DISTRIBUTION MANAGEMENT SYSTEM

Requirements Specification

Version 1.0

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# Executive Summary

## Project Overview

There is a constant need in the Albanian market to improve the way companies organize their inner work process, especially those having to deal with employees working in terrain and in our case: a medium-sizes distribution company.

We aim to propose a solution to this problem by providing a web application which remodels and creates an easier way to assign tasks, keep track of the whole process from the order to the delivery, hence making analysis and keeping everything documented. The implementation of this application will work closely with an already-established company in Tirana of such kind called DS Albania.

The administrator of the web application will assign a manager, who will be mainly in charge of Employees Performance. The manager will have the opportunity to register employees. They will assign an Inventory Supervisor and an order dispatcher for an easy and real-time inventory/order management. For the sales agents, he will create their schedule consisting in the address the sales agent must attend daily. The sales agent must attend those schedules and write a report on the respective situation. This report is later on checked by the manager. This process will include scoring and daily documentation of the performance, which is thought to organically raise employees’ competitiveness and efficiency. Additionally, this web application emphasizes the relationship between the client and the sales agent. As expressed by our contact, a representative of the company:

“It is sometimes hard to be consistent in meeting the clients, as the process gets mixed up with other daily tasks such as creating new clients, inventory management, and often our employees end up with too much idle time.”

The client consist in gyms, bars/restaurants and supermarkets. The latter mostly waits for sales agents themselves to check upon their respective products in their stores as they have lots of products. This is why sales agents are required to attend them at least once a week using the system aforementioned. For the former two: gyms, bars/restaurants with very few offered products in their place, the web application provides with a ‘online shopping’ kind of platform tailor-made for DS Albania’s products. Not only will the clients not have to consistently call the warehouse for their demands, but they will be dynamically be informed on in stock products and special offers.

## Purpose and Scope of this Specification

The purpose of this specification is to currently define the state of the application design and documentation of the processes.

In this scope:

● Documentation of the features

● Technical overview of application processes (discussed in Part 2.1)

● Components & Functional/non-functional requirements( discussed in Part 3)

● Use cases/scenarios (discussed in Part 4)

● Constraints (discussed in Part 2.4/5) of the Document

● *Legislative requirements for the product*

● Auditing and financial considerations of the product

# Product/Service Description

DS Albania is a distribution company in Albania whose aim is to distribute mainly isotonic energy drinks and other healthy products in gyms, supermarkets and some bar & restaurants. As an existing medium-sized business it was seen that it had some flaws on its distribution process that need improvement by providing new technological solutions to every step of the process.

So our idea consists in creating a web application to help in the process from ordering the products to the delivery for the customers. This involves the creation of a dynamic platform, useful and friendly to every user.This tool aims to help the company improve the distribution system and professionalise organization and management of the company processes.

## Product Context

Our service consists in a Distribution Service for a line of some isotonic drinks called **OSHEE**.They operate mainly in gyms, bars, restaurants and supermarkets.

We can say it is an independent system as it operates on its own, that will make the connection between three main entities: Warehouse, Transportation and Client.

## User Characteristics

In our system there will be 7 different type of users that have different access and priorities.

* + Admin
  + Manager

**Client**

* + Client

**Transportation**

* + Sales Agent
  + Delivery Employee

**Warehouse**

* + Order Dispatcher
  + Inventory Supervisor

**Admin**

Admin is responsible mostly to create managers in the software.The Administrator has all the privileges, and has visibility over all modules.He will have the highest priority as he is the one who hires managers and employees if necessary.

**Manager**

The manager has most of the responsibilities in the system. He has to create clients, employees, schedules, reports.

He also has to check the performances at all times, check inventory.

The general manager will have to assign tasks to almost all of the employees, Distribution Employees,Sales Agents and Order Dispatcher.

**Sales Agent**

Sales Agent will also have an account of its own. He will be responsible for contacting existing clients and also new clients. He can take orders from the client. Also he has to achieve a high performance and find as many clients on the terrein as possible.Then he will get bonuses depending on that performance.

**Inventory Supervisor**

This system will also have an inventory supervisor. He will manage all inventory in the warehouse and will notify the general manager whenever a new order should be made.

He will record initial order taking by the client which helps to have a real time information about the inventory.

Inventory supervisor will be responsible for calculating holding costs(rent,depreciation,labor cost for storage, maintenance cost etc) versus ordering costs(shipping cost, insurance etc).He can add or delete products and also record spoiled or expired products.

**Delivery Employee**

The delivering employee will be responsible for taking orders from the warehouse facility and deliver them to the corresponding addresses. Their tasks will be assigned from the general manager and the Order Dispatcher will have previously prepared the order for him to deliver it during the working hours.

Also same as the Sales Agent he will be provided with a small bonus based on his performance.

**Order Dispatcher**

The order dispatcher is one employee who will be working at the warehouse facility only.His duties will be to see new orders from the clients in the system and prepare them for the Delivery Employee to pick them up.

**Client**

The client will be the last user of the system. He will be able to view all the products and also make new orders as they desire.He will have access and information about the products and their stock situation. The client can make an order online or by contacting its corresponding Sales Agent.Of course the client will have its own account with username and password..

## Assumptions

* It is assumed the client has been verified before being registered by the Manager, using the NIPT : <http://www.qkr.gov.al/kerko/kerko-ne-regjistrin-tregtar/kerko-per-statusin-e-aplikimit-te-subjektit/> . If the NIPT is active it is eligible to be part of the database.
* The software will have a functionality of providing the delivery agent with the proper billing/receipt format according to the business law (e.g vat must be included) It is assumed the company has printer. And that the delivery agent gets the signature from the client.
* It is assumed that the manager sets the schedule properly to the employees.
* It is assumed the sales agent fill out the report for better performance tracking results.
* It is assumed the employees and the Manager are able to use the application.

## Constraints

This system will be potentially constrained by:

* The project is constrained by Internet connection
* Sales Agent, Inventory Supervisor and Order Dispatcher have to be equipped at all times with mobile smartphones or computers.
* The need of a fast internet connection and strong mobile data signals.
* Constrained by external government audit
* The application for the clients will be accessed for login only by the accounts pre-registered by the manager.
* Only the manager can have access to the creation of schedules, and the checking of employees’ score-tracking
* Laravel-based application deployment is better suggested in Cloud Hosting than in Shared Hosting/

## Dependencies

* As a Web-based Application, Internet access will be essential for our software to work. It would be convenient that the Internet provider to be a good one with high speed, preferably 10-20 Mpbs or higher .
* As the system works on web, all employees should be provided with devices that support the application, otherwise there will be o job to work on.
* The manager account can only be created by Administrator(owner of the business).
* The client account can only be created by the general manager not by other employees.
* It will be dependent on QKB, when the Client will have to be verified through their NIPT if they are existing in the market.

## Functional Requirements

The following table shows all function requirements for our Software:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Req#** | **Requirement** | **Comments** | **Priority** | **Date Reviewed** | **SME Reviewed/ Approved** |
| BR\_01 | Handling multiple account types | Different views according to the type of user:   * Administrator * Manager * Inventory Supervisor * Delivery employee * Order dispatcher * Sales Agent * Client | 1 | 3/28/2019 | Nensi Ahmetbeja |
| BR\_02 | Every user has a unique account secured by a password. | Account will be stored in a database using hashing techniques. | 1 | 3/28/2019 | Ina Panavija |
| BR\_03 | Each user and product is uniquely identifiable | Each user is identified by an id, each product by a barcode, no ambiguity | 1 | 3/28/2019 | Nensi Ahmetbeja |
| BR\_04 | The Administrator can create the Manager. | The Administrator has all the privileges, and has visibility over all Modules. | 2 | 3/28/2019 | Erika Balliu |
| BR\_05 | The Manager keeps track of all Sales Agents performance at all time. | This way the manager will define the best employee and their bonuses. | 2 | 3/29/2019 | Erika Balliu |
| BR\_06 | The manager has access at the employees database and progress | Each Employee’s score increases once taking a new order. This is represented in a ‘All Employees Report’. | 1 | 3/29/2019 | Nensi Ahmetbeja |
| BR\_07 | When creating jobs, the manager will need different fields where they will input job information. | The Wage will be the sum of the base wage and the bonus. | 1 | 3/29/2019 | Erika Balliu |
| BR\_08 | The manager should be able to easily search for a specific employee. | The manager should at all time have access to the employee location and work progress during the working hours | 2 | 3/29/2019 | Erika Balliu/  Ina Panavija |
| BR\_09 | The web application provides Modules with a settings update and their account information. | This functionality is provided by the Setting Page | 3 | 3/29/2019 | Erika Balliu |
| BR\_10 | The manager will have to be able to perform different operations over their employees. Adding new employees, or editing employee information and also deleting existing ones is a power that administrators have to be provided with. | The ability to perform these operations over the employees | 2 | 3/29/2019 | Erika Balliu |
| BR\_11 | The manager should be able to delete outdated clients that are no longer part of the company. | This functionality is provided by the Setting Page | 2 | 3/29/2019 | Erika Balliu |
| BR\_12 | The Sales Agent will be able to check their completed schedule only when the agents location matches the schedule address. | By using Geocoding service from the Leaflets and Open Streets Map API, we will convert the job addresses specified by the administrators, into precise latitude/longitude values.  The latitude/longitude coordinate system allows employees to precisely know where the job is located. | 3 | 3/29/2019 | Erika Balliu/Nensi Ahmetbeja |
| BR\_13 | The Sales Agent can manually navigate throughout the map in order to arrive in the job location. | Sales agent will have access to a map to help him find existing or new clients | 3 | 3/29/2019 | Erika Balliu |
| BR\_14 | The Sales Agent will be provided with a bonus. | A bonus of 1.5% of the Revenue of the orders taken by him will be given to the Employee at the end of the month. | 2 | 3/29/2019 | Nensi Ahmetbeja |
| BR\_15 | Inventory should reflect the current stock. | This will be accessed and controlled by the Inventory supervisor. | 2 | 3/29/2019 | Nensi Ahmetbeja |
| BR\_16 | There will be an Order Dispatcher that will be working in the warehouse. | Order Dispatcher will be responsible for viewing orders and preparing them for the Delivery Employee. | 1 | 3/29/2019 | Ina Panavija |
| BR\_17 | Order Dispatcher will have its own account to log in to. | In the account he will receive orders.. | 1 | 3/29/2019 | Ina Panavija |
| BR\_18 | The Inventor Supervisor will report each account according to the cost, demand and supply | These accounts will consists in the Holding and Ordering Costs, Demand by the Clients, Initial Inventory Stock. | 1 | 3/29/2019 | Erika Balliu/Nensi Ahmetbeja |
| BR\_19 | There will be an analysis approach on the Economic Order Quantity checked by the Inventory Supervisor. | This will be calculated by these variables:  Holding and Ordering Costs, Order Demand. | 2 | 3/29/2019 | Nensi Ahmetbeja |
| BR\_20 | The manager is in charge of creating an account for each of the clients | The Client should be uniquely identified by a NIPT | 1 | 3/29/2019 | Erika Balliu/Nensi Ahmetbeja |
| BR\_21 | The Manager should attach the respective area that corresponds to the address when creating Client’s Account. | This will create the possibility to group the Clients according to the Area. | 3 | 3/29/2019 | Nensi Ahmetbeja |
| BR\_22 | The Manager creates weekly schedule and assigns to the Sales Agent a different group of Client filtered by the Area each day. | The Sales Agent can check off the scheduled addresses only when | 2 | 3/29/2019 | Nensi Ahmetbeja |
| BR\_23 | The client will be able to log in to the software with a specific username and password. | The account for the client will be created by the manager and the client can change the password anytime. | 2 | 3/29/2019 | Ina Panavija |
| BR\_31 | The password resetting will be provided by a reset link through smtp driver. | When one of the Modules registers a new Employee, the password is firstly randomly generated (encrypted). | 1 | 4/2/2019 | Nensi Ahmetbeja |
| BR\_25 | The client will be able to see all the products and their stock status. | All product will be listed.If a specific product is out of stock it will be disabled. | 2 | 3/29/2019 | Ina Panavija |
| BR\_26 | The client can make an order online or by communicating with the Sales Agent. | The client can use its account created to make an order or can make it through the Sales Agent. | 1 | 3/29/2019 | Ina Panavija |
| BR\_27 | The client will be able to see specific offers from the company. | This will serve as a promotional useful mean to the company. | 3 | 3/29/2019 | Ina Panavija |
| BR\_28 | The client will have all record history for their orders in the past into their account.. | This way the client can see how well the product is doing for their business. | 2 | 3/29/2019 | Ina Panavija |
| BR\_29 | There will be delivering employees with accounts of their own where they will keep record of all the orders they will complete delivering. | This way there will be record for all employees, and this will help the manager determine the bonuses. | 1 | 3/29/2019 | Ina Panavija |
| BR\_30 | The delivering employee will be responsible for taking orders from the warehouse facility and deliver them to the corresponding addresses. | The main task of this employee will be delivering. | 2 | 3/29/2019 | Ina Panavija |
| BR\_31 | The delivering employee will be provided with a bonus. | A bonus of 0.5% of the Revenue of the goods delivered by him will be given to the delivering employee at the end of the month. | 2 | 3/29/2019 | Ina Panavija |

## Non-Functional Requirements

### User Interface Requirements

* Simple layout
* Dynamic screen size
* Real time notifications
* Sliding navigation drawer for app
* Static navigation drawer for the web page
* Easy-to-use and user-friendly structure
* Commands with specific functions

### Usability

* Since the application is web based it is easy to access it in real time from different browsers online.
* It shall be easy to update to meet the user requirements.
* The application should allow users to practically and reliably manage their data.
* The application provides fast and efficient communication between users across the platform.

### Performance

* Firstly our system will be a web-application that will be stored in a web server
* It will be designed to support multiple users at the same time, by multiple interfaces.
* It will require a good Internet Service Provider with strong internet, to make the application perform properly.

#### **Capacity**

Since our application is web-based, there is no need for capacity occupation in our mobile phones, computers or other devices.For sure internet connection is a key component when performance is considered but we will make sure that the application works even if there is low internet strength provided.

Multiple users will be able to use the application at anytime, but as a medium-size organisation, it is not expected to be accessed by a very large number of users. Being said that, the database that is going to be used will not be very complex, but also it will be capable enough to store everything that is needed.

To do all this we will be working on phpMyAdmin platform.

#### **Availability**

Include specific and measurable requirements for :

* The application will be available to use anytime of the day or night, 24/7
* You can use the application in any geographic location in Albania, as long as the user has Internet access
* It will be designed in English language only
* The performance of the system, will not depend on the hours or number of users spend on the application
* Different type of users have different availability and access

#### **Latency**

Acceptance script during the time that the website will not be loaded will be completed within less 3.21 seconds and less than 4 seconds when the website is loaded.In order to be efficient and productive,DMS is expected to fulfil some time limitations such as (also depending on internet speed and database size) :

* Max 300 ms for the Log-in page to be loaded
* Max 2000 ms for the map module to be loaded
* Max 1300 ms for reports to be loaded
* Max 300 ms to perform and execute any other loading page

### Manageability/Maintainability

#### **Monitoring**

The application’s user interfaces will be simple and easy to be used which will minimize the possibility for any error or crash of the system.Firstly it will need two inputs, a username and a password that will redirect the user by its type to its corresponding page,in the log in page.In the case that inputs are not valid or not matched in the database an Error message will be displayed.

Every user’s page will include all the functionalities mentioned before and it will consist on simple manageable modules.Of course admin will have an access privilege among all other users who is followed by the manage , and so on with all the employees, depending on their specific duties.

#### **Maintenance**

PhpMyAdmin will provide an ease of maintenance of the database.Still the construction of the application will consist on simple and well organized modules, not complex and user-friendly interface designs in order to create a useful tool to the users.In case of any error it is recommended simply a refresh or a re-initialization of the system.If the application faces a failure again outside help is required.

#### **Operations**

A user will be able and responsible to these operations:

* Log-in
* Create/remove new users (admin,manager)
* Assign tasks and schedule (manager)
* Modify personal information
* Create and check reports
* Make orders (client)
* Real-time location
* Complete orders (dispatcher and delivery employees)
* Check real-time stock in inventory (supervisor)

### System Interface/Integration

The system is going to operate as long as it is supported by a database in phpMyAdmin platform.Once the construction and the design of the application is finished and its system interface is accordingly connected with the database it is its duty to manage the avoidance of any possible error occurrence.Also the administrator and the manager of the company who have the most system access can make any changes in the database,if needed.

#### **Network and Hardware Interfaces**

As we have acknowledged before our software will be a web based application, that will be stored in a web server, which will be a HTTP server.

This way a TCP connection will be created between the user and the server using HTTP protocol.

We will be working with phpMyAdmin which will be properly supported by the server.

The web page will be accessible by every device that supports internet connection since the screen size will be dynamic.

#### **Systems Interfaces**

There will be 4 main view interfaces:

1. Admin view
2. Manager view
3. Employee view
4. Client view

Surely the admin will be the most privileged one, having more access and usability upon the system.

The administrator,manager,employees and the clients will be able to authenticate using the following methods:

* username
* password

The required fields to fill in for the client to sign up will be:

* NIPT number
* Name
* Address (physical)
* Category (gym, bar/restaurant, supermarket)
* Area
* Password

The employee in addition to client’s fields will need a surname, an email, phone number, a passport ID and a username. While fields as NIPT, Address, Area and Category will not be needed.Also inventory which is the other module will consist on products that will be displayed in the stock reports and in the client’s page too.As attributes it is needed a product name,an unique identifiable ID and quantity.

**Security**

Predefined fields which are the required information that every user needs to fill in at the moment of registration help to almost create a non-existing error system and secure user’s credentials.

#### **Protection**

When dealing with credentials creation/change there will be checkings:

* The Employee’s password that is generated randomly will be encrypted
* This password shall be reset only through the link sent to his/her email.
* Authentication will provide users to their respective access to the database and views.
* Database abusements forms will all be taken in consideration
* Login/registration process will go through validation

#### **Authorization and Authentication**

Authentication is made through Middleware layers such as auth(‘guest) and auth(‘login) to distinct all registered/logged-in in accounts. Admin will have preset login credentials, and has full authorization on all views, also can assign a Manager. The Manager has access on all Transport Module Entities/Functionalities such as employees CRUDs, Schedules-making, Raport-Checking, on the Warehouse Module he has access on the availability of current stock and on the Client Module he has access on the list of current clients, as it was required for the Manager to have a general knowledge for better performance. The Employee Entities on the other hand are authorized only for their specific department duties.

### Data Management

* We will primarily be using MySql
* Its model is relational, it is open source
* It supports various languages (JavaScript, C, C++ etc)
* We will be using PhpmyAdmin which supports a wide range of operations and tasks, has a helpful documentation and its data can be exported in various formats (JSON)
* There will be these main data entities: Manager, Employee, Categories and Client. Categories will have these default/initial entries: Inventory Supervisor, Delivery, Order Dispatcher. The relations amongst these entities and others such as Tasks/Schedule/ Demanded\_Orders will be defined properly.
* Depending in the user’s level of accessibility/category different privileges will be set.

### Standards Compliance

Regarding the Client relationship, the billing format of each of the clients’ orders will be made according to the Law:Nr.92/14 “**Për Tatimin** mbi **Vlerën e Shtuar**” which states that value with VAT must be included and represented according to a specific standard.

Regarding the Employees relationship, everything will be done according to the law standards of “Inspektoriati i Punes”.

### Portability

Since it is a web application it can be accessed by multiple devices such as mobile phone, computer, iPad ect,and multiple platforms such as Android, IOS, Java, Python etc, if internet connection is provided.

This web application is worked on Laravel, PHP-based. PHP is available for UNIX, MICROSOFT WINDOWS, MAC OS, and OS/2 and it is portable amongst platforms.

In the future, the experience is thought to be improved with Android and iOS for client and/or employee, with the basis of the current backend and not many changes made to the main infrastructure.

## Domain Requirements

The system manages and covers everything related to the distribution process for an existing medium-size business. It should be able to add and update employees and clients and store tabs of information on the database. It should operate in a way that most tasks should be able to be completed without the need to make endless calls or texts between a small number of people, but instead they can do this online by using their web browser.