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Mandhar Smart application for the visual pollution in Muhaisnah-2 area – Dubai UAE

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**Mandhar Smart application for the visual pollution in
Muhaisnah-2 area – Dubai UAE**

by

Hamda Mohamed Alharmoudi

**A Capstone Submitted in Partial Fulfilment of the Requirements for
the Degree of Master of Science in Professional Studies:**

Smart Cities

Department of Graduate Programs & Research

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**Master of Science in Professional Studies:
Smart Cities**

Graduate Capstone Approval

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**Graduate Capstone Title: Mandhar Smart Application for the visual pollution in
Muhaisnah-2 area, Dubai UAE**

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Abstract

People naturally love beauty, beautiful views, and a beautiful environment. Beauty is the human eye that makes him happy and brings pleasure to his heart. If sport feeds the body and science feeds the mind, then beauty feeds the soul and the mind, all the beauty around us feeds the brain that has a positive impact on human life, and the distortion that we encounter in our life has a negative impact on us. Therefore, visual pollution is defined as, everything that is inconsistent with the beauty of the environment that surrounds us which create a harmful change for the environment, and every distortion that harms a person's eyes and causes him discomfort and psychological anxiety in the long run, so that he loses the aesthetic sense around him, by replacing the beautiful scenes with conflicting and inconsistent ones.

For my smart application, the name “Mandhar” was selected. Mandhar in Arabic dictionary means the view that relaxes the soul, and what the eye falls on, either wonders or gets worse. This project is focused on the beauty of the environment and the city view which affect the human life.

The project will deal with some of the necessary information regarding the implementation or propose an application that will help clean the Muhaisnah area in Dubai and make the city Safe and sound. Visual pollution deals with the occurrence of vandalism, electricity damages, or excess dumping of wastes like beach wastes, building wastes, graffiti, stray animals, neglected cars & etc. The project will thus provide clear identification of the usage of this app along with coming up with possible solutions that will help in making the country safe and free of every damage. The project has been built based on identifying the statement of the problem, along with providing a detailed background of the problem. All possible methods have also been identified that will lead to analyzing the process of the project.

Keywords: Beauty, visual pollution, environment, responsibility, sustainable.

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Chapter 1

1.1 Background

Muhaisnah area is in the northeast of Dubai and is one of the few areas established on the Dubai-Sharjah border. It is also distinguished by its proximity to industrial areas such as Al Qusais Industrial in Dubai and Industrial Sharjah as it shown in figure 1.

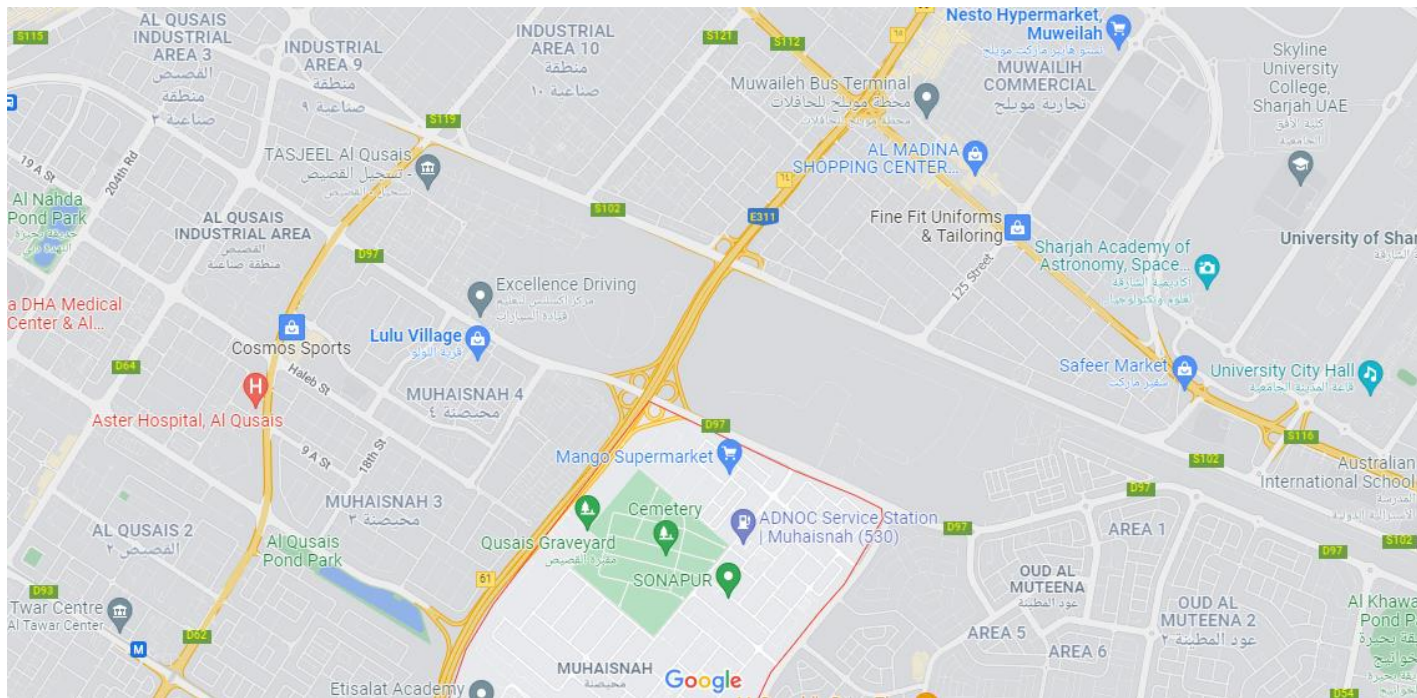


Figure 1 : Muhaisnah-2 Area

Muhaisnah area includes many labor and employee accommodations, as well as residential buildings in the area with options suitable for individuals, newlyweds and even small families. It includes a variety of residential properties such as apartments and villas. Employees and small families prefer to live in residential complexes in the area, while villa areas are suitable for large families. As one of the sub-districts, Muhaisnah-2 includes a group of workers 'accommodation, being near the industrial areas (Muhaisnah area , 2019).

With the increase number of the population in Muhaisnah-2 area, the visual pollution is continuously increasing. Most of the visual pollution in the area that you can found which affect the beauty of the city is overloads waste, people hanging clothes on balconies, Abandoned car (Scrap), graffiti, stray animals & etc. So, if any tourist or resident will visit the area, he will have a negative idea about the area as well as the city. Moreover, if the tourist or the tenant decide to live on Muhaisnah-2 area he will change his mind due to the visual pollution as they are looking for a clean area and healthy environment to live in and this will impact the value of the residential property as well as the reputation of the city.

In addition, mostly whenever we found a pollution on the city or any area, we directly call the competent authority to inform them to take an action. For example, when we found an electricity wire damage that affects the looks of the city, we call DEWA authority to take the action and fix it. Even though, when there is writing on the buildings wall, we call Dubai Municipality to take the action and paint it. However, the complainant who filed the complaint he will not be updated with the action taken and most of people don't like to submit complaint once we found an issue or pollutions on the city as they thinking no one will take the action or will listen to them as its kind of time wasting.

1.2 Statement of problem

Pollution does not mean poor air quality index or unfit drinking water or waste disposal in open air. It also extends in terms visual pollution. This is a problem where any individual founds a sight disturbing as it is polluting that particular area. For example, broken vehicle parts in the roadside are a particular disturbing sight as the scrap's particle are not only dangerous but also block a particular portion of the road and it distort the scene. Moreover, spread clothes on balconies distorts the urban landscape on the city.

However, there are some areas in Dubai like Muhaisnah-2 area is polluted not just visually but in the literal sense as well. It is often an unpleasing sight while walking down on any of roads in these cities. The passengers and the people often encounter unpleasing sight which causes a discomfort in the eyes. Sometimes maybe they are not directly contributing towards pollution but the sight is very appealing and calls for an immediate action.

Most importantly, since UAE is a popular tourist sight, when a tourist all the way from their land visits UAE, they have to witness such displays in the public places, the reputation of the country degrades. Sometimes the pollutants are direct contributors to pollution. For example, the empty paint tubes or lead particles which are dumped in open air contaminate with the local air and damage the air quality index at that particular area. The unpleasant sight urges the people to take immediate care which is why sometimes we have seen people picking up waste in some areas so that the area looks clean. We have often eyed people picking plastics and paper in parks while enjoying since it damages the aura of the scenery. In my capstone project ,I choose Muhaisnah-2 area which has a visual pollution and it is a neighborhood located in UAE in Dubai city with a population of 90,870 people and a large portion of the city use smartphones (Muhaisnah, 2019) . This makes the app easy to use because it will help in removing visual pollution from the city.

1.3 Project goals

This project aims to involve the citizen and resident on the social responsibility by reducing the visual pollution on Muhaisnah-2 area and returning back the beauty of the area as well as the city and providing an urban environment with healthy living. However, the project is aimed to design a smart application that will gather all the complaints and issues in one place with a follow up system as this will create a fast and easy way for people in Muhaisnah-2 area to report issues and visual pollution to the appropriate authority. This will lead to reduce the pressure on the government inspectors as they will notify the location of the issue and they will respond fast. As a result, we will reduce the problems that leads to disasters as well as saving efforts and money in fast responding. For example, if there is a water leak in the area and the relevant authority has been notified this will lead to reduce water waste as well as money waste.

In addition, the goal of the project is to encourage a large group of people of the recycling the plastic waste by using the application and make them aware of the excessive plastic wastes. This will help in making the city sustainable.

1.4 Methodology

The analysis processes will be used on the project is to get data about the visual pollutions on Muhaisnah-2 area. My research data will be based on quantitative data which is concerned with discovering facts about social phenomena and my secondary data will be taken from the websites and studies. The solution which has been taken to solve the problem is by designing a smart application (Mandhar.) that will help all the citizens to collaborate in cleaning the area as well as the city.

The methodologies methods selected were:

1. A personal tour around some areas in Dubai which have visual pollution like Muhaisnah-2 to have a look and to collect more data and pictures.
2. Search about data related to visual pollution in UAE and other countries on the world.
3. Study and search about countries that created a similar application and how it impacted them positively.
4. A business canvas model was designed, which it will help to identify the concept of Mandhar application and it will clarify the independent stakeholders and beneficiaries that will help in solving the problem as well it will help me to know the value properties of the stakeholders. The business model will contain nine components which are: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure.

1.5 Limitations of the Study

The project limitation that has been faced in this project is the lack of numerical data which is related to visual pollution in Dubai and this was challenges for me as this numerical data will help me in project analysis. Moreover, due to Covid -19 restriction, it was difficult to visit the government department in Dubai to collect visual pollution data from them and most of the governments are not allowed to share the private data.

Chapter 2 – Literature Review

Below are similar solutions projects which is implemented in some countries.

USA Jobs App:

The government of United States has made a USAJOBS application where any citizen of the country can look for different jobs through the platform. As states by the author Bethany, the application has been developed due to the fact that the constant increase in the number of unemployment across citizens of United States. The application developed and launched by the federal government which is available both over Android and iOS. Any user enlisted on the application can save their job listings and get time to time update about the job roles.

The application is tailor-made which allows the user to search through keywords for better search results. The application has partnered with all the leading commercials, mobile applications, and social media sites so that data is accessible to all the user's segment. The partnering allows the users to get over 5000 job alerts regularly (USA JOBS, n.d.).

PTSD Coach App:

The PTSD Coach was designed in united states for people who have posttraumatic stress disorder and it used by people to manage symptoms which takes post trauma. The application provides enough information about PTSD and the treatments which are best suited in the condition. The application is more like a personal doctor for all PTSD issues faced by an individual. The application also has tools which are used for screening and tracking the symptoms of the patient. It has all necessary information about every situation alongside a remedy. The application is very easy and any age group can use it seamlessly. The application comes with inbuilt links which redirects to the support centers and help. The application has links attached which redirects the user to the sites from where direct help can be opted in emergency cases (PTSD Coach, n.d.).

Gov2go App:

The Gov2go is a popular application which is used by all the United States citizens where they can keep a track of all the pending payments due to the government. The application enlists the citizens of U.S. through some minor details and personal information then creates a timeline and schedules all the tasks pending at the government for the entire year. It acts like a memo and keeps reminding the people about the documents and information pending at the government. It is the one-stop application for all the citizens through which they can keep a track of the tax's payment, vehicle registration, energy bill and others. The application can also be used to pay with one click which has ensured the trust of over 10 million users. The application is active in 16 different states and has a positive review. Most importantly, it allows people to pay their due payments timely to avoid fine. In a moving and busy world, people forget their timely payments which results in huge penalties. The purpose of Gov2go is to keep reminding people about their pending payments in a timeline. It's like a personal assistant for the government (Gov2go, 2021).

Snap, Send Solve App :

The government of New Zealand has developed an application which is very useful named "Snap, Send Solve". The application is used by people to report any damage like broken manholes, increased pest activities, or anything which is unpleasant report on the application, the government officials will visit the place and rectify it immediately (Snap Send Slove, n.d.).

The user has to take a picture and post it on the site along with a description. The concerned person will eye that complain and take necessary steps in a couple of days. The purpose of the application is to ensure safety and cleanliness in the country. Areas where the activities of pests have increased, people take a snap of the scene and post it on the application. The issue gets resolved and is checked out from the application. The local municipality is responsible for looking after the complaints raised in their area. Australian government has also started using the application for the same reason. New Zealand is one of the least polluted countries in the world due to their attractive initiatives by the government. The health of its citizens is a priority for the government (Snap Send Slove, n.d.).

Balady App:

Balady application which is implemented in Saudi Arabia is developed to create an effectiveness in terms of communication between the citizens and the government. Several issues are created and exist between the citizens and the government which remains unsolved and unaddressed. The main purpose of the Balady application is to ensure that the problems faced by the citizens are solved from time to time. The long queue in front of the municipality office is very long and often people refrain from complaining since majority of the problems are never noted. On the other hand, the municipality officers are also unable to check on the issues it is practically impossible to reach out to each individual or take a note of every activity. The Balady application is like a complain book where people can register themselves and post about their complaint (Balady Al Riyadh Mobile App, 2018).

Recycling machine:

In Germany you have to pay a deposit for most of the plastic bottles you buy. This is usually 25 ct per bottle. Once empty, you can bring it back to the supermarket and get your deposit back by putting it in a bottle recycling machine (How Germany Recycles Glass and Cans, 2019).

Skywards:

Emirates Skywards is a loyalty program for fly Dubai and fly emirates both able the member to earn Skywards Miles as well as Tier Miles. In addition, the member can enjoy several benefits such as getting 75% bonus Miles, Miles validity for three years, ticket upgrade option, booking hotels and up to 20Kg extra baggage allowance. Adding to this getting a priority baggage delivery depending on the membership status (Benefits of Skywards, n.d.).

Thank you for the gift initiative:

The Customer Relations Department of Dubai Municipality has launched a new initiative called “Thank you for the gift”, through which a valuable gift is presented to any customer who files a complaint that leads to the improvement of the services provided by the department to the community.

In addition, Director of Customer Relations Department, Khaled Badri said: "We want to change the perception of municipality customers about submitting complaints, and encourage them to be of assistance to us in improving and developing our services, so they submit any complaint about any service provided by the municipality in a way that does not satisfy their aspirations or is not presented in the required manner."

However, it is noteworthy that Dubai Municipality receives complaints through the unified government website, which is a system that allows customers to submit complaints. Moreover, there is free channels available to the public to receive complaints or reports is the Dubai Municipality call center 800900, which works within 24 hours. (Dubai Municipality offers a gift to the complainant, 2014).

My Car campaign:

The "My Car" campaign was launched under the slogan "Clean Car ... Sustainable City" by Dubai Municipality to reduce the phenomenon of abandoned cars in public places in the city as well as to preserve the civilized appearance of the city of Dubai. The campaign includes the dissemination of awareness messages via electronic screens in vehicle inspection centers in the Emirate of Dubai, official newspapers, and e-mail for all Dubai government employees. It also includes awareness visits for workers of industrial workshops and garages in Dubai regions such as (Al Qusais, Umm Ramool, Port Said and Jebel Ali). The process of removing abandoned vehicles is by issuing a warning in the form of a sticker that is placed on the abandoned vehicle for a period of 15 days and in case of non-response by the owner, the vehicle is transferred to the scrapyards of Dubai Municipality, and then it is sold by auction after six months if the owner did not recover it. The aim of this campaign is to raise awareness in the community about the damage caused by neglected vehicles, to promote the values of social responsibility and to cooperate with departments and authorities in the private and public sectors in maintaining the sustainability of the appearance of public facilities and the beauty of the city. (Dubai Municipality launches campaign against abandoned vehicles, 2020).

Aleef App:

Aleef Application is a platform for pet owners in Dubai which is launched by Dubai Municipality that improve animals' registration, adoption and care services. The application provides a

comprehensive view of places of interest to pet owners through the application map as well as a platform for pet adoption (Emad, 2017).

Chapter 3- Project Description

3.1 Mandhar Application

The purpose of this project is to design an application (Mandhar) that will allow people to post pictures about the sight with the location whenever they found any visual pollution on the city especially on Muhaisnah-2 area, so that the competent department or the person in-charge can know about the incident and the necessary actions will be taken directly.

To clarify, any person can post images of the visual pollution in the application itself with the location and the application will be divided into segments like water & electricity, waste, graffiti & etc. This whole filtering will be easy for the user to understand to which category the problem exists. After choosing the category the complaint will go directly to the competent department for example Dubai Municipality, police station, DEWA, RTA & etc. Segmentation will allow the competent department officials to bifurcate the problems and send it across the respective section as it shown in figure 2 below. Till the time the problem is not resolved, the problem will be marked red and after solving, it will turn green indicating that it has been addressed and a notification will be sent once submitting the complaint showing the days that needs to be taken to solve the issue and after the job is completed a notification will be sent as well with a photo of before and after.

However, the application will not only reduce visual pollution but will also ensure cleaner and safer environment. To clarify, The -application can also help in reducing the excess plastic wastes as there will be an option for collecting the plastic from your home. To clarify, people can report that they have large quantities of plastic, so the competent authority (waste management in Dubai Municipality) will send someone to take the plastic to recycle it in the factories, in return people get an amount that depends on their plastic quantity and there will be a percentage about 10% goes to the government. This means that the app will help in alarming a large group of people because they will be aware of the excessive plastic wastes and can immediately take the necessary steps to recycle all the plastic. Recycling of the plastic will contribute in decreasing a large amount of

visual. The plastic wastes will come up with a cost and the government will thus move a step ahead in making the city safer and sustainable. The entire country can be cleaned in a much more systematic manner by using Mandhar application.

To encourage all the citizen to use the application and to involve them on the social responsibility by reporting the visual pollution there will be a point for the effective user based on his number of complaints and he will have discount for example on fines, restaurant & hotels. Moreover, the effective user can have a priority of benefiting from services like having a fast queue for applying any request on the government departments, thanks and appreciation certificate.

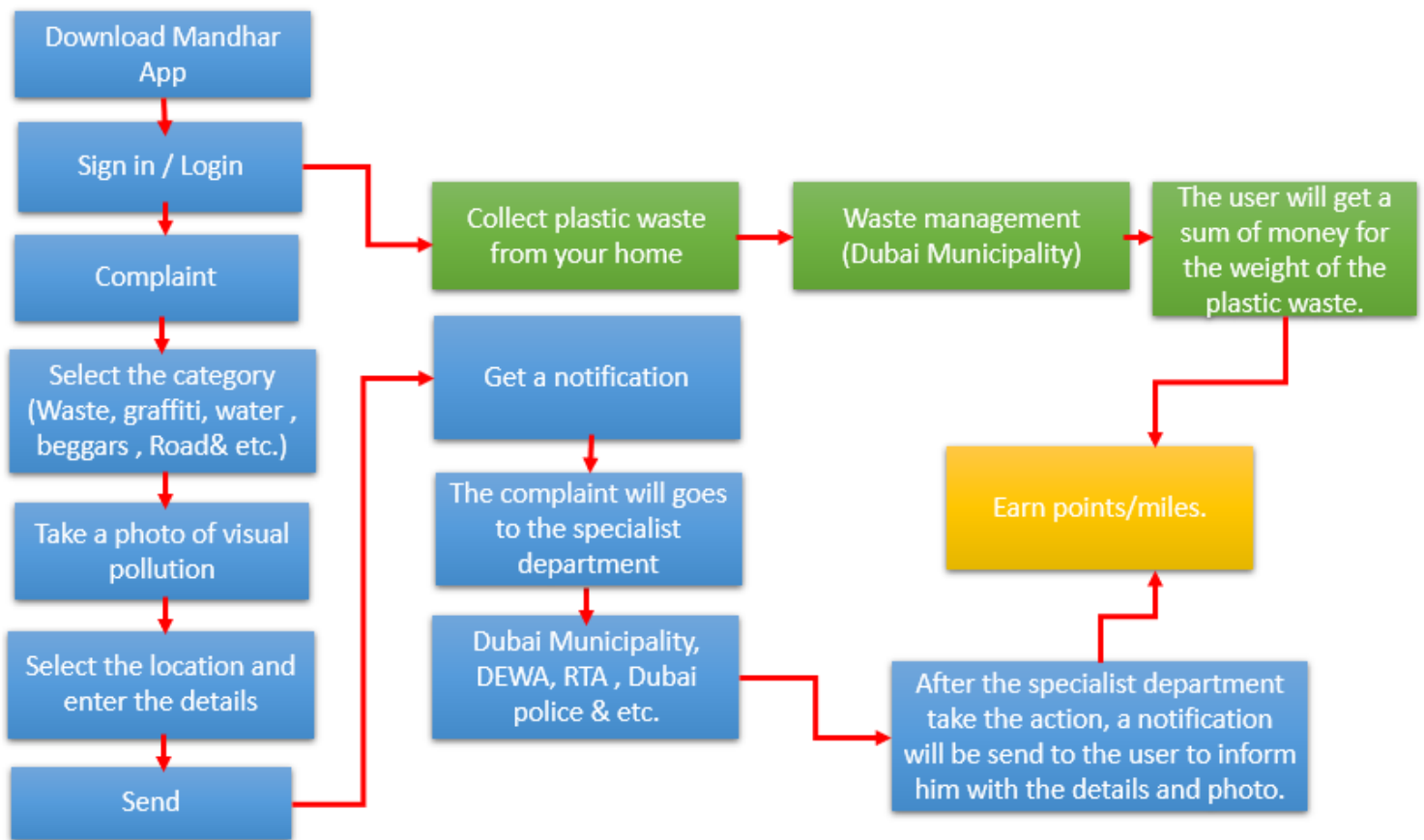


Figure 2: Mandhar Flow Chart

3.2 Mandhar App design

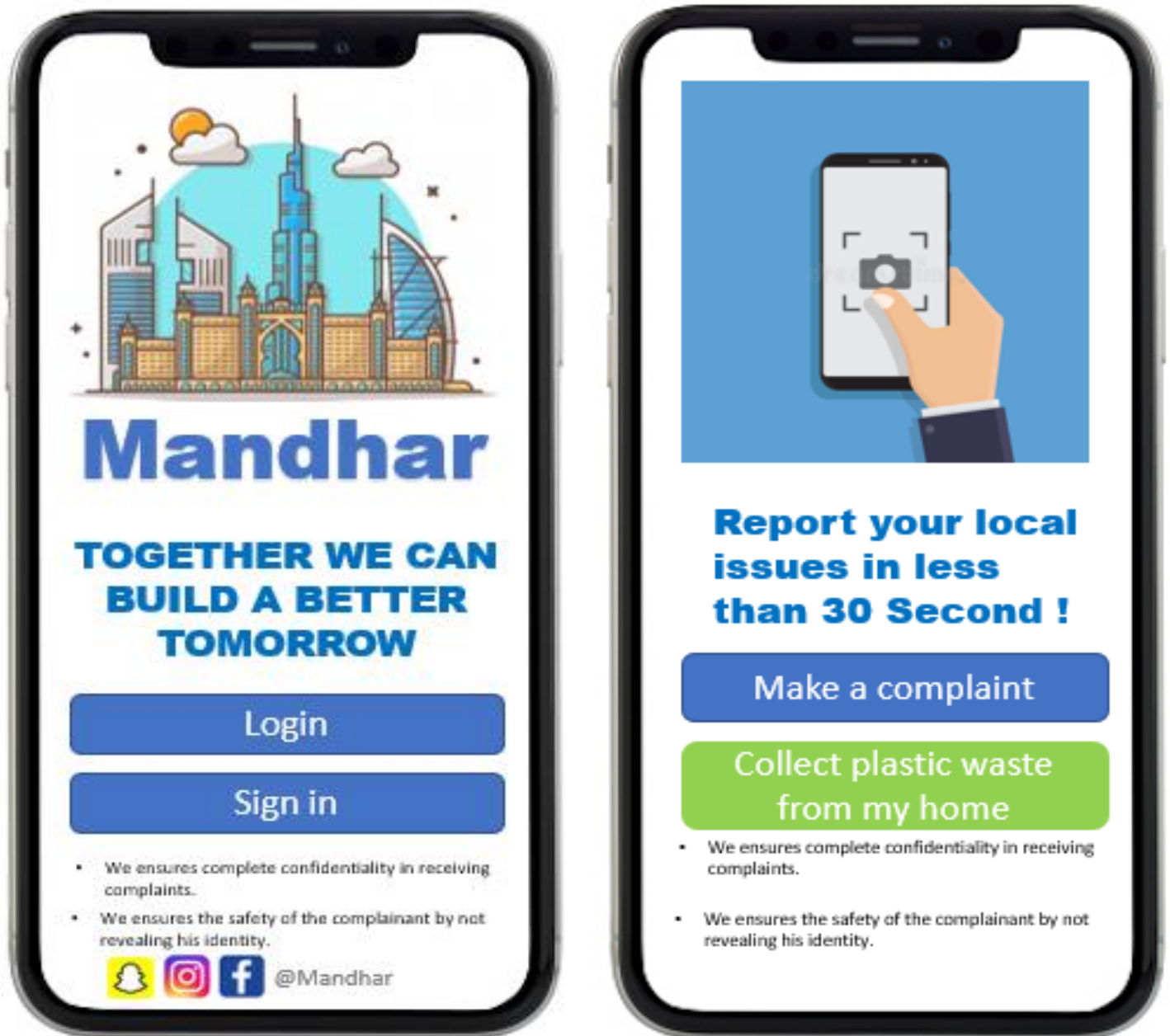


Figure 3: Choose your need (Complaint or collect plastic waste).



Figure 4: Choose the incident type

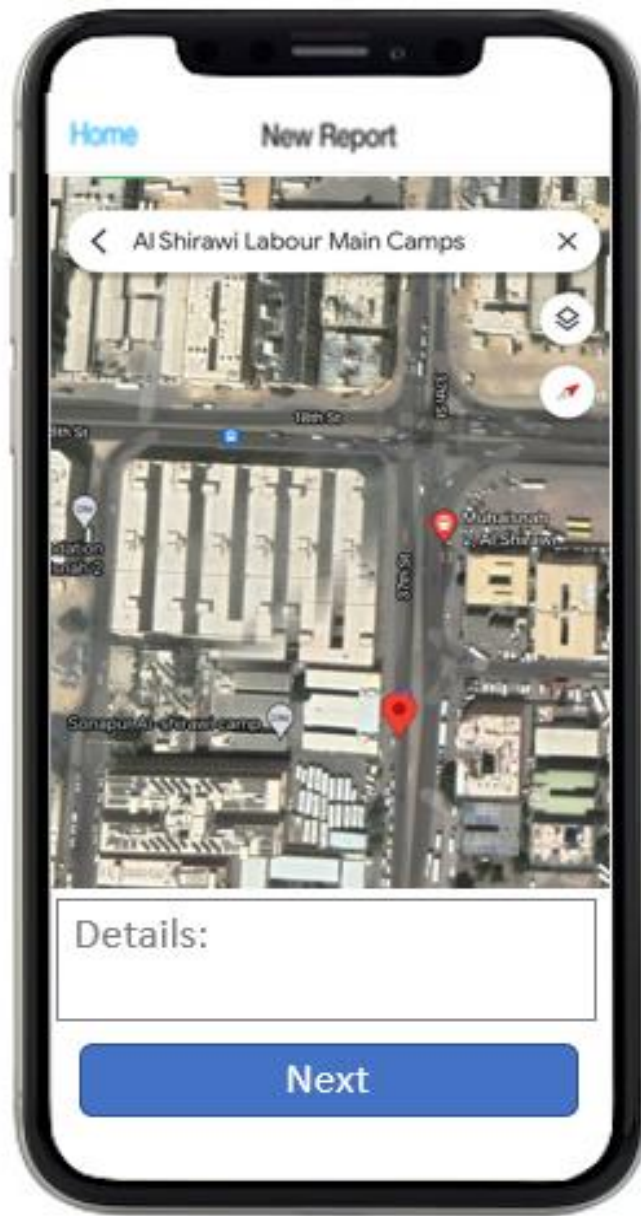


Figure 5: Take photo and share the location

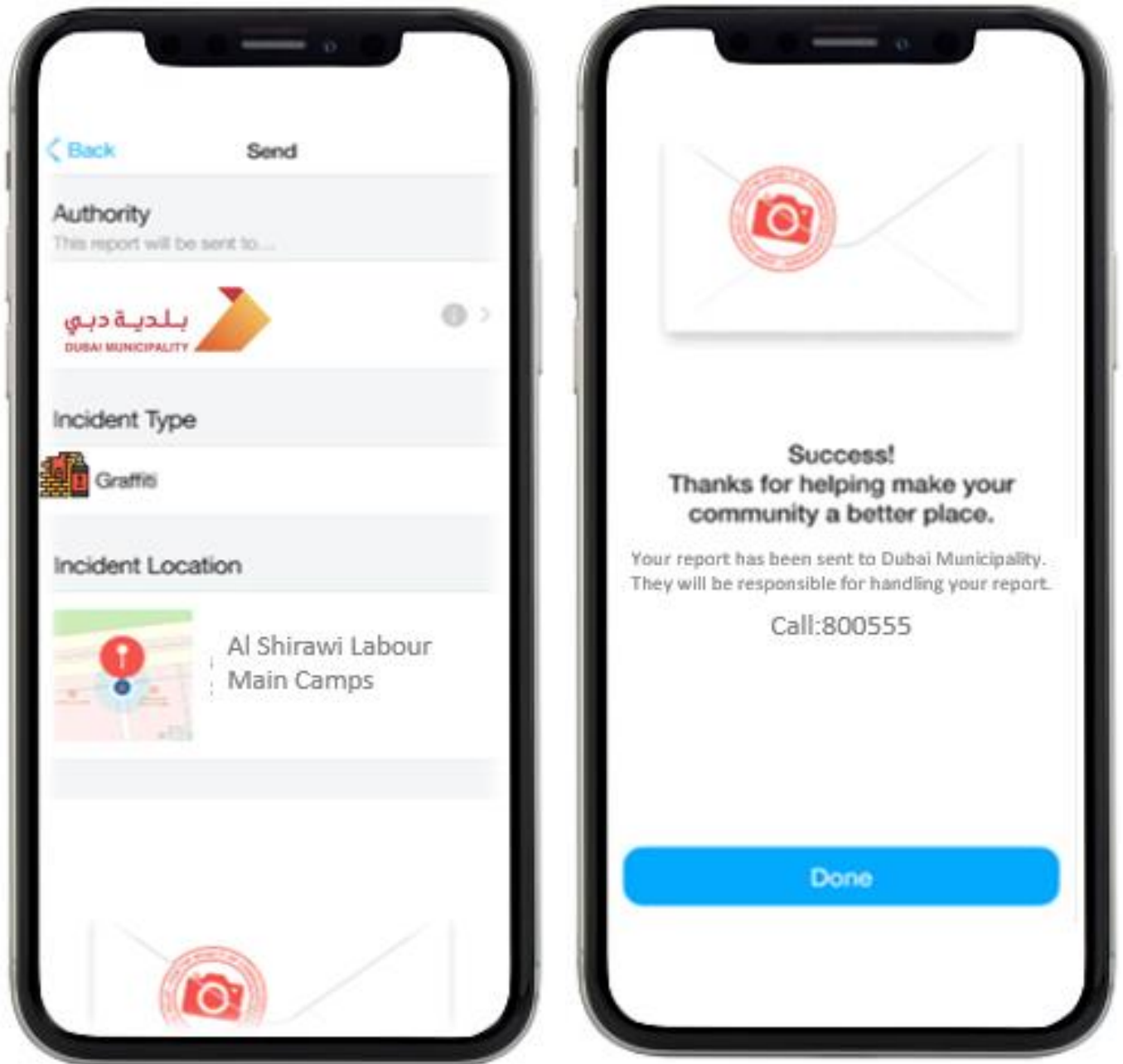


Figure 6: The report is sent to the competent authority



Figure 7: Complaint Workflow



Figure 8: Plastic waste collect screen and the user profile screen.

3.3 Results

The expected results that can be achieved with bringing up this application is involving the citizen and the resident on the social responsibility as the feeling of performing solo will raise more awareness among the people and eventually, they will become more responsible citizens. In addition, reducing the visual pollution on Muhaisnah-2 area and returning back the beauty of the area as well as the city. Moreover, providing an urban environment with healthy living. Action will be taken faster to solve the issue as all the complaints and problems are gathered in one application with a follow up system.

Furthermore, the job opportunities will be increased as there will be a need for employee to work on the data collection & management software developing, call center and customer service. The pressure on the government inspectors will be reduced as they will notify the issue with the location easily and this will save efforts and money as well as time in fast responding. In addition, the excess of plastic waste will be reduced as people will recycle their plastic waste as this contribute in decreasing a large amount of visual. The plastic wastes will come up with a cost and the government will thus move a step ahead in making the city safer and sustainable.

Chapter 4- Project Analysis

4.1 Touring in Muhaisnah-2 area – Dubai

During my visit on Muhaisnah-2 area, I found some of visual pollution that affect the beauty of the city. For examples, the walls of some buildings were distorted with strange words and drawings as it shown in figure-1 below. This phenomenon distorts the beauty of public and private properties. In addition, graffiti phenomenon its uncivilized behavior; Because it is a behavior that does not only offend the perpetrator, but also offends everyone and causes great harm to the general appearance, society and the civilized face of the city that must be at the level that we all seek. However, the spread of this phenomenon in different areas, may have a negative impact on children who, while they are inside their parents' vehicles, read some inappropriate phrases that they find on the walls as later they may resort to expressing themselves in this way.



Figure 9: Graffiti phenomenon in Muhaisnah-2 area - Dubai

Moreover, during my visit to the Muhaisnah area, I noticed many people hanging their clothes in balconies and it became as a phenomenon as it shown in figure 9. This phenomenon distorts the civilized view of the city and may cause great dangers if it falls on the street, as clothes may fly and fall on the street or on vehicles, and cause traffic accidents.



Figure 10: The phenomenon of spreading cloths in balconies

Furthermore, I found a lot of neglected cars parked in Muhaisnah-2 area as shown in figure 10 below. These neglected cars were a place for animals and a hotbed for insects. This phenomenon distorts the beauty of the city as well it affects the security sense of the area as some people will feel afraid to walk near to the neglected car thinking of someone is inside.



Figure 11: Neglected cars in Muhaisnah-2 area

4.2 Visual pollution Data

4.2.1 Abandoned Vehicles in Dubai

Related to Albayan newspaper, in 2019 total of 2,400 abandoned vehicles have been removed by Dubai Municipality and from the beginning of 2021 until the month of August, Dubai Municipality has withdrawn 1,404 neglected vehicles left by their owners in parking lots, and 12,832 removal warnings were release, including a removal poster and text messages in the same period. (Abdulhameid, 2021)

A field work team from the Waste Department in Dubai municipality specialized in following up and monitors the neglected vehicles in Dubai. The process of removing neglected vehicles is by issuing a warning in the form of a sticker to be placed on the abandoned vehicle or sending a text message to the owner of the vehicle bearing the Dubai plate in preparation for its removal and transportation for a period of 15 days and in case of non-response by the owner, the vehicle is

transferred to the scrapyard of Dubai Municipality, and then it is sold by auction after six months if the owner did not recover it. (Abdulhameid, 2021)

4.2.2 Abandoned Vehicles in Ajman

Residents and owners of shops in Ajman, especially in the Al-Jurf area, complained about the spread of abandoned cars in some places; What makes it a breeding ground for insects, dirt and bad practices, calling on the Municipality and Planning Department in the emirate to withdraw various abandoned and long-abandoned cars on public streets without any use.

In addition, related to Emarat Alyoum newspaper, Abdullah Al-Shafei, who works in the Al-Jurf Industrial Area, stated that: “abandoned cars are a place and a focus for insects and diseases, and may lead to some negative practices, especially since they are without number plates”. In addition, Hala Marwan Yahya, a housewife, confirmed that: “the presence of these cars near the place of residence of one of her friends made her not visit her in the evening for fear of insects or dangerous people inside these cars”. (Alraei, 2016)

Moreover, Jamal Ali Masoud an Arab national said that: “all residents of the emirate must inform the Municipality and Planning Department of any abandoned car they see, due to the gathering of dirt and diseases that it may cause, noting that the responsibility is shared between the residents of the emirate, including citizens and residents, and the Municipality and Planning Department”. (Alraei, 2016)

However, a campaign was carried out to withdraw abandoned cars from various regions and neighborhoods of Ajman, which led to the withdrawal of 161 neglected cars in order to preserve the civilized appearance of the city. (Alraei, 2016)

4.2.3 Beggary phenomenon

Related to Alittihad Newspaper, the Naif Police Station in Dubai arrested 104 violators of the laws, including 55 beggars and 49 street vendors, as part of the “Begging is a Wrong Concept of Compassion” campaign launched by the Dubai Police General Command.

Brigadier Tariq Tahlak, Director of Naif Police Station, said: "The center participates every year in anti-begging campaigns, which aim to enhance community awareness of the dangers of the phenomenon of beggary and maintain community security and stability, in addition to controlling beggars in public places, by forming teams Work, in cooperation with the Department of Infiltrators and other departments in the General Department of Investigation and Criminal Investigation, and teams are distributed to monitor troubling phenomena, including monitoring the locations of beggars' concentrations in the jurisdiction area so that they can be caught immediately, In addition , he pointed out that beggary threatens the security of society and the life and property of its members, harms the image of the state, distorts its civilized appearance, and is linked to serious consequences, including the commission of some crimes such as theft and pickpocketing, and the exploitation of children, patients and people of determination in beggary, to achieve illegal gains". (104 beggars and street vendors arrested in Naif, 2021)

4.2.4 Stray animals

The head of the Veterinary Services Department in Dubai Municipality, Hashem Al-Awadi, said that "the department received 4,215 reports related to loose animals in 2017, and they were completed within a short period, and dealing with these animals by bringing them to veterinary clinics to conduct the necessary examinations and receive treatment, according to the pathological condition they suffer." (Almarzouqi, 2017). In addition, the spread of these stray animals worries residents and drivers, as they roam in residential neighborhoods and on the public road, causing traffic accidents.

4.2.5 Plastic waste in Europe & UAE:

According to data from Eurostat, the EU produces 31 kilograms of plastic waste per person each year, totaling 15.8 million tons. Although Ireland announced in 2002 that it was the first EU country to impose a fee for plastic bags, it is still the most serious offender in Europe in terms of plastic packaging waste generated per capita each year.

As it shown in figure 11 below, in 2016 Irish citizens produced an average of 58 kilograms of plastic packaging waste, ahead of Luxembourg, which ranked second, with 53 kilograms. Even in Italy, where cities like Naples have a poor reputation for waste management and pollution, only 36.5 kilograms are produced. (Plastic Waste: The EU's Worst Offenders, 2019).



Figure 12: Plastic waste in Europe

However, In UAE in a single year, the average UAE citizen consumes 450 plastic water bottles. In 2011, the United Arab Emirates had the fourth highest level of bottled water consumption in the world, with an average of 43 gallons per person (Pandey, 2020).

According to estimates from the UAE's Ministry of Environment and Water, 11 billion plastic bags are used each year. This adds up to a total waste of 912.5 kg per capita each year. These statistics display the amount to which plastic bags and water bottles are used in the UAE and consequent generation of plastic waste (Pandey, 2020).

5.1 Mandhar Business Model Canvas

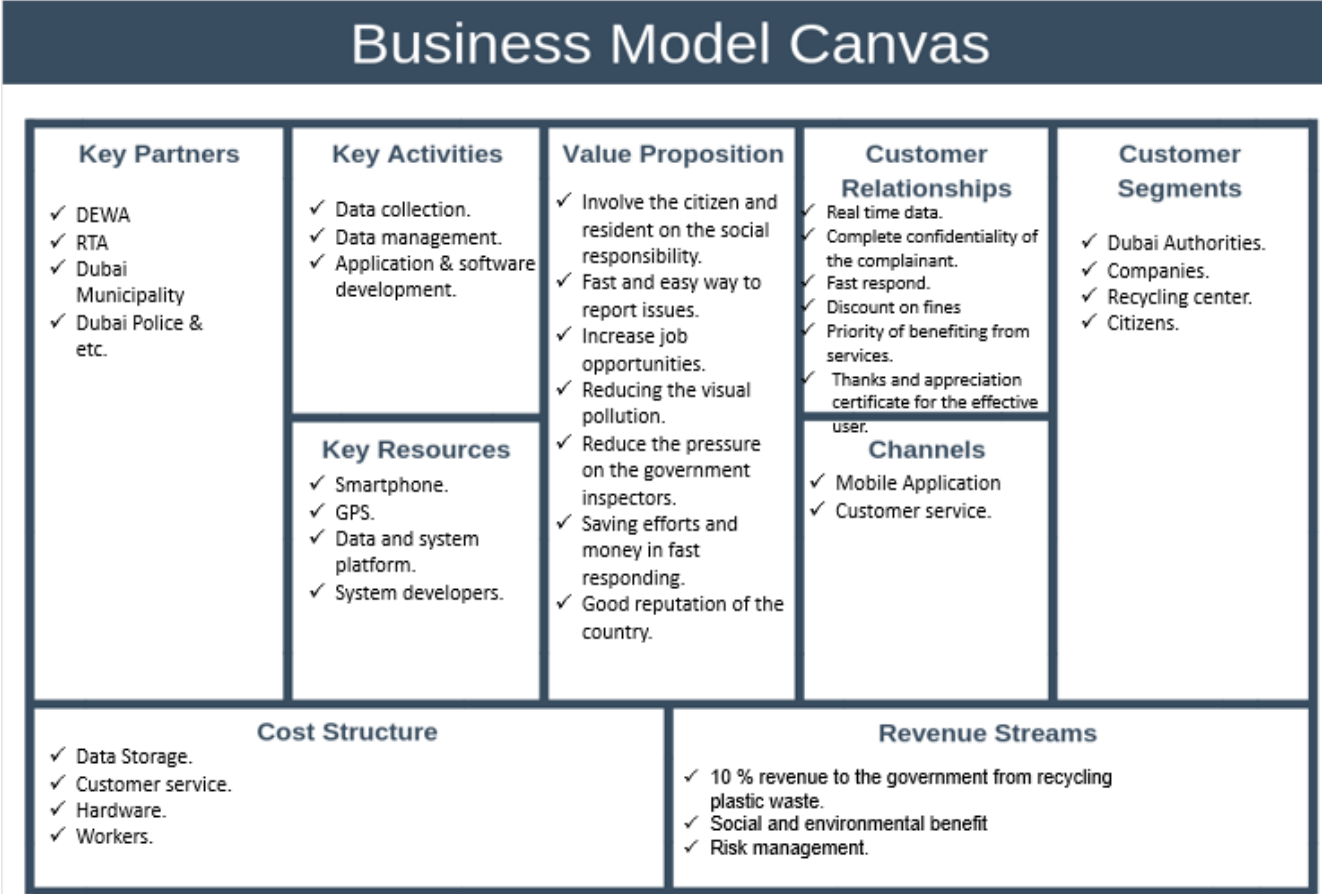


Figure 13: Mandhar Business Model Canvas

The above model shows the nine components of Mandhar business model canvas. First, Mandhar key resources will be based on the smart phones, GPS as the user will share the location and the receiving authority will notify the place, Data & system platform and the system developers. Second, the key partner that the Mandhar app will have a relationship with is Dubai electricity & water Authority (DEWA), Dubai Municipality, Road & Transportation authority (RTA), Dubai police & etc. Third, the key activities of Mandhar app is to collecting the data that will be received to the competent authority by the user and manage it. In addition , it will be based on developing

the application and the software. Fourth, Mandhar value properties are involving the citizen and the resident on the social responsibility, Fast and easy way for people to report issues, Increase the job opportunities as there will be a need for employee to work on the data collection & management software developing , call center and customer service .Reducing the visual pollution and returning back the beauty of the city, reduce the pressure on the government inspectors as they will notify the issue with the location easily, saving efforts and money as well as time in fast responding and have a good reputation to the country as this will attract the tourist to visit it. Fifth, Mandhar app Channels is based on the mobile application and customer service. Sixth, the customer relationship which is contain real time data, complete confidentiality of receiving the complaints and safety of the complainant by not revealing his identity, fast respond to the issue, earn point that will give you a discount for example on fines, restaurant & hotels, giving the user the priority of benefiting from services like having a fast queue for applying any request on the government departments, thanks and appreciation certificate for the effective user. Seventh, the customer segments such as Dubai Authorities and companies, recycling center and citizens. Eighth, Mandhar cost structure will contain the Data storage & hardware, customer service and workers. Ninth, revenue streams will be 10 % revenue to the government from recycling plastic waste, Social and environmental benefit, and risk management.

6.1 Successful projects implemented in different countries

Snap, Send, Solve App:

Snap Send Solve is a smart platform which simplifies the reporting of community issues in New Zealand and Australia. The idea of the app was inspired by the founder Danny Gorog when he was frustrated by how hard it was to report a broken swing in a park. The App won Melbourne Design Award in 2013.However, Snap Send Solve was highlighted in an article in Government News by Maris Sansom named 'Applications change the face of government' which explain how apps like Snap Send Solve are helping councils to save money by moving to more efficient channels (Snap Send Solve, 2021).

Community use:

The use of Snap Send Solve in the community has increased over time. In 2018, the New South Wales State Parliament reportedly received 14,758 reports of parking issues. In January 2020, it was reported that Victorian people used Snap Send Solve to create 104,164 reports. The most popular incident categories are trash cans, graffiti and parking lots.

Balady App:

The municipality of Tabuk in Saudi Arabia clarified that the "Photo and Send" campaign which is implemented through the Baladi application received 1380 reports, of which 1080 were terminated, while the concerned authorities are now working to close the rest to treat visual distortion according to the prepared plan; With the aim of promoting civilized behavior and awareness of the importance of preserving the environment, protecting public facilities, and treating visual pollution. The urban landscape improvement communications included several classifications, including public cleanliness, excavation barriers, street digging, lighting poles, and dilapidated sidewalks. (Okaz, 2021)

Chapter 5 Conclusion

5.1 Conclusion

To conclude it can be said that visual pollution destroys the natural beauty of the city and also reduces the sustainability efforts. In order to control the visual pollution, Mandhar application can turn out to be really helpful because all the citizen will feel responsible to help the government to clean the city. The main role of a citizen in a city is to make sure that the city is free from all kinds of pollution. The main aim of the project is to identify the different measures that will help in implementation or proposing this application in order to help control visual pollution and to make the cities safe and sound. Moreover, encourage the citizen to recycle the plastic waste in easy way by collecting them from their home. After conducting the research, it has been visible that applications like this have already been a successful one in some of the countries like Australia, News land and Saudi Arabia.

However, every act done in order to make the world a better place is an act of leadership. Mandhar application developed is also a test for leadership. Every member who posts about a visual pollution is a leader as he or she is making a move to clean the city. The act of leadership can be inculcated in this fashion among all the citizens of UAE. The feeling of performing solo will raise more awareness among the people and eventually they will become more responsible citizens. The ecosystem will be uplifted and the environment will be more green. The air quality index will be improved. The area will come under supervision frequently. As tourism accounts for a huge revenue for the government, cleanliness of the roads and nearby areas becomes a priority for the government.

5.2 Recommendations

His Highness Sheikh Mohammed bin Rashid Al Maktoum announced a project to transform Dubai into a "smart city" by conducting paperless transactions. To clarify, all city facilities and services are to be managed through smart and interconnected systems. In addition, delivering services through smart applications and encouraging collecting and sharing data to develop the services seeking for customer happiness. (Smart Dubai, 2021). However, I recommended Mandhar application which is supporting Dubai strategy that use a smart application to report issues easily as this will save time and cost in fast responding. Moreover, involving all the citizen in social responsibility by reducing the visual pollution and returning back the beauty of the city as this will increase the customer happiness.

5.3 Future Work

Mandhar application will be successful to use not only in Muhaisnah-2 area but even in Hor Alanz , Alqouz , Alqusais , Sonapur , Naif & etc. As these are old areas in Dubai that have high population density and many workers are living in and there are a lot of visual pollution types. However, I wish Mandhar application implemented not only in Dubai but all over the UAE, as all the citizen will be responsible and will cooperate together easily in returning back the beauty of the environment and cleaning the city with only one click by using the application.

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