FEASIBILITY REPORT

DEVELOPMENT SOFTWARE 3 PROJECT

Started --- 08 April 2022   **Finished --- 30 August 2022**

Executive Summary

Our app will be E-Hailing taxi services app which intends to manage the taxi business industry and Its Fleet. Our app will operate in one city, which is Durban for now, because we are based in Durban. Our app will be dedicated to establishing good business relationships between taxi owners, drivers and taxi passengers giving them more value for their money and simplifying terms to hire their services. This includes conveying to passengers' brief information of a specific taxi, its driver, and its owner. This shall help to uniquely identify each taxi in cases of emergencies, accidents, bad driving, hiring, and reporting. Clients will have to enter a taxi number plate to access information of each taxi.

The app will be suited to operate on any android and Apple devices and opened to any future technology of these devices. Its database will be stored in cloud storage. The app will be gradually updated as we collect more information of different taxi associations around South Africa.

Our app will involve managing the taxi business for taxi owners, passengers, rank managers, associations, and professional taxi drivers. Our aim is to offer the above stated services but will not close doors to diversification as long as it does not affect our core services.

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Introductions

This document is our template to produces a feasibility report, which is a key requirement to define the success and risks related to our taxi mobile app project.

Document Purpose

This report is a document that assesses potential solutions to the taxi business problems or opportunity and determines which of these are viable for further analysis.

The purpose of our feasibility report is to present our project parameters and define the potential solutions to the defined problems, needs, or opportunities. Having brainstormed many potential solutions, we as a group expands on each of these potential solutions, providing sufficient details. Project constraints and limitations of expenditure are among the various factors that will determine viability.

This document determines if our project is worth carrying out and if our idea makes sense and is profitable. It includes area of feasibility such as technical, economic, operational, scheduling feasibility

Background

In South Africa the taxi business industry is one of the biggest industries which generates a lot of money everyday. The taxi business has always been commuters and there will always be a business opportunity available for taxis.

In 2013 when the Uber business was introduced to South Africa, the taxi industry began to lose some of its client to The Uber business and others that followed providing the same services as them, simply because these business have and used an App to support it's services.

In today's world many businesses use or have an app to improve direct communication with clients and customers. Most businesses such as Meter taxis and Cabs which have been commuters over the years, now have mobile apps allowing them to successfully compete with other e-hailing companies such as Uber, Bolt and Taxify which came after 2013.

Problem Statement

In South Africa the taxi industry is still very disorganised and there is still a lot of violence within the industry. This is all because the taxi business industry does not have an app that is dedicated to the taxi industry. Their businesses are still managed through violence

From a taxi owners' perspective, "there is a lack of operational visibility and control of their vehicles' whereabouts, once it leaves the property or taxi rank as well as several inefficiencies all leading to duplicated efforts in driving routes, ultimately resulting in a loss of potential income. Until now, drivers have only been aware of customers when they see them at physical locations".

Passengers, companies, and other drivers have been calling for an app that will build a solid relationship with taxi owners and taxi associations with regards to their business. These clients cannot get or retrieve any information about a taxi and its services anywhere even on the internet.

Below is a brief of problems, opportunities, and key issues that our app is seeking to address. All these problems where collected in different sources such as taxi drivers, passengers, and taxi associations.

Umlazi taxi associations officer (interview)

"When a client is willing to hire or report a specific taxi service provided, the only way to do this, is for them to come directly to the taxi associations office of that taxi if they know where it is located. This takes along time because our offices are geographically separated from taxi routes. Another way is to use a cellphone number and call the owner and that is if the phone number is written on the taxi. Most taxis write their details on the side of the driver's door, but the writing is not that bold in size for another driver to clearly see while driving or if the taxi is in motion".

- ✓ Our app will enable taxi associations to join the service by enabling taxi owners to register their taxis on the app.

- ✓ It will capture brief details of each taxi such as number plate, name, model, color, picture, driver, driver's cellphone number, taxi rank, route, and association office location as well as the owners name and cellphone number.

Durban South Beach taxi associations officer (interview)

"Since in South Africa many people embark to cities from farms or work away from where they reside. They use taxis to travel, and, in most cases, they will get lost for the first time or week using taxi services. This event happens because of lack of information provided to the passenger by us the taxi association service provides. A passenger might not know where they are going but using google maps they can easily locate where they are going. But google maps does not tell them which taxi to take and where. If a passenger knows where they are going, they also need to know where they going to get a taxi that will take them there".

The officer additionally stated that "In towns there are many taxis and taxi ranks going in different destinations. A taxi going to Umlazi can be in the same rank as a taxi going to Johannesburg. They may also be many taxi ranks in the same location, but a passenger only knows once they are inside the taxi. Since cities, buildings and roads are constantly renovated and changed, taxi ranks also get relocated and a passage who once came to Umlazi in 2010 would really get lost to find out that the taxi rank has relocated.

Most people who get lost in town and cities fell victims of crimes such as getting magged, rapped, kidnapped, and hijacked because they may ask the wrong people for information concerning taxi ranks."

- ✓ Our app will convey information to passenger's relating to their journeys by giving a brief detailed information to passengers in a tap of buttons.
- ✓ It will prompt the passage to enter their location and destination and it will show where all the nearest taxi ranks are currently located from their location entered.
- ✓ It will used road names and things such as store and buildings found closest to the rank.
- ✓ It will provide them with the taxi name that they will get on at the rank.

Durban Umlanga taxi driver (interview)

"Taxis commute different passengers such as worker, students and those who need to go somewhere. Taxis charges differ to different destinations. The taxi business industry does not inform passengers of such information. Passenger such as students and workers need this information to structure their monthly budget. Some passengers such as students rely on their parents to give them money to pay for taxis. Without this information these passengers end up with an amount that is lesser than charged and the only time they find out is when they are already inside the taxi. We as taxi drivers have the authority to ask these passengers to get off the taxi no matter where they are. Many passenger who has been victims of this always felt unsafe because sometimes we ask them to get off in an unsafety place where they fear for their lives."

- ✓ Our app will enable passengers to enter their trip details such as where they are departing from to their destination and will tell them how much that trip will cost and estimate the time it normally takes to get there.
- ✓ It will have a feature to generate the total cost of a trip according to the number of people (passengers).
- ✓ It will notify passenger when there is an increase on taxi fees

This information will help passengers to know the amount that the taxi will charge them for that trip before they even get to the taxi. This will eliminate conflict between driver and passengers and passengers themselves because sometimes passengers pay for other passengers who get short.

Durban Rank Manager (interview)

"The taxi business industry has a lot of violence because it is unorganised. At the rank we use a first come first serve rule when it come to loading passengers on taxis. This method causes many road accidents because taxi drivers now have to speed on the road to make as many loads of the day as possible. This puts passengers in danger and causes speeding tickets. These also affect other vehicle drivers. Most drivers complain because if they drive slower, they make a lesser amount of money, and each taxi driver has a minimum target to make for the taxi owner".

He additional stated "This creates conflict amongst taxi owners because one taxi can already have made five loads while another has one. Passengers now prefer Uber services because they are much safer, and their drivers always obey the speed limit of the road.

- ✓ Our app will assist the taxi industry to create order at the taxi ranks
- ✓ It will have a system that will generate a daily loading sequency for taxis
- ✓ The app will feature a feature the helps taxi drivers and taxi owners to keep a record of the total amount they have made in a day depending on the number of loads they make.
- ✓

Durban Taxi Passenger (interview)

"The taxi industry is a business and we as passengers are considered customers. The number one rule of a business is to satisfy the customers and if the customer is not satisfied, they can submit a complain. The taxi industry does not provide a platform for us as passengers to rate their services or forward a complain because sometimes taxi drivers may mistreat us".

"Sometimes we as passenger may forget something on the taxi and cannot recover it back because they is no information provide to us to contact the taxi driver or association.
In other cases, taxi drivers drive recklessly on the road under drugs and alcohol, and this endangers us as passengers, pedestrians, and other road users. We cannot report such behavior because they is no platform provided to us as the public by the taxi industry to discipline such behavior".

- ✓ This app will create a platform for passengers to review the services they receive while in a specific taxi good or bad.
- ✓ It will provide passengers, pedestrians, and other road users with a platform to report reckless taxi driving using it number plate
- ✓ Also enable passengers to recover their belongs by enabling them to contact the taxi driver personally using the driver's cellphone number provided on the app. Passenger can also submit a report directly to the taxi associations office immediately.
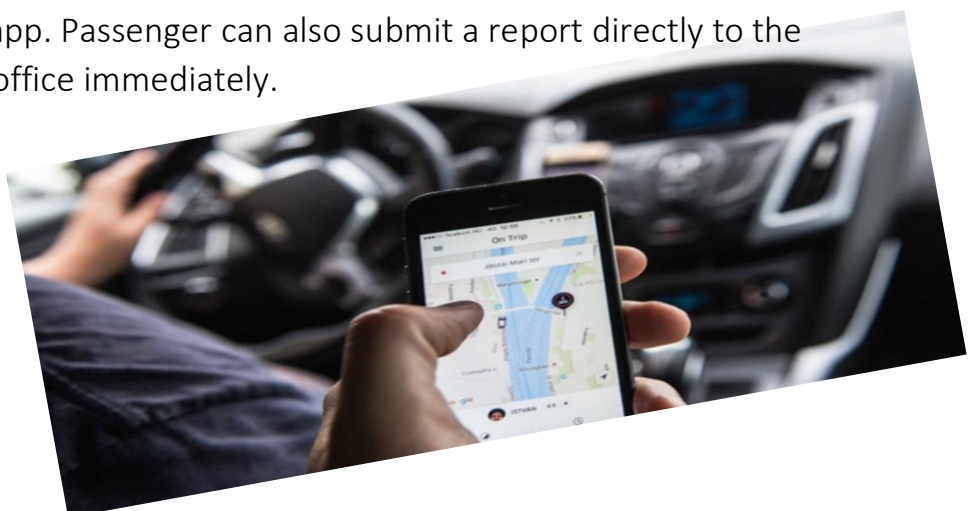
Benefits and other advantages for our target market

Taxi Owner

- Track their taxis on the amount of loads they make on the rank and to know if they reached, they targeted daily income

- Their taxi will be monitored by other vehicle users based on reporting bad driving directly to the owner.

- Their taxi will get more service hires from other companies such as Shoprite and Spur who may have stuff coming late at night. Also, on other events such as funerals

Track Taxis on route

Taxi Driver

- The drivers will be registered to the app, which will help in case of emergencies and reports

- The drive can plan his route and keep track of his daily passengers using the app

- The driver will easily know the total he has made in a day by using the app

- The driver will also get more service hire from unexpected customers and can-do special side deliveries of passengers who may directly use the app to call them directly that the owner may not know.

- Driver may also use the app to pickup passengers who may have been waiting for a long time in stops during off peak hours on routes without taxi stops

- The drivers get service rating which will be used by people who want to hire the taxi services

- More drivers can get employed because taxi owners will use the app to advertise job vacancies

- Drivers will be able to communicate directly with passengers and other drivers using the app

- Driver may also report other driver fast and easy who over route or steal passengers in their routes

Taxi Passengers and communities

- Passengers can be registered to the app, which will help them in case of emergencies and reports, since sometimes accidents happen and peoples phone get lost and there is no way to tell families that their family member(s) were involve in an accidence, this app will allow taxi officers to check if the passenger was register on the app, and if so they will be able to contact their next of keen by using their registration details.

- The passengers will have direct communication with the taxi industry (driver or association)

- The passengers will feel more safer and will see the value of their money by the app providing them with the platform to report and rate the taxi industry service immediately

- The passenger will be able to know which and where their taxi rank is, even when it is temporarily or permanently relocated using the app

- The passengers will now be able to see the price and duration of their trip before they get into the taxi

- Customers will be able to recover their lost belongings instantly by using the app to directly communicate with the taxi driver, fast and easily

- Unemployed passengers can get employed because taxi owners will use the app to advertise job vacancies for taxi drivers

- Drivers will be able to communicate directly with passengers and other drivers using the app

Other Vehicle Drivers

- The app will help other vehicle drivers to report specific taxis in case of emergencies and reports. In several cases taxi drivers knock other vehicles and they drive away.

- So other vehicle users will be able to use that taxi number plate to track the taxi and report.

- Other drivers can also report overloads and unsafety of passengers in a taxi using the app and the sticker of the taxi and number pate.

Companies

- Since taxis normally work from 4am to 8pm, companies face difficulties when their employees work over-time and run out of taxis. With this app companies can book a taxi after hours for its employees to be transported safely.

- Companies may also use the app to hire taxis to take workers to evens such as workshops and other functions. They get access to directly communicate with the driver or association
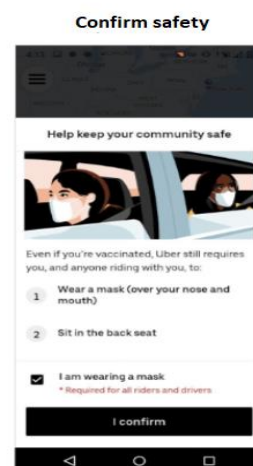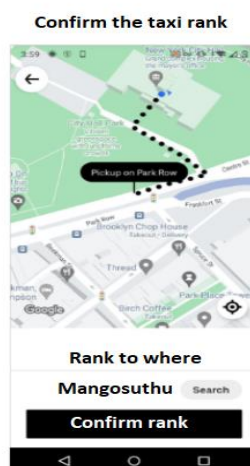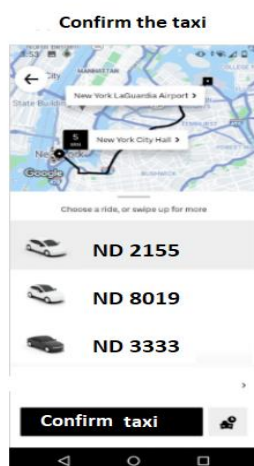
Project App Requirements (assumption and constraints)

This section provides pertinent details regarding the context for undertaking our proposed app. This information is based on the problems and solutions defined above.

• Availability of information and resources

We plan to collect all data and information we need using the taxi associations offices. We will conduct verbal and phone interviews with rank managers, taxi owners, taxi drivers and passengers to gather information.
We will issue questionnaires to the people we have mentioned above for more information. We will used historical data that is available on each taxi association. We will also distribute surveys to customers to collect accurate and reliable information.
 These offices currently have databases on books that store and manages the taxi operations and taxi fleet.

We will store all the information we gather in a cloud storage database managements system which will always be available online

Market Feasibility

We have started to issue questionnaires to rank managers, taxi owners, taxi drivers and passengers since they are our targeted market to download and use our app on daily bases.

Technical feasibility

We will be using SQL database management system software that will be hosted online and stored on cloud storage for our target market to access our database.

Economic feasibility

The taxi associations and taxi owners have agreed to financially support us in this project for us to buy prepaid airtime to conduct cellphone interviews and also for travelling to taxi associations and collect data and information.
We will need financial support to pay for a good quality database host, that offers a reasonable amount of space that we need to store our database, but for now we will use Firebase which is free to hold our database for our project. We will currently use our university for good internet connection when we want to update our database

Schedule feasibility

It might take us a lot of time to gather information of all taxi association, so we will start with the ones around Durban.

- ## **Operations and functions of our app**

Any user who will use our app has to be familiar with using other phone app because our app will be similar to all other apps such as Uber and Banking apps.
Although we will undergo a process to train and empower taxi drivers, owners, rank managers and taxi association staff to use our mobile app when they want to update information into the database or notify customers.

Our app will be designed to run on mobile devices which uses android and apple operating systems. Passengers and other clients will have to download our app on play store for free. From a technical perspective, the app will be based on Qualcomm-enabled 3G/4G devices with Bluetooth, beacons, and other advanced technologies; the entire platform consists of a suite of mobile apps running from a cloud backend. Our app's function will be very similar to other existing apps like Uber, Bolt, AfterRobot, etc. but it will differ in term of locating taxis and passengers since for the taxi industry one passenger cannot request a taxi.

Market Feasibility

We may need to also train our users of our app such as Passengers, taxi drivers, owners, rank managers and taxi association staff but we ensure that it will be very user friendly for someone to need training thoroughly.

Economic Feasibility

We will need money to pay for hosting of our app on google play store. We will need data bundles to download, run and test our app on each device and to also update the database.

Technical feasibility

We will need to have android and apple devices to test and deploy our app and also to maintain. We will need a stabled internet connection.

Operational feasibility

We will need to train rank managers, taxi association stuff, taxi owners and drivers to use the app when they would like update data on the database.

Schedule feasibility

Depending on how fast the people being trained are it will impact the time it will take for our app to perfectly work and produce desired results. We will need to make time to train these people since they are always on duty.

- # Developing and Testing of our app

As the taxi app developers, we will code our app using Ionic and Angular frameworks to develop our apps frontend correspondingly and use JavaScript programming language, PHP, HTML and Firebase for its backend. We will be using Visual Studio Code and Android Studio software to code and test our app. Since we are working as a team, we will be using GitHub to store our code.

Market Feasibility

We may need to also have taxi passengers and drivers involved now and then while developing our app to make sure it satisfies their needs based on the frontend of our app. Taxi association stuff and owners need be involve as well to monitor the language we use, if it is understandable by them, passengers, and taxi drivers

Economic Feasibility

We may need money to buy Android Studio software to develop our app or to download it. We need money for data bundle and a good internet connection to login to GitHub an access our code

Technical feasibility

We need computer devices that will be compatible with the software version of Android Studio and GitHub we will be using to develop our app.
We will need to have android and apple devices to test and deploy our a

Operational feasibility

Each team member needs to know how to use the software we will be using to develop our app.

Schedule feasibility

If there is a team member that doesn't know how to use any software that we will be using to code our app, this will impact the time it will take for us as a group to develop our app to perfectly work and produce desired results. We will need to make time to train a member.

Assessment of Options (Evaluation Criteria)

The purpose of this section is to list the possible options for satisfying our client requirements and to document the results of our feasibility assessment.

The taxi industry is a very large industry to manage and there is a lot of data that our app will need to collect and store on its database. Below we state the options we have to evaluate our app project to be completed and to work.

Option 1 Recommend

Description of the option
We will first develop our app to be used by one local taxi associations. We will choose one route that is closest to us. We will target people that go from that route to kwaMyandu mall. This will be easier for us because Myandu mall taxi rank is smaller than the ones in town. It has a few taxis, with one taxi Gathering information will be much faster and accurate. And its taxi association has a fewer number of stuffs, that will need to be trained. Fewer passengers to question as well. Our database will need less amount of space.

Cost
This will eliminate the cost of resources we will need and the money we will need to go to taxi associations and conduct interviews. Hosting our database online will be much cheaper because of less space needed

Impact
This option will not create an effective impact on the market because it will only be targeting people going to KwaMyandu Mall. While other similar apps used by the taxi industry competitors such as Ubers target everyone going anywhere. It won't have such an impact on its competitors at first.

Potential Risks that impact the ability to Deliver Desired Outcome
The local taxi association may not approve the app or want to share their database. The local drivers and passengers may not use the app regularly as expected. They may only use the app when taxi prices go up.

Option 2

Description of the option
We can also develop our app to be used by only taxi associations in Umlazi because there are three routes in Umlazi. The routes are not that far away from where we are. We will target a larger market that commute from town to

Umlazi. This will be better for us to start off with than targeting the whole of Durban. This route has three taxi association office and the major one is in town. Gathering information will be much better and accurate. All association staff will need to be trained. Our database will need a fair amount of space.

Cost
This will eliminate the cost of resources we will need and the money we will need to go to taxi associations all over Durban.

Impact
This option will create a fair effective impact on the market because it will target a larger group of people. This will gradually force demand for our app to add more Taxi association because it's service would be required in other routes as well. It will definitely impact its competitors such as Ubers.

Potential Risks that impact the ability to Deliver Desired Outcome
The taxi association may not approve the app or want to share their database. The drivers and passengers may not use the app regularly as expected. They might not find our as useful as we think it is

Market / Industry
- ❖ Durban taxi associations, taxi owners, taxi drivers, passengers, and other people such as other vehicle drivers and companies willing to use it services.
- ❖ Any node user who needs information about taxi services in Durban will be our target because there is no app that provides such information.

Financial viability
- ➢ We will need the taxi association to support us financial on paying the fee to deploy and host our app on google play store and iStore in future but for now we will raise funds as a group and use the cheapest services possible to get our app published and running.
- ➢ Also, for the database hosting services

- ❖ Our app will make money on it downloads and also on advertisement from other companies that we will agree upon on our app to host.

Risk Assessment of Viable Options

The taxi industry is a very large industry. Most taxis are owned by black owners. Most of these taxi owners are hard to get to and they are considered scary to approach. They are also old in age, which makes them not rely on apps and technology as much as other aged people. The taxi associations are also busy every hour off the day and also taxi driver, so trying to implement our viable options listed on the above page we will have the following risks:

- The taxi owners may not want to use an app to manage their operation because they do not use apps and they business is running without an it.
- Taxi association may not want to share their existing database with us.
- Passengers, taxi owner and taxi association may not find the need of the app since it will be using data bundles which cost money.
- Taxi associations may not have internet connection or technology to update database or use the app.
- The taxi owners and associations may decline the app from getting complains and reports of reckless driving from passengers and other vehicle drivers.
- The app might also be decline because taxi drivers will not be making the same amount of money they make on daily bases because they will be monitored by the app all day not to drive fast on the road.
- Our target market might not be able to use our app

- We might not have enough financial resources such as money to gather and collect information for our database.
- We might not be able to code our app using Visual Studio Code and android studio as we would want because we started it this year.
- Not having sufficient internet access could be a risk for us to develop our app because our database will be online for testing our app.
- Our app might not be in a legal standard to be on google play store and might not function well on IOS than on Android
- We can face the risk of not finishing our app in time because of insufficient information gathered. Not being able to conduct interviews with owners and rank manager because of taxi wars.

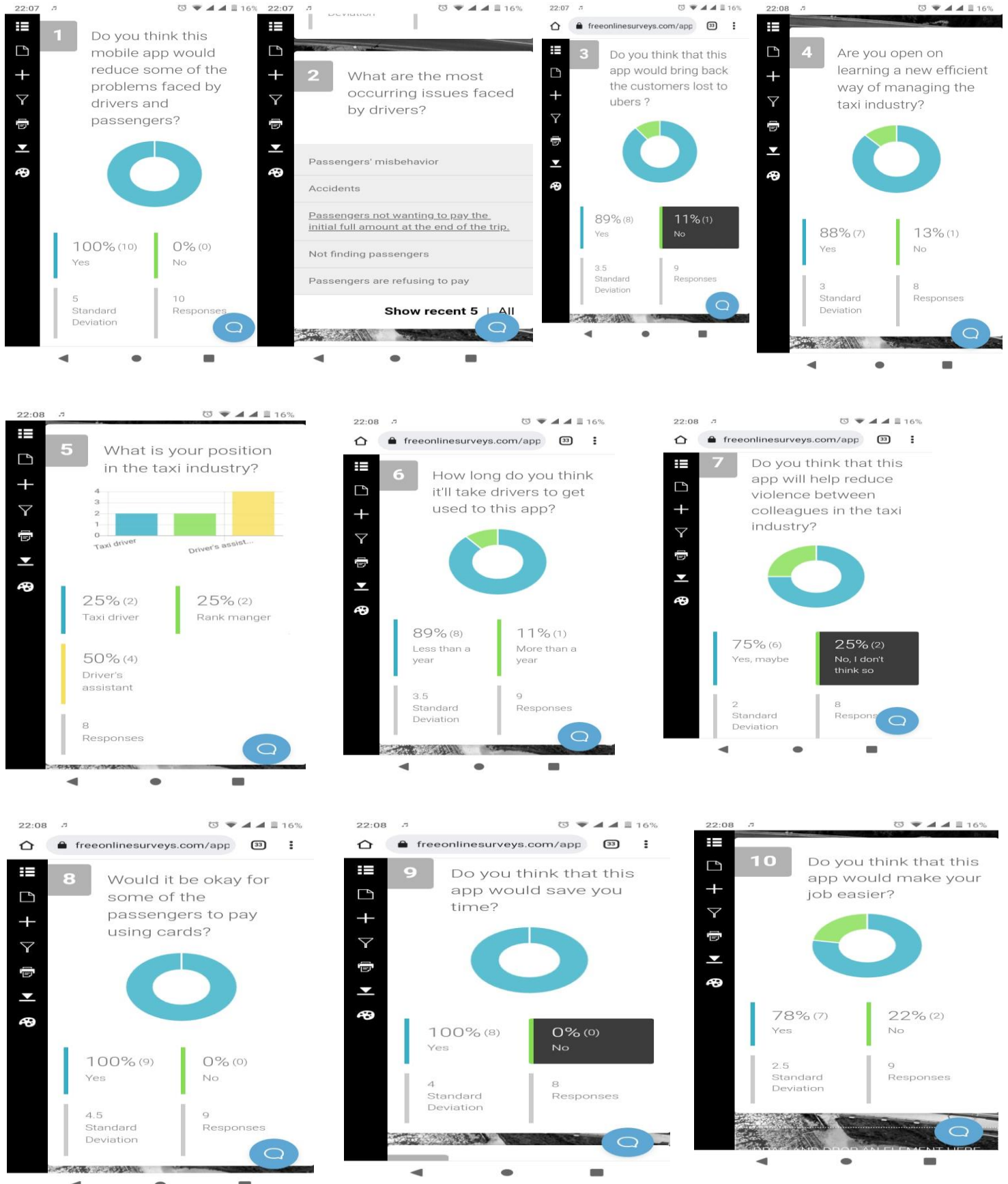# More information about our project will be detailed in our next phase which is the project charter

Analysis	
Research	Documentation
Analysing	Designing
Evaluating code	Implementing Code
Evaluating the project as a group	
Deploy and maintain the project as a group	
Managing finances	
Customer services	
Marketing	Human Resources

Conclusion

We are very confident that our App is needed because passengers and other taxi clients has been calling to improve direct communication with taxi associations and taxi owners for years. Our app will be the voice of taxi owners, taxi drivers, passengers, and other vehicle drivers. Our App will give the taxi industry the opportunity to reach potential new audiences before they even get to the taxi and increase revenue. It will help taxis to make loyal customers and to be very competitive to its competitors who are already using apps.

Our app only requires the existing taxi industries database to produce the desired result and to satisfy its customer needs. It will grow each year by including other taxi associations, city by city. Its goal is to have data of every taxi that operates in South Africa.

Survey's Conducted

1 Do you think this mobile app would reduce some of the problems faced by drivers and passengers?

100% (10) Yes
0% (0) No
5 Standard Deviation
10 Responses

2 What are the most occurring issues faced by drivers?

Passengers' misbehavior
Accidents
Passengers not wanting to pay the initial full amount at the end of the trip.
Not finding passengers
Passengers are refusing to pay

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3 Do you think that this app would bring back the customers lost to ubers?

89% (8) Yes
11% (1) No
3.5 Standard Deviation
9 Responses

4 Are you open on learning a new efficient way of managing the taxi industry?

88% (7) Yes
13% (1) No
3 Standard Deviation
8 Responses

5 What is your position in the taxi industry?

25% (2) Taxi driver
25% (2) Rank manger
50% (4) Driver's assistant
8 Responses

6 How long do you think it'll take drivers to get used to this app?

89% (8) Less than a year
11% (1) More than a year
3.5 Standard Deviation
9 Responses

7 Do you think that this app will help reduce violence between colleagues in the taxi industry?

75% (6) Yes, maybe
25% (2) No, I don't think so
2 Standard Deviation
8 Responses

8 Would it be okay for some of the passengers to pay using cards?

100% (9) Yes
0% (0) No
4.5 Standard Deviation
9 Responses

9 Do you think that this app would save you time?

100% (8) Yes
0% (0) No
4 Standard Deviation
8 Responses

10 Do you think that this app would make your job easier?

78% (7) Yes
22% (2) No
2.5 Standard Deviation
9 Responses

Appendix and Reference

No.	Reference Document Name	Location e.g., file number, E-DRM number, Web address, etc.	File Volume No.
1	accessible-taxi-final-report-dec-16.pdf	https://brocoders.com/blog/how-to-create-uber-like-app/	1
2	Durban Taxi	durban.infoisinfo.co.za	2
3	Should my Business Have An App?	www.mckennaconsultants.com	
4	Uber Driver Business [Sample Template for 2022]	www.profitableventure.com	
5	Taxi Video	https://www.youtube.com/watch?v=vQg-mQU_Qnc https://www.youtube.com/watch?v=wzcdFgTbm1I	
6	Taxi Video	https://www.youtube.com/watch?v=p5XD5LBK7ul https://www.youtube.com/watch?v=bhkzYqeZC8g	