**Ordering and Delivery Tracker App for Quadro King Water Station Retail Store**

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**ABSTRACT**

**TABLE OF CONTENTS**

Title Page

Approval Sheet

Acknowledgements

Abstract

List of tables

List of Figures

List of Appendices

List of abbreviations and symbols

Definition of terms

**CHAPTER I: PROJECT AND ITS BACKGROUND**

Project Context

Purpose and Description

Objective of the study

Significance of the study

Scope and limitation

**CHAPTER II: Related Literature**

Foreign Literature

Local Literature

Foreign Studies

Local Studies

Synthesis

Technical Background

**CHAPTER III: METHODOLOGY RESULTS AND DISCUSSIONS**

Software Design, Products, and/or Processes

System Architecture

Conceptual Design

Cost Benefit Analysis

Requirement Analysis

System Architecture / System Flow

Block Diagrams

Development and Testing

Input and Output Reports Analysis

Description of Prototype

Implementation Plan

Implementation Results

**DISCLAIMER**

The study has been made the product of hard work of the researchers. It has been approved and accepted by the panel of reviewers. Hence, no part of this paper maybe used without proper citation or approval from the authors.

**Chapter 2**

**Related Literature**

**Foreign Literature**

**Global Positioning System**

GPS is the acronym for Global Positioning System. This technology allows a person to track where they are in the world through the use of mobile phones or laptop and computer with GPS receiver. This helps us locate where we are currently or find the place, cars also have this and gives us the best direction to the location we want to go. GPS is made with three (3) different parts, they are called segments and they work together to accurately show where you are. First is space they use specific satellites circling the Earth, sending signals to users on geographical position and time of day. Second is ground control ground control is Earth based monitoring stations. Control activities include tracking and operating the satellites in space and monitoring transmissions. There are monitoring stations on almost every continent in the world, including North and South America, Africa, Europe, Asia and Australia. And lastly user equipment devices with GPS receivers like smartphones, smart watches and even cars.

According to John Kyes (2020) GPS works through a technique called trilateration. Used to calculate location, velocity and elevation, trilateration collects signals from satellites to output location information. It is often mistaken for triangulation, which is used to measure angles, not distances. Satellites orbiting the earth send signals to be read and interpreted by a GPS device, situated on or near the earth’s surface. To calculate location, a GPS device must be able to read the signal from at least four satellites. Each satellite in the network circles the earth twice a day, and each satellite sends a unique signal, orbital parameters and time. At any given moment, a GPS device can read the signals from six or more satellites.

A single satellite transmits a microwave signal that is picked up by a GPS system and used to measure the distance from the GPS device to the satellite. Although a GPS system only contains information about the distance from a satellite, a single satellite cannot offer a vast volume of location information. Satellites do not have angle detail, so the location of the GPS system could be anywhere on the top of a sphere.

As a satellite sends a signal, it produces a loop with a radius measured from the GPS system to the satellite. When we add a second satellite, a second circle is formed, and the position is narrowed down to one of the two points where the circles converge. With the third satellite, the position of the device will actually be determined, since the device is at the junction of all three rings. Ok, being said, we reside in a three-dimensional universe, which implies that any satellite creates a sphere, not a circle. The intersection of three spheres generates two intersection points, such that the closest Planet is chosen.

**GPS Tracker**

A GPS tracking unit, geotracking unit or simply tracker is a navigation device usually used by a vehicle, asset, human or animal using the Global Positioning System (GPS) to determine its movement and to determine its geographical position (geotracking) of WGS84 UTM.

Locations are contained in a mapping unit or sent to an Internet-connected computer via a cellular network (GSM/GPRS/CDMA/LTE or SMS), a radio, or a satellite modem inserted in a unit or a WiFi running worldwide.

Various businesses are purchasing position and monitoring marketing data. Often used for military and illegal purposes, to lock down and pick up repossessions/thefts and find truck loads. Tracks can be viewed in real time with GPS monitoring apps. GPS-enabled smartphones.

GPS antenna size limits tracker size, sometimes less than half a dollar. In 2020 monitoring is a $2 billion company plus military-in the gulf war 10 percent or more of the targets using trackers. Virtually any cellphone records the movements and, with most cellular usage agreements, uploads track data, generates trillions of vendable positions and tracks, prices range from fractions of a thousand to dollars per stage and user association.

**Mobile Application**

A mobile app or mobile application is a computer program or software application designed to run on a mobile device such as a phone/tablet or watch. Apps were originally intended for productivity assistance such as Email, calendar, and contact databases, but the public demand for apps caused rapid expansion into other areas such as mobile games, factory automation, GPS and location-based services, order-tracking, and ticket purchases, so that there are now millions of apps available. Apps are generally downloaded from application distribution platforms which are operated by the owner of the mobile operating system, such as the App Store (iOS) or Google Play Store. Some apps are free, and others have a price, with the profit being split between the application's creator and the distribution platform. Mobile applications often stand in contrast to desktop applications which are designed to run on desktop computers, and web applications which run in mobile web browsers rather than directly on the mobile device.

Most mobile devices are sold with several apps bundled as pre-installed software, such as a web browser, email client, calendar, mapping program, and an app for buying music, other media, or more apps. Some pre-installed apps can be removed by an ordinary uninstall process, thus leaving more storage space for desired ones. Where the software does not allow this, some devices can be rooted to eliminate the undesired apps.

Apps can also be installed manually, for example by running an Android application package on Android devices.

**Local Literature**

**Mobile Phone**

A mobile phone is a wireless handheld device that allows users to make and receive calls and to send text messages, among other features. The earliest generation of mobile phones could only make and receive calls. Today’s mobile phones, however, are packed with many additional features, such as web browsers, games, cameras, video players and even navigational systems.

A mobile phone may also be known as a cellular phone or simply a cell phone.

According to a study released by Nielsen Philippines, Filipino users spend an average of 174 minutes each day online nearly three hours through their smartphones.

At the same time, the international media and consumer research firm revealed that three out of four Filipinos who own smartphones now use them as their main access point to the Internet, pointing to the growing influence that these mobile devices have over online activities previously reserved for desktop and laptop computers.

There are more Filipinos who own cellphones than those who own toilets at home, a study from the Pasig River Rehabilitation Commission showed.

A mobile phone, cell phone, cellphone, or hand phone, sometimes shortened to simply mobile, cell or just phone, is a portable telephone that can make and receive calls over a radio frequency link while the user is moving within a telephone service area. The radio frequency link establishes a connection to the switching systems of a mobile phone operator, which provides access to the public switched telephone network (PSTN). Modern mobile telephone services use a cellular network architecture, and, therefore, mobile telephones are called cellular telephones or cell phones, in North America. In addition to telephony, 2000s-era mobile phones support a variety of other services, such as text messaging, MMS, email, Internet access, short-range wireless communications (infrared, Bluetooth), business applications, video games, and digital photography. Mobile phones offering only those capabilities are known as feature phones; mobile phones which offer greatly advanced computing capabilities are referred to as smartphones.

From 1983 to 2014, worldwide mobile phone subscriptions grew to over seven billion enough to provide one for every person on Earth. In first quarter of 2016, the top smartphone developers worldwide were Samsung, Apple, and Huawei, with smartphone sales represented 78 percent of total mobile phone sales. For feature phones (or "dumbphones") as of 2016, the largest were Samsung, Nokia, and Alcatel (Strategyanalytics.com, 2017).

**Foreign Studies**

**Innovative scenarios for modeling intra-city freight delivery**

According to Amy M. Moore (2019) there was a shift in the emphasis of freight modeling to short-haul (or last-mile) due to a spike in online shopping. This study considers creative ways of distribution of freight and multimodal shifts, in particular for the last-mile segment of intra-city freight delivery. For this analysis, GPS data were collected from a truck fleet from a major parcel distribution company near Columbus, Ohio, and used to develop a freight delivery estimation model. Freight distribution tours were modeled in TransCAD and used to build scenarios for integrating different modal changes to measure energy consumption in kilowatt-hour calculations. Innovative modes of transportation of freight were considered for situations and contrasted to class six trucks: hybrid class six trucks, electric delivery vans, parcel delivery lockers, drones and electric passenger vehicles. Initial results indicate that electric trucks decrease energy consumption because more of the miles driven are in the long-haul or stem segment of the road. Parcel distribution lockers decreased energy use in suburban areas, particularly those with large cul-de-sac communities. The results of this study were intended to provide decision-makers, both in government and industry, with knowledge to consider when identifying effective options for energy-efficient intra-city freight transport.

**Food delivery platforms revolutionizing the market during COVID-19**

According to Amina Lattanzi (2020) until recently, food innovation has usually taken place in labs and has often included new methods in agricultural processing. Then the digital revolution struck the food market, like any other industry, and the Internet became the tool by which the agro-food chain began one of the most progressive transformations. Purchasing food online is usually performed in the form of supermarket, food or meal packages. Food producers/traders can, for example, create their own marketing website, trade through third-party websites, or even use social media to promote goods. Eating-places can use delivery platforms to communicate with consumers, enabling them to select from a single tap buffet on their smartphone. Users will order a package full of fresh food items and prepare meals using the kit's guidance and recipes from – often-famous – chefs.

The growth rate of the online grocery industry around the world has reached the ceiling in the last 5 years, demonstrating that millions of customers are more interested in seeing food and food shipped by clicking a button rather than spending their time seeking a parking place to buy or waste their evenings in front of the stove.

**Synthesis**

Ordering and Delivery Tracker App for Quadro King Water Station Retail Store provides a way for customers to order and track where the current delivery vehicles currently is. According to AF Staff (2019) Customers today have strong aspirations, and achieving them can be difficult. These problems range from workers not doing the job properly, offering frustratingly long window arrival times, not providing on-the-jour billing. In today's social media and the immediate word of mouth climate, it's imperative to ensure that every consumer has a world-class experience.

A study conducted by Amy m. Moore (2019) which produced scenarios for intra- city fright delivery which is named Innovative scenarios for modeling intra-city freight delivery used a GPS data and TransCAD. They used GPS data and TransCAD to create scenarios for fright delivery estimation model to see the effectiveness and its energy efficiency. This shows that delivery and online shipping is becoming the norm for this day and age that having an optimal route is beneficial to customers. Having said the program, the researchers are doing are beneficial and follows the trend of online service, this is also giving the customers less interaction on buying/ordering water and having to go to the trouble on going to the store and risking getting sick.

According to the study of Amina Lattanzi (2020) which states that food innovation is commonly taken place in labs and often has new included methods in agricultural processing. the digital age struck the food market, like any other industry, and the Internet became the tool by buyers and customers to order food and other stuff which gives them a lot more time to prepare and do something else while waiting for the food or items they are waiting for. Having said this the researchers and the program they will be making have a place in the market with the now ever fast-growing digital age.

**Technical Background**

The researchers will be using android studio to make the program in pair with firebase for the database and for tracking, they will be using mobile phones specifically android. They will be doing the customer side of the application first before doing the rest of the separate application for the admin, owner, and driver side, the customers will have a map that shows where the driver currently is and a separate order screen. They will be using their android phones for testing purposes and their laptops and desktops for coding the application. The android version the researchers will be using is android 6.0 (marshmallow) so that most of the customers will have that specific version or higher. The application will only be available on android phones due to the lack of tools, equipment and money for IOS devices.