis on road. A while later in 2005 google officially released the google maps application in beta version 2.0 which consist plain data base, later the time progresses google released many updates to application and integrated many acquired tools like satellite imagery system, google earth, traffic level analyzer. Now the application got high customer satisfaction.

services are being offered by google maps

Along with location searching and navigation the google maps application offering many services to its users in order to increase the accuracy and perfection in its service and to stand out of other competitors. To increase the accuracy in navigation the google has to use some extra advanced tools like GPS, satellite imagery system, to give information about rea time traffic level on roads google uses real time traffic analyzer which gives information based on the number of users using on the same road. In this manner the google maps is offering some more services they are

Directions and transit

The google maps gives travel plan for tourists/ passengers, available directions through driving, walk, road, public transportation, Taxi services. When a google map user search for a location maps application it will show the relevant search results based on the input given by user, among all results, the user has to choose one location, after choosing location he can access the overview of that location which consists reviews given by users, location timings, entry fee, directions to reach that location. If the user want to reach location immediately he has to choose direction option then the app will show different ways to reach that location like by walk, by 2 wheeler, public transportation, 4 wheeler driving, after choosing one mode of transportation it will show easy, fast, less traffic routes to reach desired location safely. again, in public transportation there are 2 more mode of transport ways are available they are bus way and train way. Here we can avail clear public transportation time table and if there are separate indications to identify vehicle like bus numbers, they also available in application clearly. The google is partnered with more than 800 public transportations to keep data available for users.

Traffic conditions

In 2007, Google began offering traffic data as a colored overlay on top of roads and motorways to represent the speed of vehicles on particular roads. Crowdsourcing is used to obtain the GPS-determined locations of a large number of cell phone users, from which live traffic maps are produced.

Google has stated that the speed and location information it collects to calculate traffic conditions is anonymous. Options available in each phone's settings allow users not to share information about their location with Google Maps Google stated, "Once you disable or opt out of My Location, Maps will not continue to send radio information back to Google servers to determine your handset's approximate location. Here the google maps is giving more importance to its users' privacy. And stating that users' data is very safe and sound. However, this traffic analysing feature is excellent and more useful in medical field to reach patients by ambulance service in traffic free routes faster than regular time. And normal people also can also use their valuable time more productively by avoiding spending time at traffic signals.

Street view

in early 2007 the Google released street view feature in google maps application with new update. With this feature the users can experience the real location in 360-degree panoramic view by swiping mobile screen up to down and side to side. At the initial stage the google added only 5 US cities, by 2009 the number increased to some thousands of cities around the globe. The google maps management is focussing more on adding college campus streets and departments in street view.

to shoot these street view panoramic videos google uses 360 degree camera, they shoot with this camera by attaching on the roof of SUV, control camera from inside of the vehicle and travel in the desired area. Later adding those cities in street view leads to many controversies because of people privacy concern. Actually while recording 360 videos the camera automatically capture the people on the streets /

roads of that area, this leads to controversy. Later google realised mistake and make people faces blur with its new advanced automatic face blur technology.

In late 2014, Google launched Google Underwater Street View, including 2,300 kilometres (1,400 mi) of the Australian Great Barrier Reef in 3D. The images are taken by special cameras which turn 360 degrees and take shots every 3 seconds

Business listings

Generally, when people use maps they expect at least to know and locate necessary goods stores like petrol bunks, ATM, grocery stores. to get these locations located by users, either business itself has to list its shop in maps or maps app developers has to add shop and its information in maps. here google followed first method to list business in maps. it gives facility to business owners, store owners to add their business location to reach their exact location, contact information (mobile number, email, website) their business working timings. There is one more important feature of listing business is chatting with customers, with this chat option customers can enquire about their needs. There is an option called Google my business profile where business owners can register their business and has to get their business verified by google. to avoid misuse and location duplication google has hired some staff for in person verification, after verification they can log into their dashboard and can edit their information. Genuine business owners can also optimise their business listings to gain greater visibility in Google Maps, through a type of search engine marketing called Local search engine optimisation. The business can optimise maps search engine with the help of google my business (GMB) dashboard by using different keywords related to their business. They should think in the user point of view and add the keywords.

My Maps

My Maps is a feature in Google Maps launched in April 2007 that enables users to create custom maps for personal use or sharing. Users can add points, lines, shapes, notes and images on top of Google Maps using a what you see is what you get (WYSIWYG) editor

Local Guides

This is the volunteer programme launched by google maps to get contributions from its users to improve google maps accuracy and efficiency. The people who contribute to google as volunteer called as local guide. These local guides contribute to google maps by writing reviews, rating places, uploading different locations images, uploading videos, editing locations, editing information, and adding places in google maps. based on the number of contribution and the performance google maps gives some point to local guides, after reaching certain number of points the next level will unlock to local guide. more points lead to more levels. The google also gives some benefits to its local guide volunteers to encourage and to motivate them to do more better contributions in future. The local guide programme also one of the main causes for success of google maps, because more google maps local guides feel application as their own once and spend their valuable time to educate people about locations they have visited.

Timelapse

Earth Timelapse, released in April 2021, is a program in which users can see how the earth has been changed in the last 37 years. They combined the 15 million satellite images (roughly ten quadrillion pixels) to create the 35 global cloud-free Images for this program

These are all services presently the google maps is offering to its users and customer satisfaction level also good. Though there are many web mapping applications are available in market, the 70% of people are preferring google maps because of integrating best tools to improve accurate geolocation.

1.2 INDUSTRY PROFILE

An industry profile provides a snapshot of a specific business industry based on data that includes trends and areas of growth. It refers to clear and detailed analysis about one group of companies (businesses) carried out similar action, services or manufacturing similar product. Every business must study industry profile before incorporating business because this industry profile provide more information about that industry such as market size of industry, major companies, competitors, limitations in industry, advantages of industry. This information helps new entrepreneur to make right decision.

As we know google maps is providing services like mapping, navigation this google maps comes under **Digital mapping industry, navigation industry**

Digital mapping industry

There are many companies providing digital mapping services to users, among them some are charging some money from users for their services and some are providing better services at free of cost. Cheap internet pack prices and urbanization leads to increase in usage of these digital mapping services as like the digital mapping industry market size also increasing rapidly. these digital mapping services are using in many departments like aviation, military, and aeronautics research. Digital mapping (also called digital cartography) is the process by which a collection of data is compiled and formatted into a virtual image. The primary function of this technology is to produce maps that give accurate representations of a particular area, detailing major road arteries and other points of interest. The principal use by which digital mapping has grown in the past decade has been its connection to Global Positioning System (GPS) technology. GPS is the foundation behind digital mapping navigation systems.

Market size and growth of digital mapping industry

Digital Map Market is forecast to reach \$29.67 billion by 2025, after growing at a CAGR of 13.81% during 2020-2025. The rise in use of smartphones for navigation systems using Global positioning system (GPS) by mobile workforce is analysed to drive the overall market demand for Digital Map during the forecast period. Moreover the use of digital maps in precision farming, surveying, and construction is further set to assist the market growth during the forecast period.

Alongside the increasing usage of smartphones, the rapid developments in smartphone applications for navigation are significantly impacting the growth of the digital map market. Most the devices equipped with the navigation applications using digital maps provide the user with exact locations, best routes with high level of accuracy, robustness and reliability. Apart from navigation these devices are also used in real time asset tracking, delivery tracking and so on, is also analyzed to be the driving factor for digital map market. Therefore the wide employment of these devices integrated with digital mapping technology is acting as a key driving factor for Digital map market for the forecast period 2020-2025.

Key reasons for market growth

- North America dominates the Digital Map market owing to increasing demand from applications such as automotive, construction and many other industries.
- Increasing adoption of mobile devices for navigation, 3D mapping platforms & advanced technologies for surveying applications are analysed to drive the market during the forecast period 2020-2025.
- With the increase in collaborations and partnerships between automotive manufacturers and digital map providers, automotive industry is analysed to witness fastest growth during the forecast period.

market growth in agriculture sector

Digital Orthophotography held the largest share and is also anticipated to grow at highest growth rate during the forecast period 2020-2025. Digital Orthophotography technology avails farmers with digital farm management services that help in analyzing the high & low fertile area of the farm and many other factors that supports farmers in making decisions based on concrete data. We can use this data to do land surveys and set exact boundaries for agriculture lands and can avoid challenges in setting boundaries. It will help to measure right distance as it take ariel photography and calculate automatically.

Growth in armed forces

Digital maps are also used in military applications in providing the area map to the soldiers with the data collected through drones and helps in identifying any threats. Therefore the demand from these applications is analyzed to impact the growth of the digital map market. Most of the countries are trying to replace manpower at borders with electronic devices like robots and drones which work with digital mapping technology. So in this field also digital mapping industry has more scope

market growth in automobile industry

Automotive sector dominates the market for Digital Map during the forecast period 2020-2025 by growing at a CAGR of 15.2%. With the increasing demand for autonomous vehicles and usage of digital maps for navigation is further elevating the digital map market. Moreover the significant rise developments in the digital map technologies that facilitate autonomous vehicles with exact location, environment and drivable path, with high levels of accuracy, robustness, reliability and other factors are impacting the growth of the digital map market. The increase in collaborations and partnerships of major companies such as Nissans partnership with Tom Tom International BV., and so on are further boosting the market. In this field also automobile companies are thinking to reduce manpower and expenses spend on driver and effort which car owner put to drive car and increasing manufacturing of driverless cars. These vehicles also work with the help of digital mapping system so in this field also very profitable for digital mapping industry.

market growth in construction and logistic delivery industry

.In 2018, North America dominated the Digital Map market with a market share of 27%, followed by APAC and Europe. With the presence of the major players and ease of availability of digital cartography services for automotive, transportation &

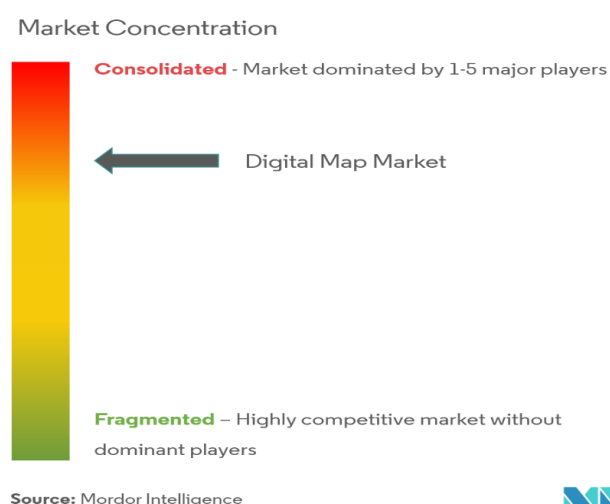
logistics, and construction industries are further boosting the market in North America. Moreover, with more than 11 million vehicles traveling on the U.S. roads, which is 11.5 percent of the total vehicles in the world as reported by the OICA in 2018, there will be significant demand for Digital Map in the automotive application from this region. APAC is analysed to grow at highest rate during the forecast period owing to the wide range of usage of digital maps in the automotive navigation applications.

Market Trends:

Rapid urbanization, along with the rising penetration of mobile computing devices for navigation, including 3D platforms, is augmenting the market growth. The increasing penetration of advanced technologies that utilize visualization, simulations, and dynamic location-based inputs is also propelling the demand for digital maps. Furthermore, the rising adoption of digital maps in the civil engineering sector to visualize territorial data for infrastructural planning and implementing adequate safety measures in buildings is also aggravating the market growth. Additionally, numerous technological developments have led to the integration of cloud technology and big data in digital mapping solutions. Moreover, the advent of real-time digital maps in passenger and commercial vehicles, along with the rapid development of user-friendly platforms, is further anticipated to drive the digital map market.

Key players in digital mapping industry

- TomTom International B.V.
- HERE Technologies
- Google LLC (Alphabet Inc.)
- Environmental Systems Research Institute Inc.
- Maxar Technologies
- Digital Map Products Inc. (LightBox)
- Getmapping
- Apple Inc.
- MAPQUEST INC. (America Online)
- Nearmap
- ThinkGeo LLC
- Collins Bartholomew



These are the major companies which are ruling digital mapping industry but among these are all companies top 5 companies like HERE technologies, google TOM TOM international and other 2 companies are gain more control in digital mapping market due to heavy demand to their products and services.

Regional wise market growth

Regions where digital mapping is using actively

North America – United states
Canada

Europe - unite kingdom

Germany

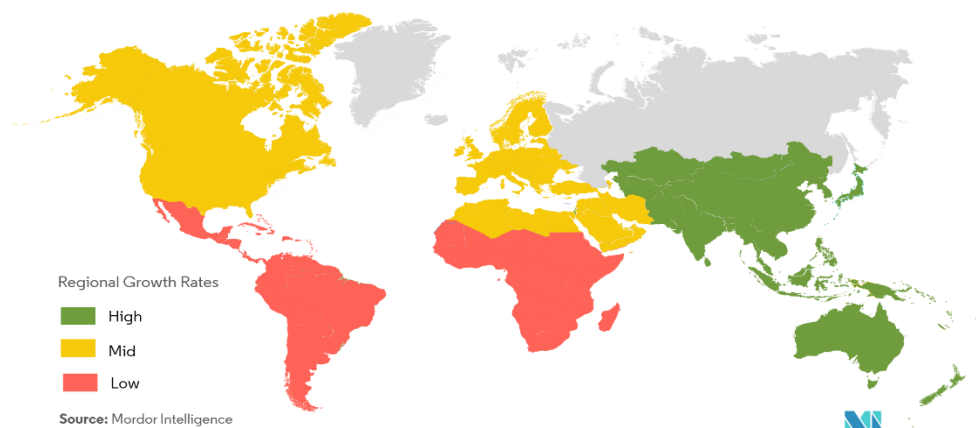
France

Asia - India

China

Japan

Digital Map - Growth Rate by Region (2019 - 2024)



Below figure is showing clearly that in which region the digital mapping usage is high and in which region the usage is low. In the figure they indicate high and low percentages with different colours. The figure contains a global map in which different colours show different levels of usage of digital mapping services.

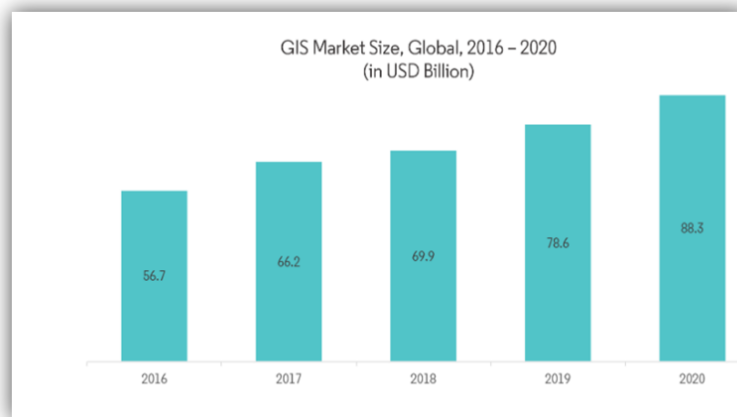
compound annual growth rate of digital mapping

Here given bar graph figure showing summary of expected compound annual growth rate of digital mapping industry all over the world. In this report, the author took top 5 major digital mapping companies like Google and TOM TOM to find the CAGR. He took the time period from 2021 to 2026 to find CAGR. Based on many factors and market growth determinants, the author came to one conclusion that the market growth will be 15% from 2021 to 2026. Comparatively, previous growth we can say this is the great growth the digital mapping industry is going to see because 15% growth in just 6 years is a very great growth, if everything happens as expected in the next 4 years, the digital mapping industry will develop a lot and bring more changes in mapping technology. The author also estimated that in which region has the largest market for digital mapping, in this way he found that North America will be the largest market for mapping, and in the Asia Pacific region the market is growing very fast.



Geographical Information System market size from 2016-20 globally

the given figure clearly stating that how geographical information system has increased from the year 2016 to 2020 worldwide. This GIS grown 57% to 66%, it means in this one-year market grown 9% it is considerable growth in one year. Next from 2017 to 2018 the market size grown from 66% to 69% in this year the growth rate is very low compared to last year, there might be some factors influenced at that time. In the next year from 2018 to 2019 the market growth increased from 69% to 78% in this year the growth again retained up to 9% in this year this growth rate as similar as 2016-17 years. In the next year from 2019-2020 the market size grown from 78% to 88%, now this year registered highest growth rate ever with 10% growth. So this is the highest growth registered in the report. In this year also there might be influence of many factors for this growth also like more urbanization, technology advancement.



The given report conclusion is the market is growing with good consistency but only on one year the growth get down. That is also because of some external factors like Govt policies and privacy issues from customers.

Challenges in Digital mapping industry

With the increased usage of mobile application based navigation services that are integrated with digital maps, there is a dire need to adopt best practices for data security, app security and privacy of the user. While developing these types of applications, the developers often overlook certain standards that later fail to attain the required security levels. In these cases, the hackers can successfully perform phishing attacks and lead to damage. Therefore, these issues are currently hampering the digital map market growth and is set to continue during 2020-2025.

1.3 COMPANY PROFILE

A company profile is an introduction to your business that details what you sell, how you were founded, what your mission is, how you manufacture or source your products, and why you serve customers. A company profile is an introduction to your business that details what you

sell, how you were founded, what your mission is, how you manufacture or source your products, and why you serve customers.

Google maps company profile

company name - GOOGLE MAPS

Company description - Google Maps is a web mapping platform and consumer application offered by Google. It offers satellite imagery, aerial photography, street maps, 360° interactive panoramic views of streets, real-time traffic conditions, and route planning for traveling by foot, car, bike, air and public transportation

Company logo



incorporated on -February 8 2005 17 years ago

Founder - GOOGLE

Type of services - web mapping

Industry - Digital mapping

Area served - all over the world (globally)

Headquarters - mountain view California united states

Products and services - Digital maps, navigation, GPS, street view, satellite imagery.

Current status - active

Commercial - yes

Slogan - Explore and navigate your world

	Discover new experiences across the world or around the corner
Vision	- To become most admired web mapping company in the world.
Mission	- “to organize the world's information and make it universally accessible and useful,
Core values	- Focus on the user and all else will follow. Democracy on the web works.
Revenue	- 4.3 billion \$ per annum approximately
Available in	- multiple languages
Reason for starting maps	- as a new solution to help people “get from point A to point B.”
No of employees’ work	- more than 7100
Programming language used	- C++ (back-end), JavaScript, XML, Ajax (UI)
Address	-1600 Amphitheatre Parkway in Mountain View, California.
URL	https://www.google.com/maps/@17.3944104,78.5092769,9z
Phone	- 1-650-253-0000
Head of google maps	- Jen Fitzpatrick

1.4 NEED FOR THE STUDY

- This study helps to identify how far google maps users satisfied with the maps services
- It helps to convey drawbacks and issues are being faced by users to management
- This research is useful to bring a change in application interface and layout based on the user's feedback.
- This research helps to increase user satisfaction and to attract new customers with its updated interface and new updates which include major changes asked by its customers.
- This research is useful for google to know how many customers are loyal to them
- It helps maps developers to come with new ideas by rectifying current drawbacks
- that enables companies to gain insight of customers' needs and requirements, their loyalty, as well as obtain useful feedback, whether in a positive or in a negative light,

1.5 SCOPE OF THE STUDY

scope of this research is to understand the requirements and improvements to increase the customer satisfaction. This research will help future researchers to know present I mean in 2022 year how far users satisfied with the present features and services of google maps. this research will help upcoming researchers to understand the present issues and obstacles are being faced by users and to find solutions to these issues. This research is convenient to know the Customer experience is how customers engage with product and brand throughout the entire arc of being a customer. This research may be utilised to increase customer trust and loyalty by rectifying existing issues. It will be helpful for company to stand out of competitor companies as it is giving importance to customers. With this customer will get benefited in many ways. it is beneficial to analyse and evaluate the main hindrances as it obtain information describing characteristics of a large sample of individuals of interest relatively quickly.

1.6 OBJECTIVES OF SURVEY

Primary objectives:

- 1. to assess how satisfied users are with different aspects of google maps and its navigation system:**

The main aim and objective of doing this research and survey is to identify and understand how far the users (customers) of the google maps application is satisfied with the services are being offered by the maps. The main services offered by google maps are location searching, navigation, street view, satellite imagery system. I have asked users google maps questions in different aspects like application interface and try to find their satisfaction level. This is the main aim of this research. To achieve this aim I tried many ways like collecting users' opinions in the form of getting survey forms filled by active google maps users.

secondary objectives

1. to understand google maps users' perception:

knowing and understanding google maps application from users point of view, analyzing the problem which is being faced by user is whether the mistake from google maps application itself or due to lack of users technical knowledge. It means clearly understanding and thinking everything from the user's point of view. If we do research in this way we can avoid bias in the result of research.

2. to know challenges are being faced by users:

The challenges are faced by customers shows more impact on the users satisfaction level. When there are less challenges to users the user satisfaction level will be high whereas the challenges are more automatically the user satisfaction level also low. That's why it is more important to know the major issues users are facing in application to understand the research result.

3. to know with which service / feature of the application the user satisfied more:

though there are many services offered by company. There will be some cases like some users only limit themselves to use only some part of the application like using only one service when he is in need and ignore rest of the services. But the real fact is, if he use the same service with combining related feature there are chances that he will get more productivity. For example, there is a google maps user who uses maps only to reach his office daily by car. But one day his car brake down and he want to go office, then if he know that we can get public transportation details in maps, he can get into public transportation and reach his office.

4. to understand customer expectations:

when a user downloading one application into his mobile or desktop, he will have some expectations in his mind on application how its interface would be and the services it will offer. The developers should keep these expectations in mind and try to reach an average person expectation.

1.7 LIMITATIONS OF STUDY

1. limited sample size: Due to time constrain Though there are many google maps users available I am able to collect only 150 samples from 150 respondents. Hence, we cannot say that this research is 100% correct. But 150 number is not too small. We can measure satisfaction by taking average of collected samples.
2. The survey samples are limited to some regions such as Hyderabad, Anantapur,
3. The duration of research is restricted to three months. If there is some more time, we can collect many samples from different types of regions and different types of people like business and employees, drivers who uses maps regularly.

4. This research result is purely based on the samples collected from respondents, so we also can not sure about the conclusion of the research. Whatever the conclusion we gave is only based on the limited data from limited area. Hence the information may be subjected to personal bias.
5. The study is an opinion survey; caution may have to be exercised while extending the result to other areas.

CHAPTER 2

REVIEW OF LITERATURE

2.1 introduction

A review of literature is a written summary of journals, articles, books and other documents that describe the past and current state of information on the topic of your research study. As review of literature means a description and analysis of literature relevant to particular topic, I have studied many research papers, which have done by many authors earlier, and I have learnt a lot about google maps and its navigation system. When I browsed in online by using different academic search engines like google scholar, Microsoft academy, pedmed I was able to find many researches which are already written by many authors. These are all researches gave me a chance to understand and to get a clear-cut picture of my research topic a study on customer satisfaction towards google maps and its navigation system.

in this process I have depended mostly on internet to refer previous research papers because now a days due to covid 19 pandemic situation the education system in India changed tremendously. Now everything from classes to exams is carrying out through online only. In the same way many researchers also started uploading their research papers online and keeping them available for new generation researchers. For this reason, I fully rely on internet for collecting, referring, summarizing journals, research papers. In this process I have used many websites to obtain research journals and papers, but some websites like researchgate and google scholar helped me to do my research in better way by providing relevant information.

2.2 list of researches

2.2.1 Emma Fraser research (2019)

He worked as UC Berkeley, Berkeley Center for New Media, Faculty Member UC Berkeley, Media Studies, Faculty Member Lancaster University, Sociology, Lecturer (Media and Cultural Studies) University of Leeds, Sociology and Social Policy, Teaching Fellow, Manchester Metropolitan University, Humanities, Languages and Social Sciences, Research Assistant University of Technology Sydney, Cultural Studies, Alumna The University of Manchester, Sociology, Graduate Student. Besides this research he published 3 books, 14 papers, 1 theses chapter.

In this research he clearly explains about customer satisfaction and google maps navigation system. His research says that Google maps , is one of a growing number of touring apps available on phones, smart watches, tablets and other mobile devices,that enable users to undertake digitally-supported exploration of (particularly)urban environments. Combining augmented reality, cartographic interfaces and geographic data, these apps offer situated, visual and geo-locative urban experiences.

He also mentioned about customer satisfaction in his research by saying What are the importances of customer satisfaction by saying When your customers are satisfied, they believe in the brand and become loyal. These loyal customers give brands repeat business and form a major part of the revenue. Losing customers takes a huge toll on your business revenue and customer churn numbers. In his opinion google acquired good customer satisfaction by providing up to date innovative features in google maps.

With this we can understand that he tries to find and provide valuable information about customer satisfaction towards google maps and its navigation system in his research. After reading his research papers I realized that there are still many things in google maps and customer satisfaction topics. And with this paper I clearly understood each and every detail.

2.2.2 vikky aprilla research (2017)

Master of Information System, Universitas Kristen Satya Wacana, Salatiga, Indonesia.

His research mostly concentrated on improvement of google maps and solving minor issues in apps and reporting those problems to company to get solved. Besides this, this research concentrated on land mapping.

This research says that Google maps API provides many features for manipulating maps and adding content to the map through a variety of services that allows to create a mapping application. This paper discusses the use of the Google maps API to connect the land site listed in the certificate of land with Google maps so that the location of the land can be determined accurately. The method used in this research is the research and development (R&D) method with dynamic system approach. The applications were made aiming to help the Land Officer and the public to know the location of the land digitally. The utilization of GPS technology is used to determine the coordinate points of the boundary in the form of latitude and longitude accordance with the existing situation in the field. The advantage of mapping digital land certificates is not only to know the land site, but also get the information contained in the map and make map-making is much cheaper because they do not need to use a lot of tools, maintenance, in addition to the storage media practically do not need more space.

In this research the author concentrated to help form owners in finding their form area and to avoid malpractices like occupation. He aims to provide clear picture of all form owners land measurements online and to let public and owner of the land know land their location digitally.

So this is the research implemented well then it is very helpful for farmers and land owners to protect their land from forceful occupations.

2.2.3 Qun Liu research 2010

School of Electrical & Electronic Engineering, Shandong University of Technology, No.12, Zhangzhou Road, Zhangdian District, Zibo, China

in this paper, we present the theory and method to implement the Google Maps-style WebGIS based on ArcGIS software. The original spatial data is configured and landscaped by ArcMap or ArcIMS Author, to generate MXD or AXL files. Subsequently, ArcIMS Administrator could easily create corresponding map

service. And then, some programming work is carried out to build hierarchical map tiles and to achieve the organization and management requirements. The key technologies include map tiles generation based on Java program, storage strategy based on five-level directory, management platform based on web pages. Finally, the map tiles would be rapidly and seamlessly published in web pages. The method is successfully applied in our research projects, which are demonstrated in the last section of the paper.

This research of qun lui strongly focusing on improving google map and suggesting many improvements to make google maps more efficient and easy to use and navigate from one place to other place by adopting some better techniques like arcgis. From these types of researches we can understand one thing that is today easy and user friendly interface and artificial intelligence google maps not developed just like that means easily. There are many researches and development activities takes place behind this much advanced maps application.

2.2.4 Divisha Arya (2016)

Business management, Master of management program, Parahyangan Catholic University. She states that the Study of Consumer Behavior has become essential. Consumers are the kings of markets. Without consumers no business organization can run. Consumer behavior involves the psychological processes that consumers go through in recognizing needs, finding ways to solve these needs, making purchase decisions, interpret information, make plans, and implement these plans. Consumers often buy products not because of their attributes per se but rather because of the ultimate benefits that these attributes provide, in turn leading to the satisfaction of ultimate values. Consumer behavior is a complex, dynamic, multidimensional process, and all marketing decisions are based on assumptions about consumer behavior. Models of consumer behavior play a key role in modern empirical Industrial Organization.

In this research she is mainly focused on customer satisfaction and highlighted this point only because the whole business is depended on this point only. if there is no loyal customers means who are highly satisfied with our products and services and who support us in any circumstances the business may not run properly. That's why every company should focus mostly on customer satisfaction and try to gain more loyal customers. That's why she dedicated here whole research to the customer satisfaction.

2.2.5 Chung-Hua Chu

National Taichung University of Science and Technology, Taichung, TW

In this research tries to make travelling and tours, tourist spots make accessible to travelers by using google maps.

His research mainly says that People who have self-planning of itineraries are increasing. However, current travel websites only provide simple travel information and regular set itineraries and they cannot assist with users' self-planning of itineraries and increase participation intention. This study develops a travel planning platform by Google Maps and through Tra News, data sources constructed by users and users' positive system experience, it enhances users' travel experience and intention and helps users arrange itineraries.

In recent years, the Taiwanese travellers in Taiwan are increasing. According to "investigation on national traveling in 2010", in 2010, total traveling frequency of the

Taiwanese aged at least 12 years old in Taiwan was 1023.93 million. They were more than 2009 by 26.5% [1] (Table I). The percentage of self-planning of itineraries was 88.4% which was the first. It means that most of people in Taiwan planned the itineraries by themselves and thus self-planned trips is worthy of operation and study.

As above table said travelling increased many times in recent years because of advancement in internet technology and easy information acquirement. As travelling of people increased there is a need to update information and show the proper and safe routes to them. For this purpose the author decided to use google maps to give clear and safest routes for travelers.

2.2.6 christon sardinos research (2018)

Dept. of Informatics and Telematics, Harokopio University of Athens, Athens, Greece

The exponential growth in the usage of smart devices, such as smartphones, interconnected wearables etc., creates a huge amount of information to manage and many research and business opportunities. Such smart devices become a useful tool for user movement recognition, since they are equipped with different types of sensors and processors that can process sensor data and extract useful knowledge. Taking advantage of the GPS sensor, they can collect the timestamped geographical coordinates of the user, which can then be used to extract the geographical location and movement of the user. Our work, takes this analysis one step ahead and attempts to identify the user's behavior and habits, based on the analysis of user's location data. This type of information can be valuable for many other domains such as Recommender Systems, targeted/personalized advertising etc. In this paper, we present a methodology for analyzing user location information in order to identify user habits. To achieve this, we analyze user's GPS logs provided through his Google location history, we find locations that user usually spends more time, and after identifying the user's frequently preferred transportation types and trajectories, we find what type of places the user visits in a regular base (such as cinemas, restaurants, gyms, bars etc) and extract the habits that the user is most likely to have

So this research is saying that there are a lot information to collect from google maps users devices like their movements, their most stayed locations like their home, their most visited places, usage of their mode of transport to travel from one place to other place, their favorite food, their workplace. Google collects this much data from an user to improve user experience with user friendly interface. With this data google can customize the pages in their other google apps pages by displaying their favorite things like favorite food, vehicle, and it also use to display their personalized ads while using apps. By doing these things google can improve their customer satisfaction and change their perception towards all google apps along with google maps. If we came to google maps when it collects information from app, it will show the very relevant search results at top from next time, because most probably user like that result. By using tis information it can navigate users in best routes by avoiding routes with heavy traffic and reach them safe and quick to their homes.

2.2.7 Anbavo wang

School of Computer and Information, Shanghai Second Polytechnic University, Shanghai, China

This paper introduced the concept of graphic resources integration based on Google Maps. At the same time, it also specifically elaborated on the use of Google Maps API to develop integrated resource management systems. This approach use of Google Maps application programming interface, combine GPS technology, with B/S flexibility to real-time, vividly, and simply implement roaming position in the idle resources, under using resources, demanding for resources of companies, schools, hospitals and so on. Meanwhile it gives the suggestion of the recommended optimization of resources through logistics mode of calculation. Finally this paper also explored its elementary business applications.

On June 29 2005, Google launched own API procedure to let the people, who have interests in Google Maps, voluntarily develop Google Maps' services, meanwhile Google might also carry on the management of these services by API. As the matter stands, the exploiters only need use the JavaScript to link up Google Maps to their homepages. In addition, they may also manufacture the mark or the info window independently on the map, including icon, yellow page and other information frame like these. This online map service, which is simple and effective, has two advantages; firstly, the. Google Maps API is for free at present; secondly, registered users also permitted to add own labels on webpage to organize information and upload pictures. Now the users also can edit the places means can add locations in google map and they can also provide information about that place the only google will verify whether the place located at the exact location or not. These are the advantages of giving google api to public. By using this api the researcher want to implement integrated research management system by using graphical resources integration

2.2.8 oki ari saputra research (2018)

Faculty of Computer Science, Brawijaya University, Malang, Indonesia

Application testing is measured from the user's point of view by highlighting five aspects of testing, which are functionality, effectiveness, efficiency, reliability, usability, and cartography. This research aims to make a comparison between Google Maps, Here Wego, and Wisepilot applications on the Android operating system as a better alternative that should be used in searching locations on maps and navigation routes through user satisfaction testing. Applications in this test are used in the recommended navigation routes and locate-ons in Malang which requiring several types of testing on each application. For each application is tested and evaluated by five aspects of testing using Web Quality Evaluation Method (WebQEM) method and cartography rules. The writer has analysed and made a comparison of test results that were conducted on each aspect based on the standard assessment categories in each aspect tested. The Google Maps application is superior to other three applications based on four of the five aspects tested: functionality, effectiveness, efficiency, reliability, usability.

The researcher main aim is to provide users a best for searching locations on maps and navigation between from one place to another place. In this way he decided to do research on different applications which facilitates navigation and searching locations features. After doing some research on the list of apps he decided to select google maps, here wego, wisepilot and started testing these apps in five aspects they are functionality, effectiveness, efficiency, reliability, usability. After conducting thorough research on these three applications, he came to identify that the google map is very superior and best among these three to search locations in map and navigation. So the google map has good user-friendly interface and easy to understand and easy to use. mainly it s free application and available for all android users by default in their newly purchased smartphone.

2.2.9 wenjaang hu (2012)

School of Information Engineering, Inner Mongolia University of Science and Technology, Baotou, Inner Mongolia, China

As an important feature of Web 2.0, mashup technology can improve data value by integrating data and services. Google Map provides a series of services of map data provided , processed ,published, making application of Google Map technology conform the development trend of the times. In this paper, Google Map is as a platform combined with a reasonable top-k ranking method which are able to build a application mode that can process map data, provide user a reasonable order according to the need and provide reasonable choose suggestion. With the development of WEB 2.0, kinds of data on the net are open. Many internet service providers provide not only data and service in their site pages, but also provide programming interface for the third parties can freely access related data and service. This kind of application uses many open platform's data and services is called Mashup[1]. In the times of WEB 2.0, personal enthusiasm and creativity are released. First part, the user is not meet in large and complex applications, but there are many individual needs; second one, the prevalence of open API and tools, making users with some programming basis can program application development, Mashup has become the best tool to meet the users with individual needs. This article focuses on the use of top-k[2] ranking method to integrate the information on Google Map, according to the special needs of the user to integrate information, meet the personalized needs of the user's. The article uses mainly restaurant demonstrate the subject's feasibility. According to the user's personalized requirements on the restaurant to design scoring and system functions, integrate restaurant's information and combine the characteristic of top-k ranking algorithm to provide reference proposal for the user's individual needs.

In this research the researcher aims to integrate data and services and use arc mashup technology to improve efficiency of applications in this researchers tries to use google map data and services.

2.2.10 Deepa bura (2019)

Department of Computer Science & Engineering, Faculty of Engineering & Technology, Manav Rachna International Institute of Research & Studies, Faridabad, India

Google maps are used to navigate to desired destination. Various services are offered through Google Map like research on criminologist, mapping application on web, planner, street view etc. The users of web use Google Maps majorly for finding the routes between their respective source and destination. Although it provides the various paths to the users between the desired source and destination, but many users need the additional information associated with the path in terms of security, risk, quality of path etc. In today's world around 70% of women are working, so they need some security mechanism for safe and secure route. This paper proposes a technique, which will predict safe route with the help of google maps. Web mapping service which is developed by the google is known as google map, which offers various services like maps of street, traffic conditions based on real time scenario. Google maps are a type of flat maps that basically works with web browser.

This research aims to provide women safe and security world by developing or using google maps. This is the most helpful research for women. If this research get succeeded. At present the world is fully got advancement in science and medical field which lead to women also come out of their home and work with men. That's why their safety also matters a lot in this situation. Researcher got good idea for providing safe and sound working environment.

2.2.11 Hao shi

School of Engineering and Science, Victoria University, Melbourne, Australia

The health geographical information system (GIS) has been used in many organizations for the management and visualization of public health data. As epidemiology information has become a part of health data repository in the health data management system, many health researchers have dedicated their research areas to geographical epidemiology information analysis and visualization. The Population Health Epidemiology Unit of the Department of Health and Human Services (DHHS) in Tasmania uses the web-based epidemiology system ('WebEpi') to conduct monitoring and surveillance of the health of Tasmanian population. In this paper, the epidemiology data self-organizing map (SOM) analysis methodology and Google Maps services techniques of WebEpi are presented. SOM has been used as a tool to recognize patterns with data sets measuring epidemiology data and related geographical information. Google Maps services offer Web GIS application programming interface (API) and GIS views. The integration of SOM and Google Maps facilitates the epidemiology data pattern recognition and geo-visualization which enables health research to be conducted in a novel and effective way.

2.2.12 Adi setiwan

Department of Mathematics, Universitas Kristen Satya Wacana, Salatiga, Indonesia

Land area measurement is very important in agriculture, plantation and housing. The border of the land are often irregular and contoured. Determining the coordinates of land boundaries by using GPS (Global Position System) requires field visits to the site of land will be very costly. Today, Google Maps provided by Google Inc. is widely used in GIS (Geographic Information System) e.g. to determine the latitude and longitude coordinates of location on the surface of the earth such that the coordinate of boundary of a region or position on the surface of the earth can be

determined. More information of Google Earth can be found in and Furthermore, the coordinates of the border of the region can be used in land area measurement.

In this paper, we present how to determine the land area measurement by using spherical quadrilateral approach method. The proposed method is compared to quadrilateral approach method with the UTM (Universal Transverse Mercator) coordinate system. The spherical quadrilateral approach method delivers in the calculation of the area of DIY and Central Java provinces 3328.2355 km² and 34978.488 km², respectively, while the quadrilateral approach method yielded 3613.1760 km² and 35207.7300 km². The results obtained by spherical quadrilateral approach method are bigger than the reference areas but less than 10 %.

2.2.13 Quin quan tan 2016

Earthquake Administration of Beijing Municipality, China

As is well known, earthquake often inflicts severe casualties and property losses. The occurrence of earthquakes cannot be reliably predicted by current technology, therefore the earthquake emergency and rescue is an important part of protecting against and mitigating earthquake disasters. Basic geographical data play an important role in earthquake emergency work. However, it is hard to acquire the spatial data of the earthquake site in short time. Therefore, the Google Maps data could be applied in the early stage of post-earthquake emergency work. This paper discusses the principles of Google Maps and technologies of applying Google Maps data in earthquake emergency work. The downloading and merging algorithm is designed and implemented. Using Google Maps data and the program, we produced thematic maps in real earthquake emergency work. It is proved that the methods are feasible and have great practical application significance.

Google Maps is a web mapping service application and technology provided by Google, which powers many map-based services [1, 2], including the Google Maps website, Google Ride Finder, Google Transit, and maps embedded on third-party websites via the Google Maps API. It offers street maps, a route planner for traveling by foot, bicycle, car, or public transport and an urban business locator for numerous countries around the world. It also can help find the location of businesses. Google Maps is a new style WebGIS and has deeply impacted the whole GIS world since its birth. Google Maps abandon the traditional technology of WebGIS, by using Ajax and hierarchical maps slicing technologies to achieve a new kind of Web Map Service (WMS). In this case, users do not need to have the professional GIS skills or installation of special software/plugin to enjoy the Google Maps service. Google Maps mainly provide three categories of map data: vector map data, remote sensing data, and topographic map data. Vector map data are most widely used in real applications, and provide the information of administrative divisions, transportation and other business points. Remote sensing data include different resolution satellite image data and airborne remote sensing image data. Topographic data can display terrain, elevation and contour information.

So in this research the author thought to detect earthquakes before it takes place and save people lives, property, animal lives by using valuable google maps data. As we discussed before in one research the google maps collect a lot of valuable information from its users and users' different devices like traffic information and personal information. As google maps interface and API are very advanced in technology and most useful for

estimating and the natural disasters like earthquakes and tsunamis in early stage. The author thought to use google maps to detect and estimate the impact of coming earthquake in early stage by collecting and analysing data from google maps by using different tools and software. if this research get succeeded it will be more helpful to the countries like japan, Indonesia, and china. Because the deaths due to these earthquakes is increasing and the present technology is not able to give appropriate information regarding coming earthquakes. So if this method is implemented in these countries properly then we can save many people lives and property.

2.2.14 [Mingchun Wang](#) 2021

Guangxi Engineering Research Center for Small UAV System and Application, Guilin University of Aerospace Technology, Guilin, China

In order to visually represent the flight flow conditions of the target airport, the flight data are visually coded and presented, and these numerical data are converted into more intuitive graphic information. This paper analyzes the flight data of aircraft, designs a basic preprocessing method of intelligent extraction and visualization of flight path, visualizes the flight path of aircraft arriving or leaving the airport, and is used to assist air traffic flow management and planning. First, the available parts of the original Airbus A321 flight data are pre-extracted. Then, the parameter units are converted, the data is divided and intercepted, the track data is smoothed, and the track offset is corrected. Finally, a Keyhole Markup Language (KML) file is generated that can be parsed by Google Earth. Through actual test, it can process data and batch generate KML files that meet the requirements. The system has stable and reliable characteristics, and completes intelligent extraction and visualization of track data.

This research focusses on providing clear information about the flight paths and help pilots to land their airplanes safely. In aviation industry present they are using very complex method to know the flight or airplane paths by firstly they take information numerically and then convert this data into visual graphic information then the airplane pilots can understand that data and take appropriate actions. This is the very long process and takes more time to finish this process and there is delay in decision making also which will lead to tension in passengers. So this author conducted this research by aiming to provide direct visual graphic information about flight paths by using google earth and google maps data. He also experimented to get visual information from google earth and google maps by passing KML files through these applications and succeeded in getting data quickly. So this research is very useful in aviation department to make decisions quickly and avoid unwanted extra time and money spending on outdated technology.

2.2.15 [pavel poketny](#) 2017

Department of Computer and Communication Systems, Tomas Bata University in Zlín, Czech Republic

This article describes how to determine live traffic levels in cities using Google Maps. Google Maps offers a program interface that allows one to graphically visualize a custom configuration of a selected map in any web-browser. A transport layer can be added to this configuration, which can be symbolized by four different colors on

major thoroughfares depending on current traffic flow levels and nodes. The main goal was to define this level of traffic as a numerical value that can be subsequently processed. To begin with, users need to convert these maps to HTML5 canvas to create individual canvases because Google Maps are represented by complex div tags in a user web-page. From canvas, a simple algorithm can read the pixels at any coordinates and then evaluate their colors. The whole solution is then implemented, using JavaScript programming language and designed to be used in real environments.

This research aims to aware and educate people about finding the traffic levels on city roads by using google maps application. In this research he clearly explained about how to find the traffic levels on city roads. This traffic related information is very useful for food delivery, groceries delivery applications and normal people to use their valuable time very productively by avoiding heavy traffic routes and select easy way to destination. Google collect this traffic information from its users only, the google maps will estimate the level of traffic by measuring the number of google maps users are present on the road at the particular time. Google maps gives more importance to its users by interacting and encourage them to help in developing google maps in the form of contributions. There is the separate tab is available to express users opinions on different locations, to add missed locations, to give updates about shops and businesses to the map users. With this 2 way interaction only the google maps won many users hearts.

2.2.16 Yanqing xu 2010

Institute of Remote Sensing, Wuhan University of China, Wuhan, China

Google Maps API which developed by Google was released in the network map on a free API function set. This article describes its features, functions, development method of WebGIS based on the Google Maps API, and we develop the logistics network system based on it. Studies have shown that: With the help of the Google Maps API it can be easily embedded the map into the logistics web pages; it has high resolution data and user-friendly interface. With the help of Google Maps API and WebGIS, it can make the logistics rationing system to be visualization applications, and that is the future trending of logistics network system.

In this research the author aims to create a logistic network system which means logistics transportation system used in business to transport goods from initial stage to final stage. To create this logistic network system, he uses google maps application programming interface. This google application programming interface is free source to create web mapping applications. Google keep its API free for public to use. In the same way he also thought to use this free source to create logistic network system for his business. So with this research we can understand that, we can use google maps to create logistic network system also which enable business to run more efficiently. After studying this research, the entrepreneurs' can clearly understand about the logistic network system and google maps integration.

2.2.17 yuda dian hajra 2018

Department of Information Technology Management, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

Medical service has become important aspect nowadays. When we have an emergency condition, we are often confronted with unknown variables such as travel distance and time of the medical services near us. This paper aims to develop a location-based service for medical purpose, which considers two major variables: travel distance and time. This system is using Haversine algorithm to find medical services around us within a certain radius. Then using Google Map API to calculate travel distance and time. TOPSIS algorithm is used to determine the best option for the results. By using this method, the whole system shows this research result give better method in decision making over previous studies.

Each person uses google maps for different purposes, one person uses maps to navigate from one place to another place, one uses to search different locations, one uses to find traffic level on road, one use to contribute to google maps. In the same way these researchers also focussing on different different aspects in google maps to research and to improve them in that aspect. Like that this researcher tries to include more medical services in google maps and give better medical service when the user search in google maps. For this he try to add more hospitals, pharma companies, medical shops, clinics and make them available in google maps to the people.

2.2.18 Boonyanit mathayomchan 2019

Computer Science - Science Division, Mahidol University, Nakhon Pathom, Thailand

Well-known tourist attractions receive reviews in various languages. Google Maps has a reviewing system with translation service. The translated reviews may not perfectly represent the original review, but may still capture valuable information. This paper studies the effectiveness of nonusing translated reviews in sentiment analysis for tourist attractions in Phuket, Thailand. Reviews for beaches in Phuket and nearby islands are collected. The reviews are separated into two groups, reviews originally written in English and non-English. Rather than discarding non-English reviews or constructing models for each origin language, we experiment with different ways of utilizing the non-English reviews by translating them into English. Results show that models constructed using the reviews originally written in English are also effective for translated reviews. This can significantly reduce the effort to understand the sentiment of reviews written in various languages by training only one model and applying it to text translated from any language.

In this research the author trying to explain how to understand the non-English and regional language reviews in google maps. There is a review system in google maps which will help to its users before visiting his desired place. The google maps will ask the visitors and tourists who visited the place will ask to write review about that place by including different facilities and services provided at the location. Based on these reviews the people can decide to visit that place or not. This review system has a feature to select any regional language to write reviews. Usually most of the people

skip non English and some unknown regional language reviews but the thing is the regional language and local people reviews will be more genuine so the author is saying that without skipping these reviews we can translate reviews into our own language or English to understand the emotion of that reviewer and try to make decision making more better.

2.2.19 Gustavo zurita

Management Control and Information Systems Department, Business School, Universidad de Chile, Chile

Group support systems are becoming quite popular. They are also instigating large groups of people into collaborative practices. But research on large group collaborations is still very scarce, making it difficult to assess the benefits and drawbacks. This paper describes an empirical study with a group of 48 participants who used Google Maps to accomplish a collaborative design task. The main research goal was to obtain quantitative and qualitative insights about large group collaborations. Various dimensions of group collaboration were studied, including group size, shared awareness, task monitoring, and coordination. The obtained results indicate that large groups face very significant coordination problems and difficulties converging and handling the volume of information. But the study also points out that large group collaborations stimulate participation and task synergy through positive reinforcements, constant feedback and peer pressure

The study of large group collaborations is relatively recent, with researchers traditionally favouring smaller groups. For instance, one of the most comprehensive reviews of Group Support Systems (GSSs) reports that only 4% of the 200 studies considered group sizes with 10 or more people, and that 40% used group sizes with 4 or fewer members

Chapter 3

RESEARCH METHODOLOGY

3.1 Research Design

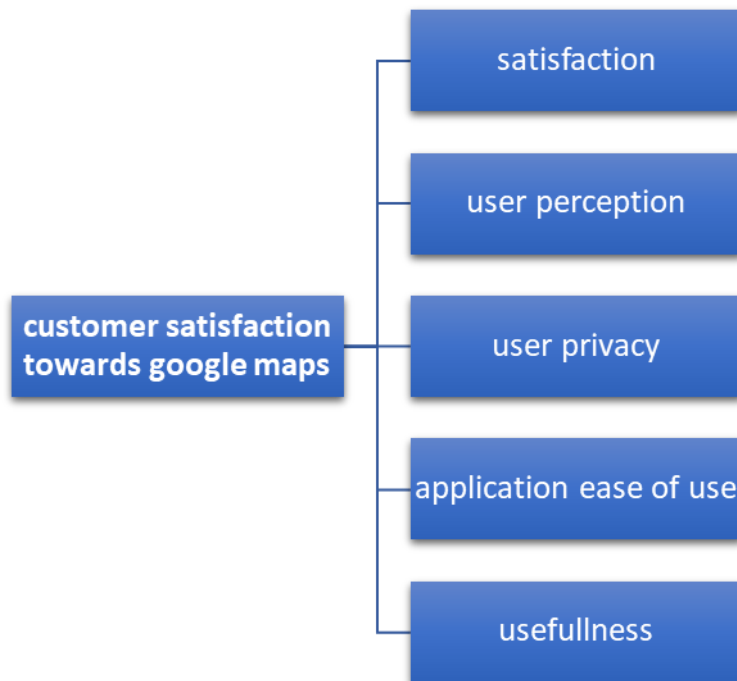
Research design refers to the framework of market research methods and techniques that are chosen by a researcher. The design that is chosen by the researchers allow them to utilize the methods that are suitable for the study and to set up their studies successfully in the future as well.

This research adopts the descriptive research design. Descriptive research design is a type of research design that aims to obtain information to systematically describe a phenomenon, situation, or population. More specifically, it helps answer the what, when, where, and how questions regarding the research problem, rather than the why.

In this research data is collected from users and customers of google maps in their day-to-day activities.

3.1.1 Research model

In research, the model is a pictorial or graphical representation of a crucial concept. It explains the relationship between several variables.



3.2 Sampling technique

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The methodology used to sample from a larger population depends on the type of analysis being performed, but it may include simple random sampling or systematic sampling.

Sampling is the integral part of researches mainly in researches related to customer satisfaction. To know the opinion of the customers of particular service we need to collect samples from people.

Sampling design : In this research I used 2 sampling designs they are simple random sampling design, cluster sampling design. As the name itself suggests in simple random sampling In this research I have collected data from google maps users randomly, it means in my sampling design there is no any restriction regarding particular people. Along with simple random design I also used cluster sampling design which means dividing people based on their area like school and particular street and collect samples from them. I followed this design in such a way where I sent survey form to one particular college and asked to fill.

Sampling area: The study was conducted among the users or customers of google maps application in Hyderabad and some cities in Andhra Pradesh like Anantapur.

3.3 Source of data

3.3.1 primary data : primary data means the data which is collected for the first time by researcher and this is the data which is collected and prepared by researcher himself. This is the data which is original in nature. In this research I used questionnaire to collect data from respondents in the form of doing field and online surveys. In online survey by preparing survey form and sent to respondents to fill it. In field survey by taking print of survey forms and asked people to answer to the questions filled by myself.

3.3.2 secondary data: This is the data which is not collected for the first time and not in original In nature. This data was collected by someone else in past. The source of this secondary data is different websites, magazines, articles and research papers.

3.4 structure of questionnaire: in this study I used questionnaire to collect primary data from people in the form of doing survey. I had divided this questionnaire into 2 parts they are demographic questions and study related questions. In the demographic questions contain questions related to personal information of the respondents like Name, age, occupation, annual income, gender to analyze how different people are responding to different types of questions, for example, one age group people like one thing but the same thing wont liked by different age group people. The second part of the questionnaire is study related questions which include questions to know their satisfaction levels and their opinion of different aspects of google maps, whether they are liking the services or not.

3.5 Sampling size: The size of sample included in this study is about 150

3.6 Period of study: The study is carried out for the period of 3 months from January 2022 to march 2022.

3.7 Analytical tools

3.7.1 percentage method: A percentage frequency distribution is a display of data that specifies the percentage of observations that exist for each data point or grouping of data

points. It is a particularly useful method of expressing the relative frequency of survey responses and other data.

3.7.2 anova: Analysis of variance, or ANOVA, is a statistical method that separates observed variance data into different components to use for additional tests. A one-way ANOVA is used for three or more groups of data, to gain information about the relationship between the dependent and independent variables.

Chapter 4

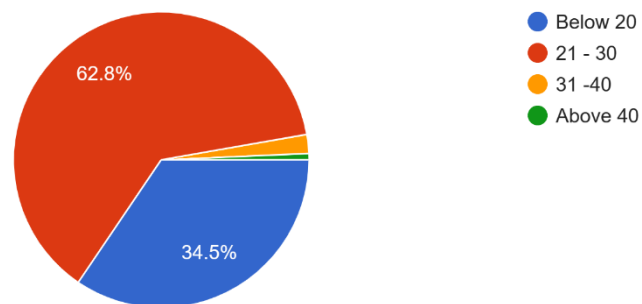
DATA ANALYSIS AND INTERPRETATION

4.1 percentage method

4.1 Table showing age of respondents

Age	No. of respondents	Percentage of respondents (%)
Below 20	50	34.5
21-30	91	62.8
31-40	3	2.1
Above 40	1	0.7
Total	145	100

Age
145 responses



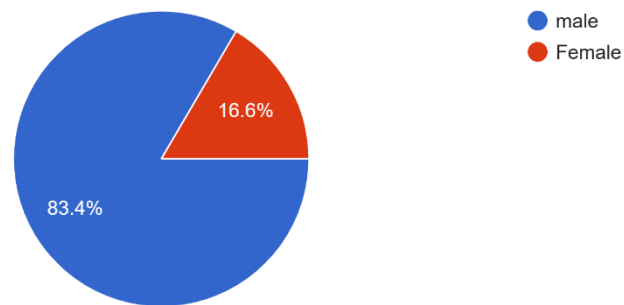
Inference

In the above table and chart, it is clearly saying that among 145 respondents 50 respondents means 34.5% respondents are belong to below 18 years age, 91 people means 62.8% respondents are belong to 21-30 years age group, 3 people are means 2.1% belong to 31-40 age group and finally only one person belong to above 40 age. Therefore in this survey majority of the respondents are belong to 21-30 age group.

4.2 Table showing gender of respondents

Gender	No. of respondents	Percentage of respondents (%)
Male	121	83.4
Female	24	16.6
Total	145	100

Gender
145 responses



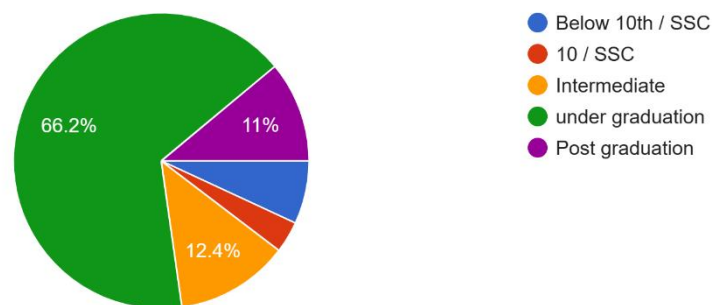
Inference

The above Table and chart clearly defining that there are 83.4% male respondents and 16.6% female respondents participated in survey. It means majority of the respondents in this survey is male.

4.3 Table showing education qualification of respondents

Education qualification	No. of respondents	Percentage of respondents (%)
Below 10 th	10	6.9
10 th	5	3.4
Intermediate	18	12.4
Undergraduation	96	66.2
Post graduation	16	11
total	145	100

Education qualification
145 responses



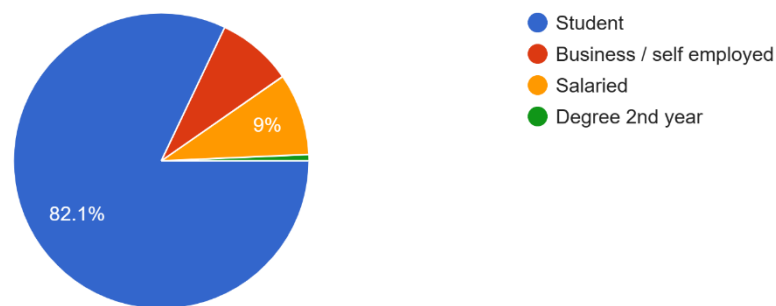
Inference

The above table and chart clearly stating that in this survey nearly 6.9% respondents are studying below 10th standard, 3.4% persons are studying 10th class currently, 12.4% students are studying intermediate, 66.2% students are studying under graduation, and remaining 11% individuals' highest education qualification is postgraduation. Therefore in this survey majority of the participants highest education qualification is under graduation.

4.4 Table showing occupation of respondents

Occupation	No. of Respondents	Percentage of respondents (%)
Student	120	82.7
Business / self employed	12	8.3
Salaried	13	9
total	145	100

Occupation
145 responses



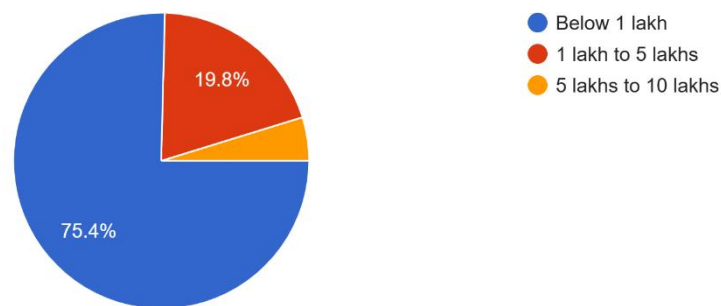
Inference

The above table and chart is clearly saying that there are 82.7% of the students, 8.3% are business or self-employed, and remaining 9% are salaried respondents participated in survey. From this table we can understand that majority of the participants are students.

4.5 Table showing annual income of respondents

Annual income	No. of respondents	Percentage of respondents (%)
Below 1 lakh	95	75.4
1 lakh to 5 lakh	25	19.8
5 lakh to 10 lakh	6	4.8
total	145	100

Annual income
126 responses



inference

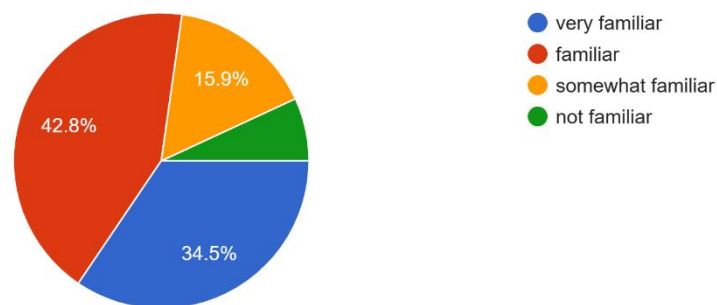
from the above table and chart it is inferred that 75.4% of the respondent's earnings are below 1 lakh, 19.8% people are earning income between 1 lakh to 5 lakh and just 4.8 people are earning income between 5 lakh to 10 lakhs. So majority of the participants earnings annual income is below 1 lakh.

4.6 Table showing how familiar respondents with google maps

Familiarness	No. of respondents	Percentage of respondents (%)
Very familiar	50	34.5
Familiar	62	42.8
Somewhat familiar	23	15.9
Not familiar	10	6.9
total	145	100

How familiar are you with Google maps?

145 responses



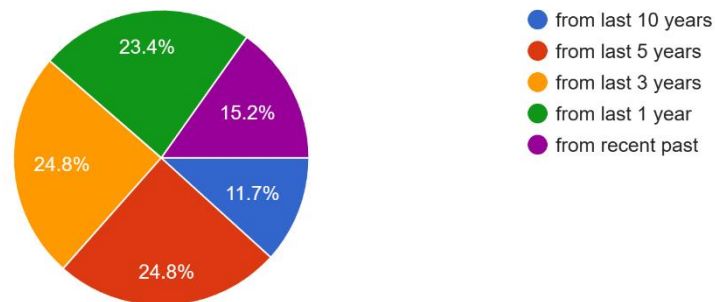
Inference

from the above table and chart, it is inferred that 34.5% respondents are saying that they are very familiar with google maps by using regularly in their life, 42.8% respondents are saying they are just familiar with google maps means they use google maps but not always, 15.9% respondents are saying that they are somewhat familiar with google maps means they have little bit knowledge about google maps, and finally 6.9% respondents are saying they are not at all familiar with google maps.

4.7 Table showing how long have respondents been using google maps

Time period	No. of respondents	Percentage of respondents (%)
From last 10 years	17	11.7
From last 5 years	36	24.8
From last 3 years	36	24.8
From last 1 year	22	15.2
From recent past	34	23.4
	145	100

How long have you been using google maps
145 responses



Inference

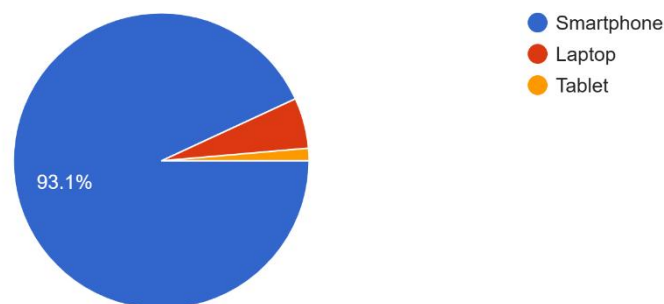
from the above table it is inferred that there are 11.7% respondents are using google maps from last 10 years, 24.8% respondents are using google maps from last 5 years, 24.8% respondents are using google maps from last 3 years, 15.2% respondents are using google maps from last 1 year and rest of the 23.4 respondents are just started using maps from recent past. So majority of the respondents are using maps from last 5 and 3 years.

4.8 Table showing in which device respondents use google maps more

Device	No. of respondents	Percentage of respondents (%)
Smartphone	135	93.1
Laptop	8	5.5
Tablet	2	1.4
Total	145	100

In which device you prefer to use google maps?

145 responses



Inference

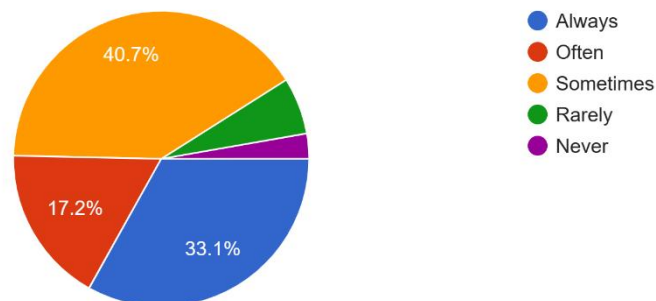
The above table and chart clearly defining that there are 93.1% of respondents are preferring and using maps in smartphones, 5.5% respondents are recommending to use maps in laptops, 1.4% respondents are preferring to use maps in tablet devices. Hence the majority of the users are preferring to use maps in smartphone conveniently.

4.9 Table showing how often the respondents use google maps for navigation

Frequency	No. of respondents	Percentage of respondents (%)
Always	48	33.1
Often	25	17.2
Sometime	59	40.7
Rarely	9	6.2
Never	4	2.8
Total	145	100

How often you use google maps for navigation?

145 responses



Inference

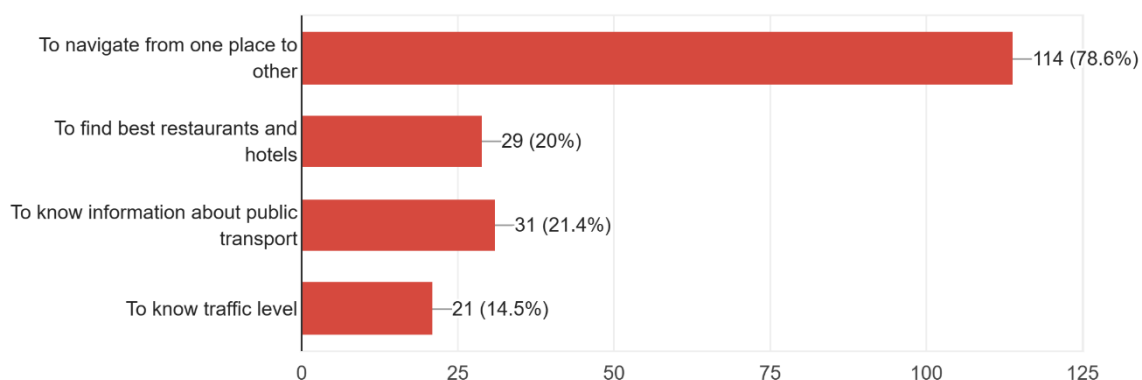
The above table and chart is clearly stating that 33.1% of the respondents are using google maps always for navigation purpose, 17.2% respondents are using google maps often for navigation, 40.7% respondents are using sometimes for navigation, 6.2% respondents are using maps rarely for navigation and rest of the 2.8% of the respondents saying they never use maps for navigation. Hence majority of the respondents are saying they use maps only sometimes for navigation purpose.

4.10 Table showing for what purpose the respondents use google maps

Purpose	No. of respondents	Percentage of respondents (%)
To navigate from one place to other	80	55.2
To find best restaurants and hotels	29	20
To find public transportation information	31	21.4
To know traffic level on road	5	3.4
	145	100

For what purpose you use Google maps

145 responses



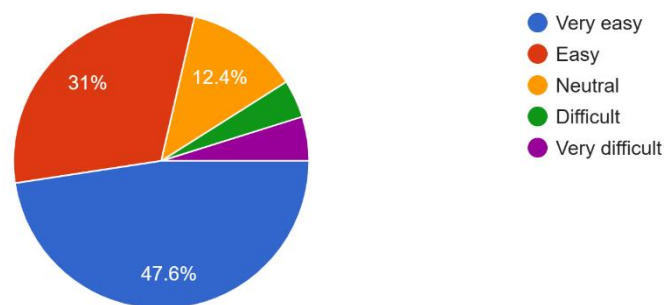
Inference

The above table and chart clearly saying that there are 55.2% of the respondents are using google maps for navigating one place to other, 20% of the respondents are using for searching best restaurants and hotels nearby, 21.4% respondents are using maps for knowing information regarding public transportation, and remaining 3.4% respondents are using maps for knowing traffic level on their route. Hence majority of the respondents are using maps for navigation purpose.

4.11 Table showing how easy it is to use google maps

Frequency	No. respondents	Percentage of respondents (%)
Very easy	69	47.6
Easy	45	31
Neutral	18	12.4
Difficult	6	4.1
Very difficult	7	4.8
	145	100

How easy it is to use google maps
145 responses



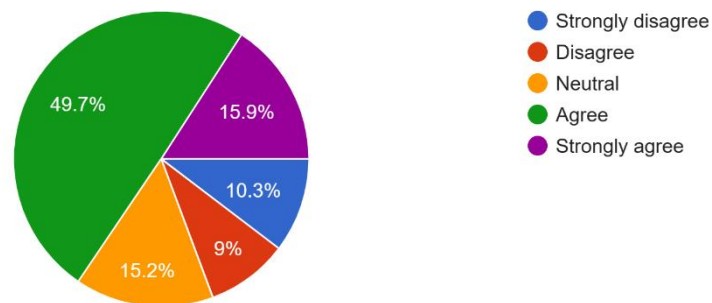
Inference

from the above table and chart it is inferred that 47.6% respondents feeling it is very easy to use google maps, 31% respondents are feeling it is just easy to use maps, 12.4% respondents are feeling it is neither difficult nor easy to use maps, 4.1% respondents are feeling it is difficult to use maps, and remaining 4.8% respondents opinion is it is very difficult o use maps.so majority of the users feeling it is very easy to use maps.

4.12 Table showing respondents as to whether google maps helps to reach their destination safely or not.

Frequency	No. of respondents	Percentage of respondents
Strongly agree	23	15.9
Agee	72	49.7
Neutral	22	15.2
Disagree	13	9
Strongly disagree	15	10.3
	145	100

Google maps app helps to reach my destination safely and quickly” Do you agree?
145 responses



Inference

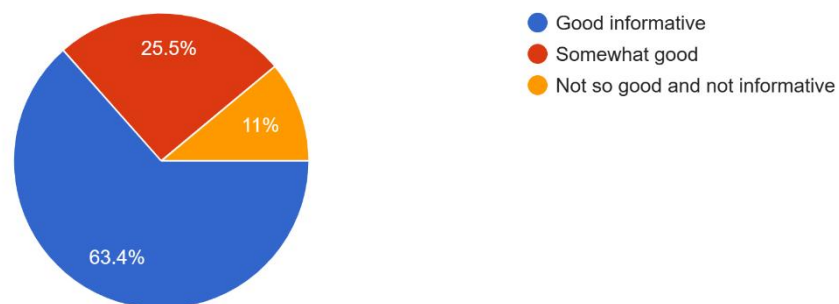
From the above table and chart it is inferred that 15.9% respondents are strongly agreeing on the statement that “maps helps to reach their destination safely” 49.7% respondents are just agreeing on the statement, 15.2% respondents are neither agreeing and nor disagreeing statement, 9% of the respondents are disagreeing on the statement, and remaining 10% of the respondents are strongly disagreeing on the given statement. Hence the majority of the respondents are just agreeing with the statement.

4.13 Table showing respondents opinion on google maps notifications

Opinion	No. of respondents	Percentage of respondents (%)
Good informative	92	63.4
Somewhat good	37	25.5
Not so good	16	11
	145	100

Your opinion on notifications from Google maps

145 responses



Inference

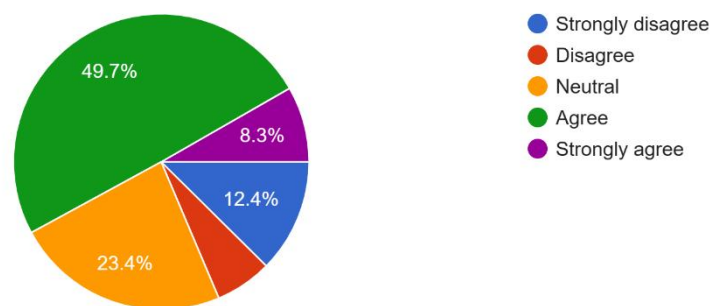
From the above table and chart, it is inferred that 63.4% people are saying that the notifications are being sent by maps are good and informative, 25.5% respondents are saying that notifications are somewhat good, and remaining 11% of the respondents are feeling that notifications are not so good. So, majority of the respondents are feeling notifications are good.

4.14 Table showing respondents' opinion on whether the reviews posted in google maps useful or not

Frequency	No. of respondents	Percentage of respondents (%)
Strongly agree	12	8.3
Agree	72	49.7
Neutral	34	23.4
Disagree	9	6.2
Strongly disagree	18	12.4
	145	100

I find the reviews posted in google maps useful. Do you agree?

145 responses



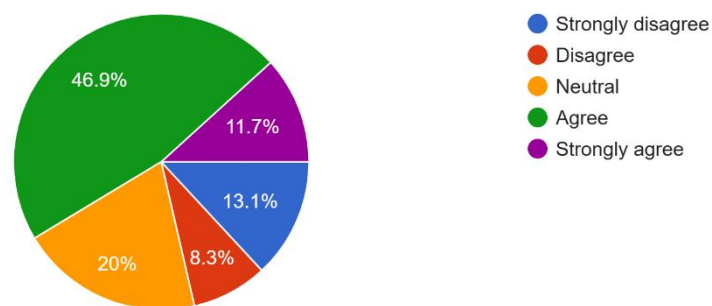
Inference

The above table and chart clearly saying that 8.3% of the respondents are strongly agreeing with the statement that “the reviews posted in maps are useful to them”, 49.7% of the respondents are just agreeing with statement, 23.4% of the respondents are neither agreeing nor disagreeing, 6.2% respondents are disagreeing with statement, and remaining 12.4% respondents are strongly disagreeing with the statement. So most of the respondents are just agreeing with the given statement.

4.15 Table showing the opinions of respondents whether they trust google maps navigation accuracy or not

Frequency	No of respondents	Percentage of respondents (%)
Strongly agree	17	11.7
Agree	68	46.9
Neutral	29	20
Disagree	12	8.3
Strongly disagree	19	13.1
	145	100

I trust Google navigation's accuracy Do you agree?
145 responses



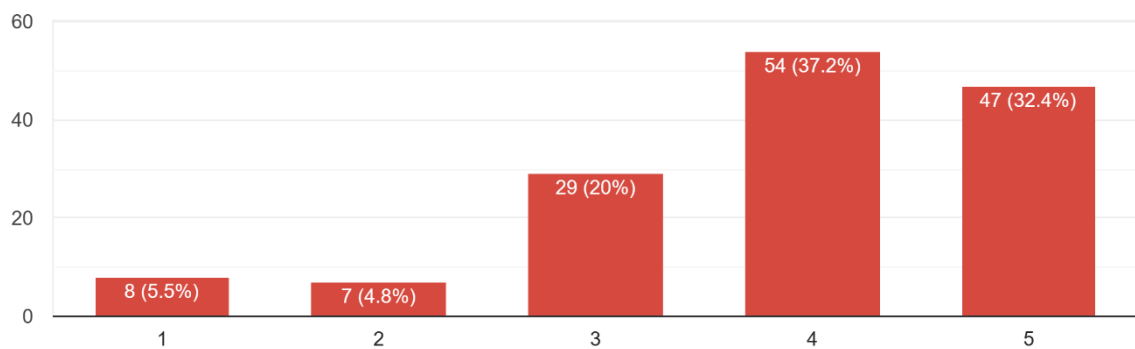
Inference

the above table and chart clearly stating that 11.7% of the respondents are strongly agreeing with the given statement that "they trust google navigation accuracy" 46.9% of the respondents are just agreeing with the statement, 20% of the respondents are neither agreeing and nor disagreeing with the statement, 8.3% of the respondents are disagreeing with statement, and remaining 13.1% of the respondents are strongly disagreeing with the given statement. Hence the majority of the respondents are just agreeing with given statement.

4.16 Table showing how likely they recommend google maps to others in the form of rating

Rating	No. respondents	Percentage of respondents (%)
1	8	5.5
2	7	4.8
3	29	20
4	54	37.2
5	47	32.4
	145	100

On the scale of 1-5 How likely is that you recommend Google maps to others
145 responses



Inference

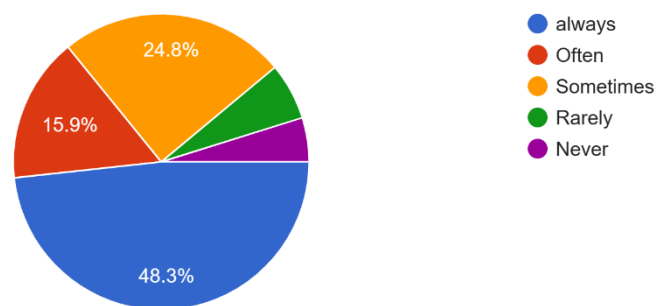
the above table and chart clearly defining that 5.5% respondents rated 1 for recommending google maps to others, 4.8% respondents rated 2, 20% respondents rated 3, 37.2% respondents rated 4, 32.4% respondents rated 5 on the scale of 1-5. So most of the respondents are recommend maps to others with 4 rating.

4.17 Table showing the respondents answers on whether they recommend google maps at new and unknown places or not

Frequency	No. of respondents	Percentage of respondents (%)
Always	70	48.3
Often	23	15.9
Sometimes	36	24.8
Rarely	9	6.2
Never	7	4.8
	145	100

Do you recommend to use Google maps at New / unknown places *

145 responses



Inference

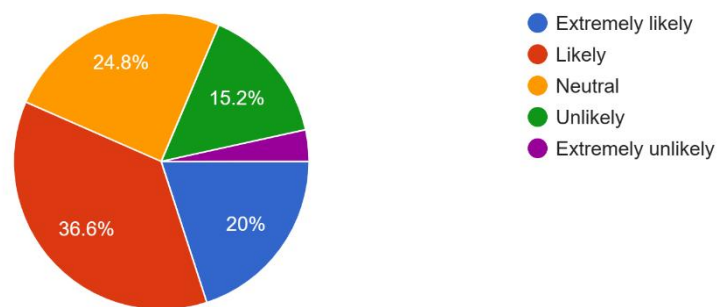
From the above table and chart it is inferred that 48.3% respondents are saying they always recommend to use maps in unknown places, 15.9% respondents are saying they often recommend, 24.8% respondents recommend sometimes, 6.2% respondents rarely recommend, 4.8% respondents are saying they never recommend to use Google Maps in unknown places.

4.18 Table showing respondents opinion of whether google is collecting user personal information

Frequency	No. of respondents	Percentage of respondents (%)
Extremely likely	29	20
Likely	53	36.6
Neutral	36	24.8
Unlikely	22	15.2
Extremely unlikely	5	3.4
	145	100

Do you believe that Google is collecting users personal information?

145 responses



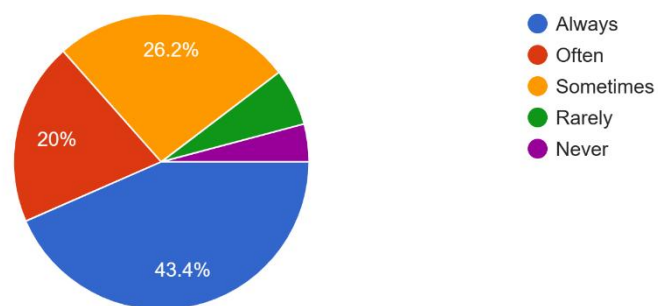
Inference

The above table and chart clearly defining that 20% respondents are extremely likely with the statement “google is collecting user personal information”, 36.6% respondents are likely with statement, 24.8% respondents are neutral with statement, 15.2% respondents are unlikely with statement, and finally 3.4% respondents are extremely unlikely with the statement. So majority of the respondents are likely with statement.

4.19 Table showing whether respondents allow google maps to access their real time location

Frequency	No. of respondents	Percentage of respondents (%)
Always	63	43.4
Often	29	20
Sometimes	38	26.2
Rarely	9	6.2
never	6	4.1
	145	100

Do you allow google maps to access your real time location?
145 responses



Inference

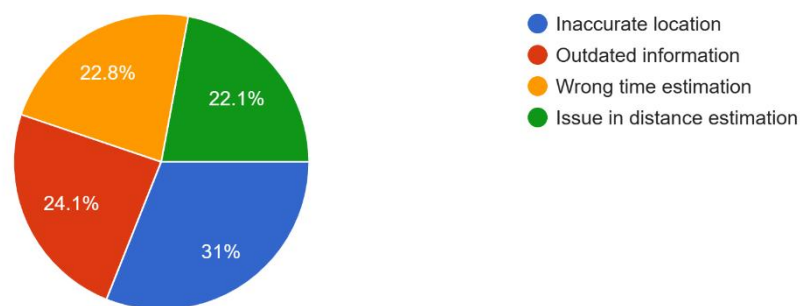
From the above table and chart, it is inferred that 43.4% of the respondents are saying that they always allow google maps to access their real time location, 20% of the respondents are often allow, 26.2% respondents allow only sometimes, 6.2% respondents allow rarely, 4.1% respondents never allow maps to access their real time location. Hence the majority of the respondents give always access to maps.

4.20 Table showing major issues faced by respondents in gogle maps

Issues	No. of respondents	Percentage of respondents (%)
Inaccurate location	45	31
Outdated information	35	24.1
Wrong time estimation	33	22.8
Issue in time estimation	32	22.1
	145	100

Major issues you faced in google navigation?

145 responses



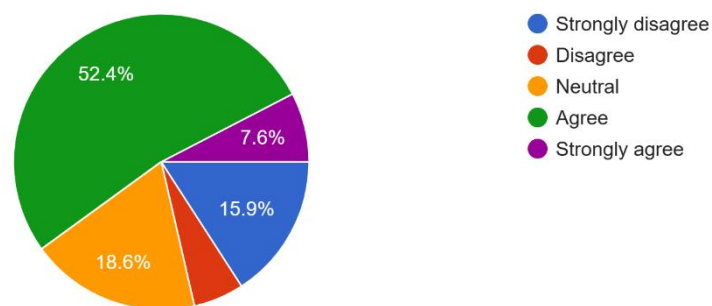
Inference

The above table clearly saying that 31% of the people are facing inaccurate location issue in google maps, 24.1% respondents are facing outdated information issue, 22.8% respondents facing issue in time estimation, 22.1 respondents are facing issue in distance estimation in maps.so majority of the respondents are facing inaccurate location issue in google maps.

4.21 Table showing whether google maps showing better location suggestions

Frequency	No. of respondents	Percentage of respondents (%)
Strongly agree	11	7.6
Agree	76	52.4
Neutral	27	18.6
Disagree	8	5.5
Strongly disagree	23	15.9
	145	100

Google maps is able to give better location suggestions. do you agree?
145 responses



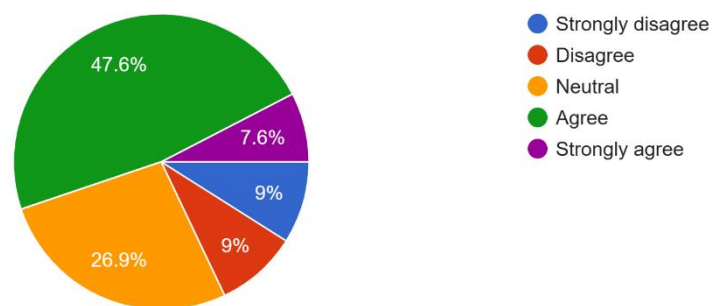
Inference

The above table and chart clearly showing that the percentage of respondents who agreed and who did not agree with the given statement that is "google is able to show better location suggestions. 7.6% respondents are strongly agreeing with the statement, 52.4% respondents are just agreeing with the statement, 18.6% respondents are neither agreeing and nor disagreeing, 5.5% respondents are disagreeing with statement, and rest of the 15.9% of the respondents are strongly disagreeing with the given statement. So majority of the respondents are just agreeing with the statement that google map is able to show better location suggestions.

4.22 Table showing respondents opinion on google maps application graphics and interface attractiveness

Frequency	No. of respondents	Percentage of respondents (%)
Strongly agree	11	7.6
Agree	69	47.6
Neutral	39	26.9
Disagree	13	9
Strongly disagree	13	9
	145	100

Google maps app graphics and interface is very vibrant and attractive do you agree?
145 responses



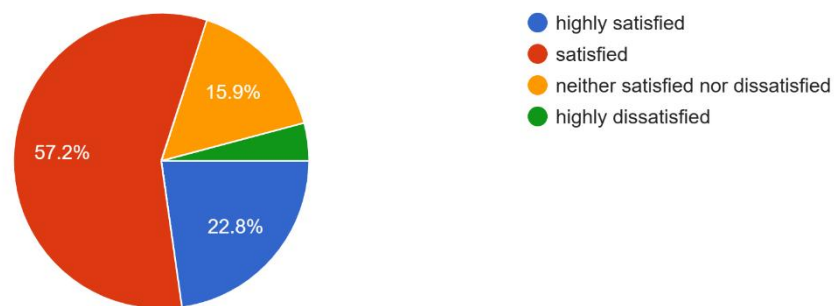
Interference

The above Table and chart clearly stating that 7.6% of the respondents are strongly agreeing with the statement that is google maps interface is very attractive and vibrant, 47.6% of the respondents are just agreeing with the statement, 26.9% respondents are neutral means they are neither agreeing nor disagreeing with statement, 9% respondents are disagreeing with the statement, remaining 9% respondents are strongly disagreeing with the statement. So majority of the respondents are saying that interface is vibrant and attractive

4.23 Table showing satisfaction level of respondents with search results in google maps

Frequency	No. of respondents	Percentage of respondents (%)
Highly satisfied	33	22.8
Satisfied	83	57.2
Neither satisfied nor dissatisfied	23	15.9
Dissatisfied	6	4.1
	145	100

How far you satisfied with search results in maps
145 responses



Inference

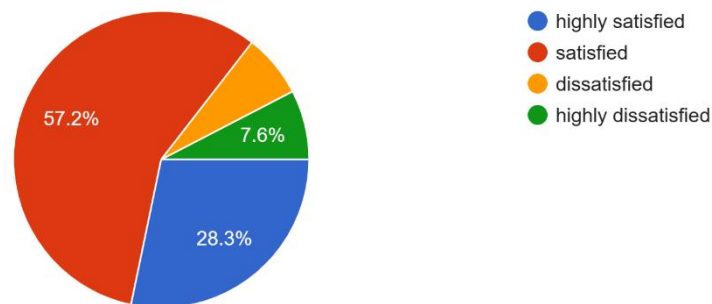
The above table and chart is showing the satisfaction level of respondents towards search results in google maps. in this survey 22.8% of respondents saying that they are highly satisfied with the results, 57.2% respondents are just satisfied with the services, 15.9% of the respondents are neither satisfied nor dissatisfied with the services, 4.1% of the respondents are dissatisfied with the services. So majority of the respondents are just satisfied with the search results in google maps.

4.24 Table showing how far respondents satisfied with google navigation system

Frequency	No, of respondents	Percentage of respondents (%)
Highly satisfied	41	28.3
Satisfied	83	57.2
Dissatisfied	10	6.9
Highly dissatisfied	11	7.6
	145	100

How satisfied are you with the google navigation system? *

145 responses



Inference

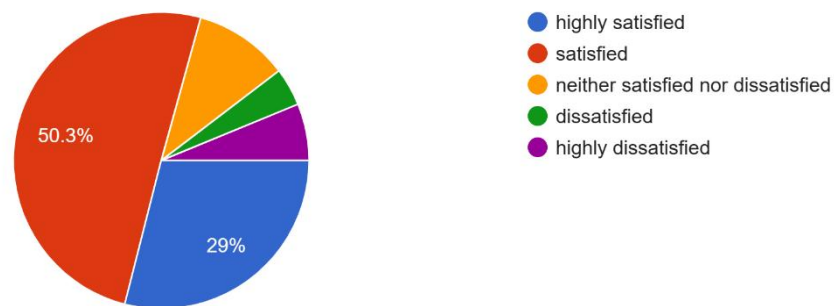
The above table and chart clearly stating that 28.3% of respondents are highly satisfied with google navigation system, 57.2% of the respondents are just satisfied, 6.9% of the respondents are dissatisfied with navigation system, 7.6% of respondents are highly dissatisfied with navigation services. So majority of the respondents are just satisfied with google navigation system.

4.25 Table showing how far respondents satisfied with the google maps voice over system

Frequency	No. of respondents	Percentage of respondents (%)
Highly satisfied	42	29
Satisfied	73	50.3
Neither satisfied nor dissatisfied	15	10.3
Dissatisfied	6	4.1
Highly dissatisfied	9	6.2
	100	145

How satisfied are you with the google maps voice over while navigation

145 responses



Inference

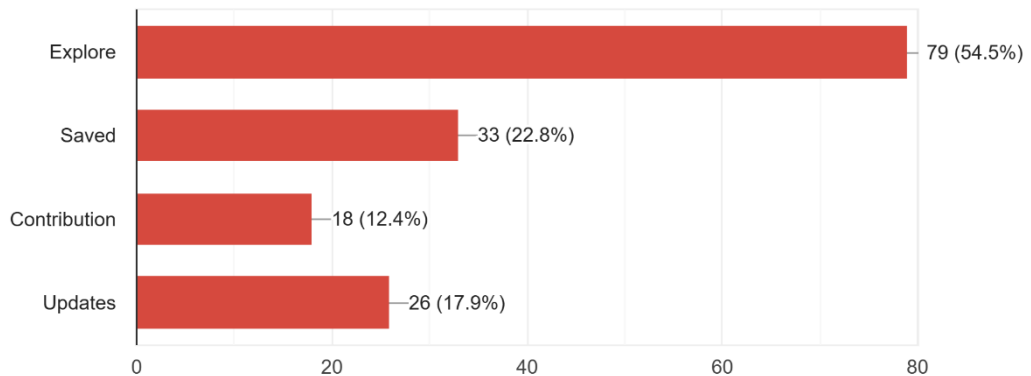
The above table and chart is clearly showing that 29% of the respondents are highly satisfied with google maps voice over while navigation, 50.3% respondents are just satisfied with voice over, 10.3% of the respondents neither satisfied nor dissatisfied with the voice over, 4.1% respondents dissatisfied with voice over, and remaining 6.2% of the respondents are highly dissatisfied with the maps voice over. Majority of the respondents are just satisfied with voiceover system.

4.26 Table showing respondents most used tab in google maps application

Tabs	No. of respondents	Percentage of respondents (%)
Explore	79	54.4
Saved	33	22.8
Contribution	18	12.4
updates	15	10.3
	145	100

which tab you most use in google maps app

145 responses



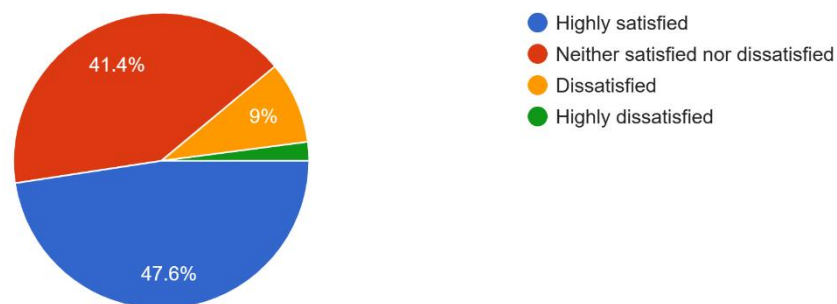
Inference

The above table and chart is clearly stating that 54.4% respondents are using explore tab mostly, 22.8% respondents are saying that saved tab in maps application, 12.4% respondents are saying that they use contribution tab most, and remaining 10.3% respondents are using updates tab mostly. So majority of the respondents are using explore tab in maps application.

4.27 Table showing respondents satisfaction levels with google maps new updates

Frequency	No. of respondents	Percentage of respondents (%)
Highly satisfied	69	47.6
Neither satisfied nor dissatisfied	60	41.4
Dissatisfied	13	9
Highly dissatisfied	3	2.1
	145	100

are you satisfied with google maps new updates
145 responses



Inference

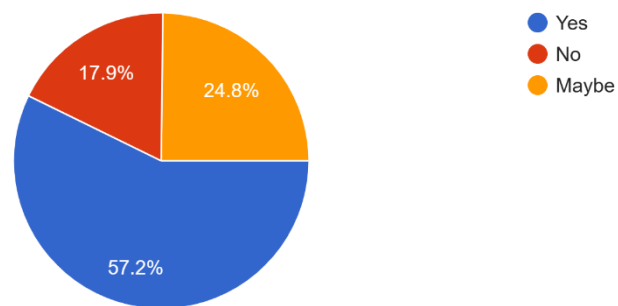
From the above table and chart, it is inferred that 47.6% of the respondents are highly satisfied with the new updates, 41.6% respondents are neither satisfied nor dissatisfied with updates, 9% of the respondents are dissatisfied with updates, remaining 2.1% respondents are highly dissatisfied with the new updates. So majority of the respondents are highly dissatisfied with updates.

4.28 Table showing respondents opinion on offline maps

Frequency	No. of respondents	Percentage of respondents (%)
Yes	83	57.2
No	26	17.9
maybe	36	24.8
	145	100

Do you think offline maps are useful?

145 responses

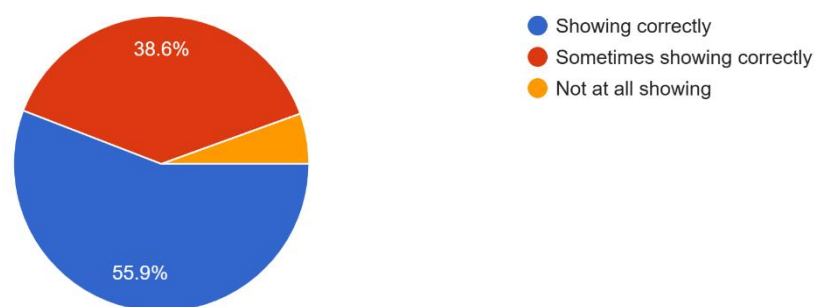


4.29 Table showing respondents opinion on whether google maps showing diversions and directions correctly

Frequency	No. of respondents	Percentage of respondents (%)
Showing correctly	81	55.9
Sometimes showing correctly	56	38.6
Not at all showing	8	5.5
	145	100

Does Google maps able to show road diversions, and directions correctly?

145 responses



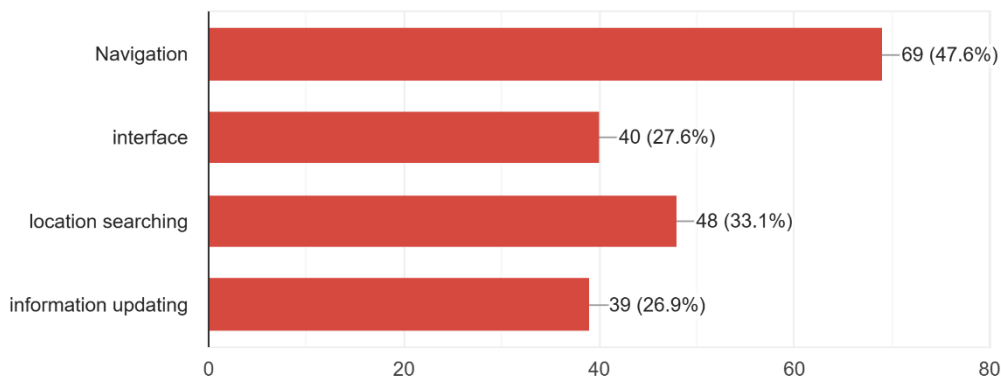
Inference

the above table and chart is showing clearly that 55.9% of the respondents are saying that directions and diversions are showing correctly, 38.6% of the respondents are saying that directions are showing correctly at sometimes only, and rest of the 5.5% of the respondents are saying that directions are not at all showing.

4.30 Table showing respondents opinion on in which aspect does google maps has to improve

Different aspects	No. of respondents	Percentage of respondents (%)
Navigation	69	47.6
Interface	20	13.8
Location searching	30	20.7
Information updating	26	17.
	145	100

in which aspect do you think maps to be developed
145 responses



Inference

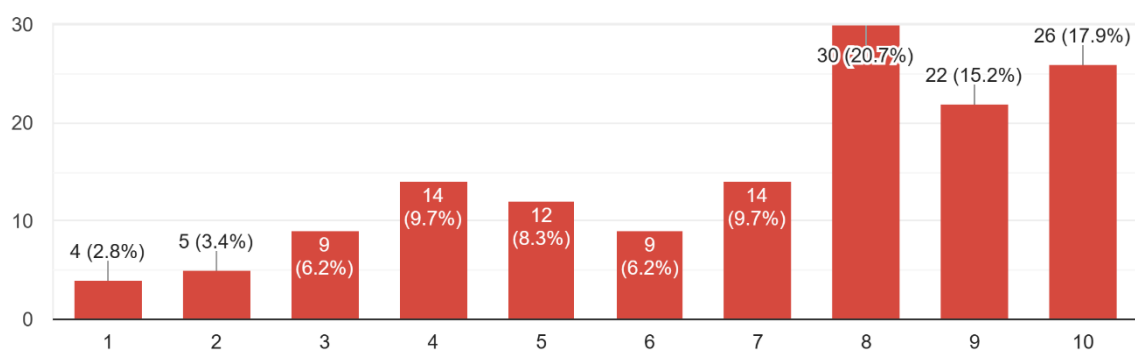
the above table and chart is showing clearly that 47.8% of the respondents are asking to improve google maps in navigation, 13.8% of the respondents are saying maps should be improve in interface, 20.7% of the respondents are saying it should be improve in location searching aspect, 17% of the respondents are asking maps to be improve in information updating aspect. So majority of the respondents wish is google maps has to improve navigation system more.

4.31 Table showing respondents overall rating to google maps on the scale of 1 to 10

Rating	No. of respondents	Percentage of respondents (%)
1	4	2.8
2	5	3.4
3	9	6.2
4	14	9.7
5	12	8.3
6	9	6.2
7	14	9.7
8	30	20.7
9	22	15.2
10	26	17.9
	145	100

Rate your overall satisfaction with Google maps

145 responses



inference

The above table and chart clearly showing overall rating given by respondents which indicates satisfaction levels of respondents on the scale of 1 to 10. In this survey 2.8% respondents rated 1, 3.4% respondents rated 2, 6.2% respondents rated 3, 9.7% respondents rated 4, 8.3% respondents rated 5, 6.2% respondents rated 6, 9.7% respondents rated 7, 20.7 respondents rated 8, 15.2 respondents rated 9, 17.9 respondents rated 10 in this survey. This scale shows the satisfaction levels of respondents, lowest number indicates lowest satisfaction levels, highest number shows high satisfaction levels. so, on this scale most of the respondents rated 8. It means most of the respondents mostly satisfied with google maps services.

Chapter -5

5.1 Findings

- ✓ Majority of the respondents participated in this survey 62.8 % belong to 21-30 age group
- ✓ From the analysis it was found that majority of the respondents 83.4% are male
- ✓ The study exhibits it was found that majority 66.2% of the respondents are qualified with under graduation.
- ✓ In the analysis it was found that majority of the respondents 82.7% are students who are studying currently.
- ✓ In the analysis the majority of the respondents 75.4% are earning below 1 lakh annual income.
- ✓ The study exhibits that majority of the respondents 42.8% are just familiar with google maps application.
- ✓ In the analysis it was found that majority of the respondents 24.8% are using google maps from last 5 and 3 years.
- ✓ In the study it was it was found that majority of the respondents 93.1% are using google maps in smartphone.
- ✓ In the study it was found that majority of the respondents 40.7% use google maps sometimes.
- ✓ From the analysis it was found that majority of the respondents 55.2% are using maps for navigation purpose.
- ✓ From the analysis it was found that majority of the 47.6% respondents are feeling it is very easy to use google maps application.
- ✓ The study exhibits that majority of the 49.7% of the respondents agreeing on the statement that the google maps is able reach their destination safely.
- ✓ From the analysis it was found that the majority of the respondents 63.4% are feeling the notifications from google maps is good and informative.
- ✓ The study exhibits that majority of the respondents 49.7% are feeling the reviews posted in google maps are very useful.
- ✓ From the analysis it was found that majority of the respondents 46.9% agreeing with the statement they trust google navigation accuracy.
- ✓ From the analysis the majority of the respondents 37.2% rated 4 on the scale of 1 to 5 indicates that they are mostly interested in recommending google maps to others.
- ✓ The study exhibits that majority of the respondents 48.3% are recommending always to use google maps in new and strange places.
- ✓ From the analysis it was found that majority of the respondents 36.6% likely with the statement google is collecting user personal informatio0n.
- ✓ The study exhibits majority of the respondents 43.4% are allowing google to access real time location.
- ✓ From the analysis it was found that majority of the respondents 31% are facing inaccurate location issue in google maps.
- ✓ From the analysis it was found that majority of the respondents 52.4% are agreeing on the statement that google maps is giving better location suggestions.

- ✓ From the analysis it was found that the majority of the respondents 47.6% agreeing on the statement that google maps interface is attractive.
- ✓ The study exhibits that the majority of the respondents 57.2% are satisfying with search results in google maps.
- ✓ From the analysis it was found that 57.2% of the respondents are satisfied with navigation system.
- ✓ From the analysis it was found that the majority of the respondents 50.3% are satisfied with voice over given by google maps while navigation.
- ✓ Form the analysis it was found that the majority of the respondents 54.4% are using explore tab in maps.
- ✓ From the analysis it was found that majority of the respondents 47.6% are highly satisfied with new updates provided by google maps.
- ✓ The study exhibits that majority of the respondents 57.2% are expressing that offline map are useful.
- ✓ From the analysis it was found that majority of the respondents 55.9% are saying that directions are diversions are showing correctly.
- ✓ The study exhibits that 47.6% respondents are expecting google maps to improve in navigation aspect.
- ✓ From the analysis it was found that majority of the respondents 20.7% are rated 8 on the scale of 1 to 10 for indicating overall satisfaction level of customers.

5.2 suggestions

- ✓ Though 95% people well aware about google maps, still it has to fill that 5% customers also to reach 100% customer reachability. So, my suggestion is, google maps has to concentrate on promotions to fill that little gap also.
- ✓ As customers reported there are issues in navigation system like inaccurate location, so maps have to focus on developing navigation system.
- ✓ In some regions maps satellite imagery system is not showing clearly due to some security issues in that region. So, maps have to focus on that aspect also to give clear satellite images to its customers in order to increase efficiency and accuracy.
- ✓ Google maps has to conduct awareness sessions about contribution section in google maps to update information regularly with the help of its customers only.
- ✓ Most of the customers are saying that they are facing information updating issue in maps that means, there is more outdated information present in maps about nearby business, so it has to remove outdated information and keep updating new information in maps.
- ✓ Maps has to keep its mobile, PC, tablet applications accessible to all differently abled people like blind, def and dumb people by enabling support to their respective accessibility software like JAWS for blind people.
- ✓ Maps management has to monitor and filter contributions submitted by various users and remove inappropriate contributions like irrelevant revies, irrelevant images of the locations.
- ✓ Google maps street view services are limited to some regions only, so it has to extend its services to more regions.

- ✓ Navigation system in remote areas is very poor and not accurate, so maps has to pay attention to improve avigation on remote areas also.
- ✓ As google maps collecting more user personal data from his device, user is facing security issues and losing trust on maps and wanting to restrict google. so google has to give chance to user on choosing on which type of data google has to collect.
- ✓ as compared to google maps competitors, google maps is lack in efficiency in its offline maps, so offline maps also has to improve.

5.3 conclusion

The study on customer satisfaction towards google maps and its navigation system focuses on identifying the customers / users satisfaction levels with the services provided by google maps and to know the perception of users on google maps. to achieve these above 2 objectives, I have selected survey method which includes preparation of questionnaire, circulating through online or offline mode to get those forms filled. Based on the data collected from users I have come to one conclusion that is, as per the overall satisfaction index in my survey the user's satisfaction level percentage is 80%. Because most of the respondents rated 8 for overall satisfaction. And when we come to perception of the users, the most of the user's perception towards google maps is positive means they are enjoying google maps services in their day to day life and they are very useful to them. And in this research, I have found some interesting facts they are, the google maps users mostly urban residents, visitors, drivers, and most of the people are not fully aware about all services of google maps, most of the people are facing navigation issues only, most of the people don't know other alternatives to google means that much impact google maps has created in their life. The user's expectation from google maps is error free and clean and easy user interface to their applications. The main factors influencing people to adopt google maps are, the application came by default in android mobiles, the application is free of cost, no alternative applications providing services as best as google for free of cost, updating application as per the trend in society, making application more user friendly and more accessible, giving authority to users to edit, add, and review places in the name of contributions. These are all factors I think influence users to adopt google maps. among these are all the last point may influence more because when people add or edit locations in the map, then they feel like they own that service and they give more importance. Finally, my one-line conclusion on this study is the objectives of the study is achieved, the users are almost satisfied with google maps. but still google maps hast to improve more to reach 100% customer satisfaction level. Mainly in navigation field, interface. If google maps make these changes it will be the giant and monopoly in digital mapping industry.

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Appendix

Questionnaire

1. Age *
 - A. Below 20
 - B. 21 - 30
 - C. 31- 40
 - D. 41-50
 - E. Above 50
2. Gender *
 - A. Male
 - B. Female
3. Education qualification *
 - A. Inter / HSC/ Diploma
 - B. Under graduation
 - C. Post-Graduation
 - D. Others
4. Occupation *
 - A. Student
 - B. Business/ Self employed
 - C. Salaried
 - D. Other:
5. Annual Income
 - A. Below 1 lakh
 - B. 1 lakh to 5 lakh
 - C. 5 lakhs to 10 0lakhs
6. How familiar are you with Google maps? *
 - A. Extremely familiar
 - B. Moderately familiar
 - C. Somewhat familiar
 - D. Slightly Familiar
 - E. Not at all familiar
7. How long have you been using google maps ?
 - Below 2 years
 - 3-5 years
 - 6-8 years
 - 9-10 years
 - Above 10 years

8. In which device you prefer to use google maps? *
- A. Smartphone
 - B. Tablet
 - C. Laptop
9. How often you use google maps for navigation? *
- A. Very Often
 - B. Often
 - C. Sometimes
 - D. Rarely
 - E. Never
10. For what purpose you use Google maps *
- A. To navigate from one place to other
 - B. To find best restaurants and hotels
 - C. To know information about public transport
 - D. To know traffic level
11. How easy it is to use google maps *
- Very easy
 - Easy
 - Neutral
 - Difficult
 - Very difficult
12. "Google maps app helps to reach my destination safely and quickly" Do you agree?
- A. Strongly agree
 - B. Agree
 - C. Neither agree nor disagree
 - D. Disagree
 - E. Strongly disagree
13. Your opinion on notifications from Google maps *
- A. Good informative
 - B. Somewhat good
 - C. Not so good and not informative

14. I find the reviews posted in google maps useful. Do you agree?

- A. Strongly agree
- B. Agree
- C. Neither agree nor disagree
- D. Disagree
- E. Strongly disagree

15. I trust Google navigation's accuracy Do you agree?

- A. Strongly agree
- B. Agree
- C. Neither agree nor disagree
- D. Disagree
- E. Strongly disagree

16. Rate on the scale of 1 to 5, How likely are you recommend google maps to others

- 1
- 2
- 3
- 4
- 5

17. Do you recommend to use Google maps at New / unknown places *

- A. Always
- B. Often
- C. Sometimes
- D. Rarely
- E. Never

18. Do you believe that Google is collecting users personal information?

Extremely likely

Likely

Neutral

Unlikely

Extremely unlikely

19. Do you allow google maps to access your real time location?

- A. Always
- B. Often
- C. Sometimes

- D. Rarely
 - E. Never
20. Major issues you faced in google navigation?
- A. Inaccurate location
 - B. Outdated information
 - C. Wrong time estimation
 - D. Issue in distance estimation
21. Google maps is able to give better location suggestions. *
- A. Strongly agree
 - B. Agree
 - C. Neither agree nor disagree
 - D. Disagree
 - E. Strongly disagree
22. Google maps app graphics and interface is very vibrant and attractive
- A. Strongly agree
 - B. Agree
 - C. Neither agree nor disagree
 - D. Disagree
 - E. Strongly disagree
23. How far you satisfied with search results in maps *
- A. Highly satisfied
 - B. Satisfied
 - C. Neither satisfied nor dissatisfied
 - D. Dissatisfied
24. How satisfied are you with the google navigation system? *
- A. Highly satisfied
 - B. Satisfied
 - C. Neither satisfied nor dissatisfied
 - D. Dissatisfied
 - E. Highly Dissatisfied
25. How satisfied are you with the google maps voice over while navigation *
- A. Highly satisfied
 - B. Satisfied
 - C. Neither satisfied nor dissatisfied
 - D. Dissatisfied
 - E. Highly Dissatisfied

26. Which tab you use most in google maps
- A. Explore
 - B. Saved
 - C. Contributions
 - D. updates
27. are you satisfied with google maps new updates?
- A. highly satisfied
 - B. neither satisfied nor dissatisfied
 - C. dissatisfied
 - D. highly dissatisfied
28. do you think offline maps are useful
- A. yes
 - B. no
 - C. maybe
29. does google maps able to show route diversions correctly
- A. showing correctly
 - B. sometimes showing correctly
 - C. not at all showing
30. In which aspect do you think maps to be developed *
- A. Navigation
 - B. Interface
 - C. Location searching
 - D. Information updating
31. Rate your overall satisfaction with Google maps
- A. Highly satisfied
 - B. Satisfied
 - C. Neither satisfied nor dissatisfied
 - D. Dissatisfied
 - E. Highly Dissatisfied
32. Will you recommend Google maps to others ?
- A. Always
 - B. Often
 - C. Sometimes
 - D. Rarely
 - E. Never