Ban Trans Transportation Management System

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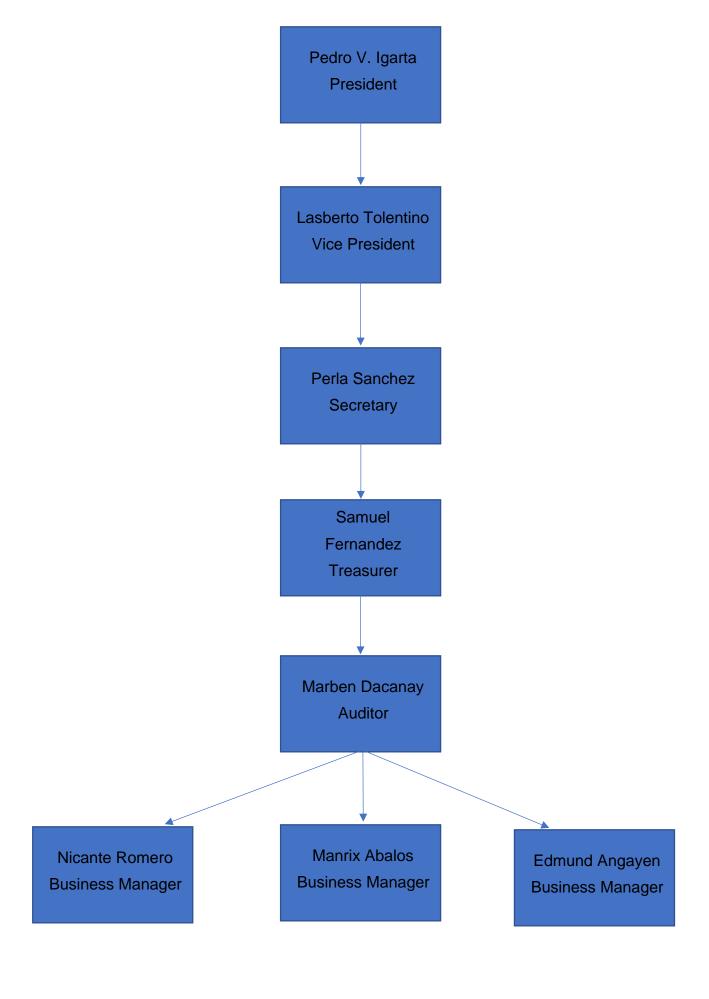
I. Company Profile

Ban Trans is located in Shanum Street beside chowking Burnham Park Baguio City. Ban Trans is a UV express van franchise which caters to trips from Baguio to Cabanatuan and Baguio to San Jose City. BanTrans stands for Baguio Nueva Ecija Van Transport Association Incorporated. It went into business the year 2010, and has been catering to the needs of commuters ever since. UV Express is a license to operate utility vehicles, particularly vans, as an alternative mode of public transportation in the Philippines. Ban Trans is owned by different Stakeholders and they elect officers every 2 years. Their current set of officers is for the year 2015-2017. They aim to create a safe, convenient and customer friendly environment for their passengers and drivers.

The first market opportunities for a transportation business on a commercial basis began with the need of passengers for a fast, safe and reliable transportation service. In the year 1999, their organization was named Strawberry. Unfortunately, Strawberry did not last that long. In the year 2000, the company BUCCT (Baguio-Urdaneta Carmen Cabanatuan Transport) was formed and in year 2006, they changed their name to BanTrans and up to this day, they cater to different transportation needs of travelers in Baguio City. Ban Trans' operating hours are from 7am-6pm daily. Since then, the company grew steadily every year and now has 55 drivers with 55 vans.

Ban Trans conducts van transportation services for both Cabanatuan and San Jose and all the other neighboring provinces they pass through before the said places. The company undertakes all maintenance duties for transportation facilities and organizations. UV Express follows the franchisee model which is the right to use a firm's business model and brand for a given period of time. The country's Land Transportation Franchising and Regulatory Board (LTFRB) serves as the owner of the franchise. UV Express vans are air conditioned, seat 14 passengers and charge 2 pesos per kilometer.

Organizational Chart



II. Business Process

Driver Registration

For a company who runs a transportation business you must first look for appropriate drivers that fits the requirements of the company. Based on Ban Trans company, there are certain requirements for the drivers to legally operate with the company which includes the following:

- NBI Clearance
- Police Clearance
- Drug Test (negative result)
- Fill up form for registration

Once the driver comply with the requirements stated above, the driver can now legally operate with the company.

Van Queueing

The rules that the company follows upon queueing the vans is a first-come first-serve basis. There is a form which is managed by the clerk. The clerk records the route and the list/queue of vans that will depart.



Refer to *figure 1* there is an allocated row to be filled up for every trip that will depart. The attributes includes the plate number of the van, name of the driver, time (arrival and dispatched), number of passenger, booking fee per head and driver's signature.

Figure 1

Passenger fare payment

Once there's a van available, the passenger can now buy a ticket based on their destination with the corresponding fare *refer to figure 2*. Just like the other public utility vehicles the fares are subjected to change according to the order of Land Transportation Franchising and Regulatory Board or LTFRB. The regular passenger will have the minimum fare and an additional fare for succeeding kilometers. For senior citizen and person with disability there is a given discount of 20%. *Refer to figure 3*



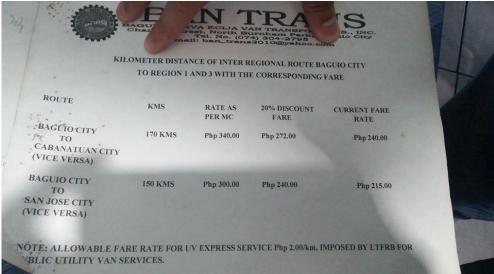


Figure 2 Figure 3

Once the passenger has paid the fare, the clerk will now give the passenger a ticket depending on the destination of the passenger. Before departure, the dispatcher will collect all tickets from the passengers. The dispatcher will then return the tickets at the counter.

After the ticket has been returned the clerk will fill out a booking sheet which consists of the current date, driver, control number and the plate number of the van. The clerk will count the tickets and will check each ticket per destination per passenger. After listing down the number of passengers per destination and the departure time of the van, the clerk will then compute the fare amount which is composed of the actual fare amount per destination refer to *figure 2*, booking fee which is also called the terminal fee it is collected upon payment for the daily revenue of the business which keeps it running, community fund and the SOP. The Booking fee, community fund and SOP will be deducted from the total collected amount which the clerk remits to the driver which all adds to the total revenue of the company.

When a van arrives at the terminal, the driver reports to the clerk how many passengers he had when he left the terminal before coming up to baguio, the fare for each passenger and also the time of his departure from the said terminal.

Account Management

The company has a ledger wherein they record all the expenses, liabilities, revenue and their assets including net income or loss. These data help the company make important decisions when it comes to managing their finances.

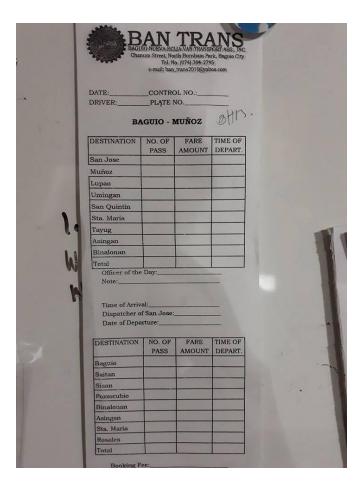
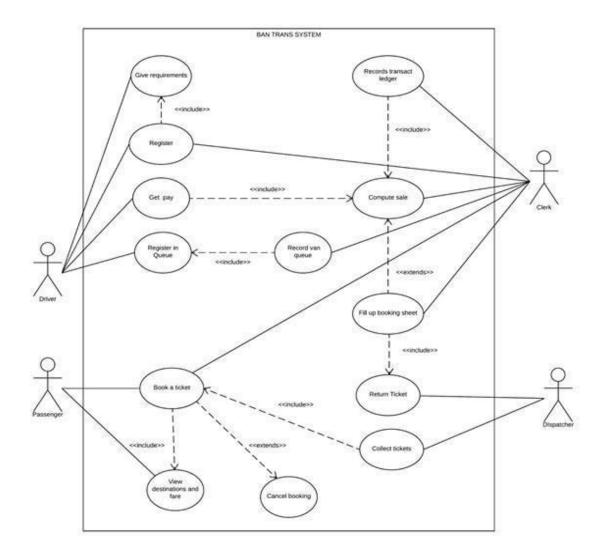


Figure 4

Special cases:

- The passengers can have refunds as long as he still have the tickets and the tickets are still not changed.
- Assuming the passenger has already bought the ticket, the passenger has the privilege to choose whether to immediately board the van or not.
- If there's a situation where the road is closed at the van's route, it is up to the discretion of the driver if they are to continue with the trip.
- If the passengers of the van are below 10, they are not obliged to pay the SOP since no money will be left for the driver if ever they include it.

Use Case Diagram



III. Technologies

HTML5

Hypertext markup language is a language that provides the structure of web page. HTML5 is the latest version of HTML, it comes with new attributes that can make the structure of a web page more fixed and easier to read. These attributes are semantically defined, meaning that they have a sole purpose when using them in making web pages. Another added feature in HTMl5 is its extended form-input type support making it now possible to input other sorts of data and help programmers in parsing these data easier. There are a lot of new attributes that can help developers to structure their web page more simple and readable.

CSS3

Cascading style sheets is a language used for presentations which includes, but not limited to, styling, layout and even animation. It is solely used in designing in respect of the separation of structure and design, where HTML is used in structuring web pages. This allows developers to add background images, configure border and padding sizes, text effects, and manage the column layout in web pages. From its time of inception, CSS3 has included features like media queries where developers can specify lines of code to respond to the different screens; and animations in which in the past only Javascript can handle it.

JavaScript

JavaScript is a cross-platform scripting language used alongside with HTML5 and CSS3 in developing web-applications. It provides interactivity in web pages that allows users to interact to dynamically changing pages. Javascript is commonly used to interact with the Document Object Model where developers can access certain parts of a document in inserting, updating and deleting content as well as changing its structure and style. Javascript also provides the use of event listeners where an event can happen whenever a user does something with the application such as a mouse click or drag, and in return, can generate interactive actions such as pop-ups, modal boxes, and notifications. There are a lot of APIs available written in Javascript that can be used to extend other functionalities that users can use and are in need in today's age such as Local Storage, Web Notifications, Server-Sent Events and Geo Location. Also, a lot flavors of JavaScript have emerged over the years like Angular, Vue and NativeScript where it provides developers different ways of implementing functionalites depending on the features provided by every Javascript flavor.

PHP

PHP is an open source programming language that is used for web application back-end development. It is compatible with almost all database languages. It allows communication with the server and database with its friendly interaction with HTML. PHP

is also applicable with a web application that is dynamic, it also has the best documentation posted in the web. It provides good error handling whenever the developer encounters an error. The best thing about PHP is that cross operating system, meaning PHP can be transferred and translated easily.

Bootstrap

A framework for front-end development of web and mobile applications, it is known for its responsive nature making it mobile ready and has pre built components ranging from typography to tables in both styling and structuring elements in applications. With its existing ready-made classes and ids, it lets developers be at ease in structuring web pages in which a load of examples can be seen on Bootstrap's documentation. Because it is open-source and free, developers can customize the default prebuilt components of their choice and implement them in their projects by tweaking the pre built components of Bootstrap. This allows developers to make and sell their own templates in the internet and add plugins that can be used by customers for their websites. With the current and future rise of mobile usage, it is expected to have 1.5 mobile devices per capita by the year 2021 - according from a 2017 paper of the Global Mobile Data Traffic Forecast from Cisco - thus making mobile-ready applications a must in today's day and age. With the help of a grid system equipped in Bootstrap, developers can easily specify parts of a page to be occupied vertically or horizontally, choose specific behaviours when a page is viewed on a mobile device, and adapt any screen size - a responsive application that can fit any devices.

JQuery

JQuery is a Javascript library that provides a concise way of writing Javascript codes. By providing a way to write simple yet concise codes in Javascript, JQuery does its job by wrapping multiple lines of codes in Javascript compressing them into methods which are known as callback functions - where the base functionality of JQuery comes from. With JQuery's syntax, it helps a handful of commonly used operations done by developers like traversing the DOM, generating animations, triggering events, and building AJAX applications easier.

Laravel

Laravel is an open-source PHP framework that is expressive and simple in syntax. The creators of Laravel was inspired by other web frameworks such as Ruby on Rails, Sinatra and ASP.NET such that in creating Laravel creators managed to combine these said frameworks in one. Laravel is mostly used for back-end development that can make common parts of web development easier and faster such as routing, sessions and much more. Laravel is a powerful framework that provides tools suitable for small to large development. It is also provides testing support tools to test the developed application.

Laravel is best known for its method injection, this allows developers to add methods directly in their codes making the development faster. Laravel is also known for its authentication, most developers spent a lot of time in authentication part of the code. With

Laravel 5 it already have a built-in authentication system that is ready to be set and use. Security is a key feature for Laravel framework it ensures that SQL Injection will not push through and will also prevent with cross-site scripting.

AngularJS Framework - Javascript

AngularJS is a Javascript framework that works well with Laravel which we will use in developing web application. Angular JS adapts the MVC architectural pattern which isolates the logic and user interface side of the application and supports separation of concerns, giving developers confusing free and organized tree structure. Angular JS' Data-binding allows developers to dynamically change the contents of a webpage just by changing some few codes. Angular JS also enables developers to create their own html tags via custom directives or built in directives, which would give them the opportunity to manipulate the DOM freely.

MySQL

MySQL is an open source database language that is powered by Oracle. MySQL contains advanced features and tools that can help in managing data. One main feature of MySQL is database password encryption. It enables nested loops for joins and provides some functions such as count, sum, average that can solves data that is in the database. It also support for the different joins that is with the standards of SQL. MySQL is a powerful language that can delete, insert, update and delete rows and shows how many rows are affected. It is also error friendly because it shows how to fix the error. A key feature of MySQL is trigger, it can perform a task at a certain point of time when a certain trigger is reached.

Git Repository -

A git repository is used to manage a project by the team. It contains all commits, revisions, delete, trunking and branching done by all the members of the group.

Sublime Text 3

Simple text editor but powerful, it can contain different plugins for every different use. Sublime text editor has a powerful shortcut commands that can do things automatically for the user. Code snippet and editing or replace are strong features that can overthrow other text editors. It can edit more than one line at the same time with just few shortcut commands such as alignment and find and replace.

MySQL Workbench

MySQL Workbench is a database management tool for database developers, and DBAs. MySQL Workbench provides data modeling, SQL development, and administration tools for server configuration, user administration, backup, and much more. MySQL Workbench

is available on Windows, Linux and Mac OS X. Some features are Reverse and Forward Engineering, Visual Data Model, Data and Object Management

PHPStorm

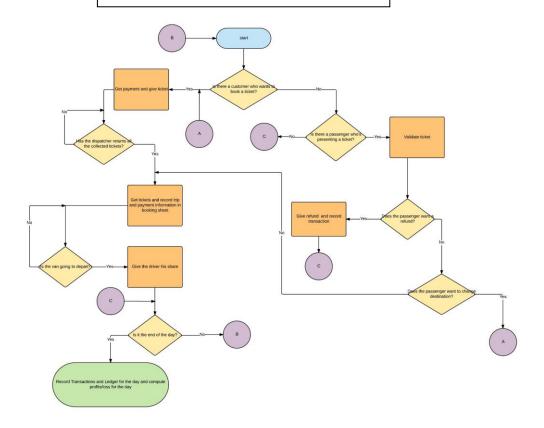
An IDE that supports web development written in PHP. The IDE works well with different PHP frameworks including Laravel. It provides Fast and Safe Refactoring, Easy Debugging and Testing, etc.

WAMP Server

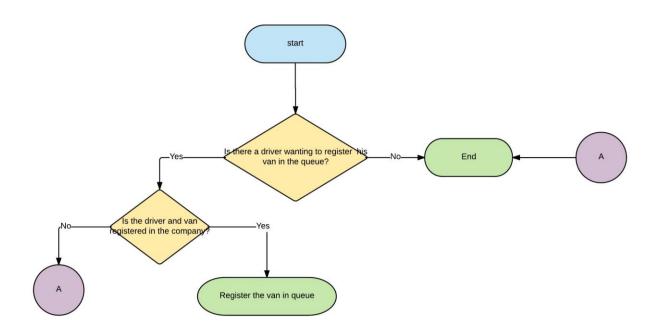
A software stack that contains Apache, MySQL, and PHP for the Windows operating system that allows development of applications with the capability of managing resources such as managing databases through its build-in PHPMyAdmin, configure the web server, the development and deployment of web applications with the use of PHP - its built-in server-side script.

IV. Flowcharts

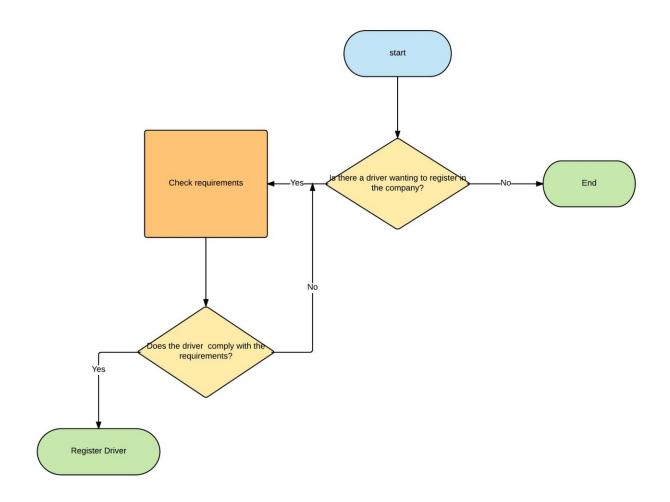
Clerk – Fare Payment



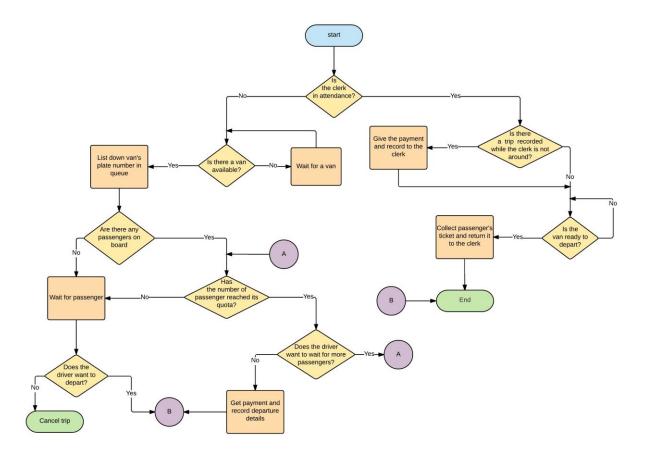
Clerk - Van Queue



Clerk – Van Registration

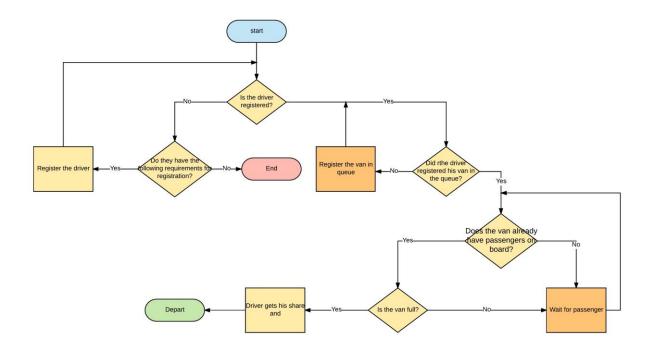


Dispatcher

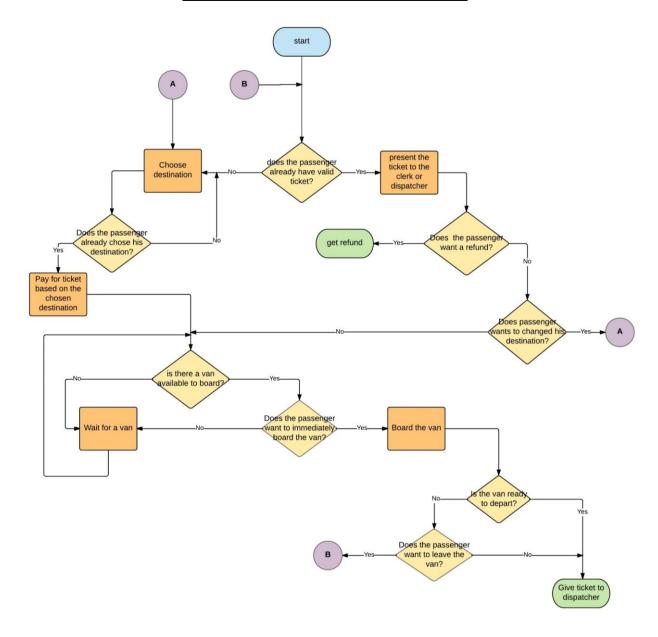


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Driver



Passenger



V. Hardware Specifications

Ban Trans has a desktop computer with a Dual Core Processor, 2gb of Ram running a Windows 7 32-bit operating system. They also have an HP Deskjet Ink Advantage 2010 Inkjet Printer and a stable PLDT internet connection using a zyxel p-660hn-t1a modem which offers 2.4GHz frequency. We believe that these specifications would be sufficient enough to run the system that we would be creating but the owner explicitly told us that they are willing to buy new hardware in case the system would not support their current set up.

VI. Transcript of Interview

Interviewer: IT Students of Saint Louis University

Interviewee: Clerk of BanTrans

Interview Setting: Interview conducted in office of Ban Trans located at Shanum Street Baguio City. The interview was conducted at 3:00 PM on Wednesday September 26, 2017.

Interviewer: Are you willing to spend for the resources needed in implementing the

system?

Interviewee: "Oo sige. No problem."

Interviewer: Do you offer discounts for students/senior citizens/PWDs? If Yes, How?

Interviewee: "Student wala na kasi. Sa senior 10 pesos kasi kung susundin nati yung talagang rate, 2 pesos per kilometer ang binigay ng LTFRB. Ngayon kasi kung Cabanatuan is 170 kilometers, kung susundin natin yung 2 pesos na rate, 340. Kung susundan natin yung rate na 272, baka hindi kasi kayanin ng student na bayaran ang 272 kaya finix nalang naming sa rate ng 240. Then nagbibigay nalang kami ng additional 10 pesos para sa Senior."

So additional 10 pesos pa po on top of the 240 pesos na singil?

Interviewee: "Oo for senior lang."

Kahit saan po na destination?

Interviewee: "Oo kahit saan."
Pag PWD po ba parehas din?

Interviewee: "Oo parehas lang sa Senior"

Interviewer: What happens if the roads are closed? Will you cancel the ticket?

Interviewee: "Hindi naman kami nagbibigay ng ticket. Hindi kami nagbibigay ng reservation mahirap kasi yun. Depende kasi sa van yun. Pag nakabili ka na, sakay ka na."

Interviewer: Hindi po pwede yung mas maaga ka ng 2 hours?

Interviewee: "Hindi. Kasi ang problema sa mga nagpapareserve ang upuan kasi natin limited lang. Pag nagpareserve kayo halimabawa sa harapan, tapos yung dumating na is nakaupo na sa harapan mahirap na silang paalisin doon. Sa bus siguro pwede pero sa van alanganin. Basta first come first serve basis."

Interviewer: So wala po kayong reservation?

Interviewee: "Wala. Wala talaga."

Interviewer: Are there any fixed schedule for trips? If none, how would you determine

the departure time?

Interviewee: "Depende kasi tayo sa pasahero. Kapag matumal, mag ttake yan ng 2-3 hours waiting. Pero kapag kalakasan, siguro minutes lang ang pagitan nila. Pero ang trip natin is 4-6 tapos punuan na tayo bago umalis yung van."

Interviewer: Pano po kung hindi sya napuno within the 2 hours na time frame? Aalis na po yung van?

Interviewee: "Hindi. Aantayin natin mapuno bago umalis kahit gaano katagal. Depende nalang siguro yun sa discretion ng driver kung masyado nang matagal aalis na sya. Pero so far wala pa naman."

Interviewer: Pag may weather forecast tungkol sa bagyo (e.g. signal no 3), is the management responsible in contacting the drivers to avail no trips for a particular day or so?

Interviewee: "Kumabaga, Decision na kasi ng officers in charge yan eh. Usually kapag may bagyo at close ang Kennon, itatawag na agad nila sa baba na iba ang daan nyo via marcos highway kayo kasi malakas ang ulan. So kumabaga may advice mula sa officer in charge sa mga ganun na cases."

Interviewer: Kunwari bumagyo ng malakas pero may nakasakay na po? Itutuloy parin po ba ang byahe?

Interviewee: "Nasa driver na siguro yun. Pero ang office hindi na liable sa kung ano man ang mangyare sa van sa byahe. Kasi usually kasi ditto sa baguio signal number 3 pero sa baba, 1 lang. Minsan pag signal number 3 or 4 icancel na naming ang byahe. Pero minsan kasi may mga pasahero na matitigas ang ulo. Babayaran nila lahat ng upuan papayagan pero kung ano man ang mangyayare sakanila sa driver, van at sa mismong pasahero wala na kami dun kasi may pinost na cancellation of trips."

Interviewer: Pano po yung mga trip nyo na before 8 ng umaga?

Interviewee: "Ang first trip naming 4am mag aantay na nag pasahero. Pag nakakuha na sya ng quota nya na 5 passengers, 7am aalis na yun. 7am-6pm, punuan bago umalis. 6pm onwars, wala nang trips. Kapag holidays, at madaming pasahero extended ang service naming. Holidays, exams mga ganyan. Kapag peak season."

Interviewer: Kapag wala pa po kayo at close pa ang office san po magbabayad yung 4am na trip?

Interviewee: "Sa dispatcher"

Interviewer: Kung nasiraan yung van pero walang available na van para magrescue, ano solution nila?

Interviewee: "Kapag halimbawa nasiraan yung van, depende kung saang location sya mas malapit. Baguio or baba. Yung susunod sa pila ang pupunta na mag rescue."

Interviewer: Can I schedule late night trip (for example 12mn) if i rent a van? If yes, Is there any additional charges?

Interviewee: "Kapag arkila kasi, depende na yun sa usapan ng mag aarkila at ng driver. Pero may makukuha kaming booking fee sakanila. Kapag dito pumasok yung van, parehas yung booking fee. Pero kapag halimbawa kakilala nung driver at hindi sila dito sa terminal nagkita, wala na kami doon."

Interviewer: Do you collect information like cellphone numbers and id number of IDs? if yes, how do you use these information for the welfare of your customer? and why do you use them?

Interviewee: "Hindi na."

Interviewer: Yung sa drivers po?

Interviewee: "Sa drivers, meron silang information data sheet. Meron silang bio data bago pumasok dito yung mga bio data, NBI, police clearance, drug test. Yun yung pinaka basic bago sila pumasok ditto. Peor ang kumukha sakanila mga operators. Bale na brief na sila bago pumunta ditto."

Interviewer: How do you handle cancellation of reserved seats if you are already in the van?

Interviewee: "Okay lang. Halimbawa naka bili ka na ng ticker tapos may emergency, pwede nilang I refund walang bawas yun."

Interviewer: Do you compute profit on a daily basis?

Interviewee: "Daily."

Interviewer: How early must a client reserve a van (arkila) if ever he wishes to do so? **Interviewee:** "Depende sayo. Nasa mag aarkila nay un kung paano kasi nasa sayo naman yung kung kelan ang schedule ng trip nyo para ma schedule ninyo."

Interviewer: Do you ever plan to add more destinations?

Interviewee: "Hindi pa siguro kasi depende kasi yan sa franchise. Possible kung mag open sila sa Gapan, pwede siguro. Pag may nag open na franchise pwede siguro. Pero so far, wala pa."

Interviewer: What if I bought a ticket and I decided not to board the van yet?

Interviewee: "Pwede pa pero until 6pm mo sya gamitin. Within the day. Pero pwede mo din naman syang gamitin the next day or pwede mo syang I refund. Pero kung nawala mo yung ticket mo, kelangan mo bumili ulit."

Interviewer: IT Students of Saint Louis University

Interviewee: Clerk of BanTrans

Interview Setting: Interview conducted in office of Ban Trans located at Shanum Street Baguio City. The interview was conducted at 5:00 PM on Wednesday September 30, 2017.

Interviewer: About sa association niyo po, pano po yung company profile niyo? Meron

po ba kayong papel para malaman?

Interviewee: "Wala pa ako nung nagstart."

Interviewer: Ano po yung plan ng internet niyo dito? PLDT po siya?

Interviewee: "Oo, PLDT. 1299 pero nagbibill kami ng 1600 kasi sa landline."

Interviewer: Ang office time niyo po, 8 am-6 pm?

Interviewee: "Operation time 4 am to 6 pm."

Interviewer: Yung office time po?

Interviewee: "8 am – 6 pm, ang unang pangalan kasi nito ay BUCCT. Nabankrupt kasi to nun dahil sa previous management. Di niya nahandle bumagsak kaya nagkaroon ng

bagong management, naging Ban Trans yung pangalan."

Interviewer: Kailan po naging Ban Trans?

Interviewee: "2000 yata. Tanong ko nalang muna kung anong year na establish ang Ban

Trans. Yung president na to pwede mapalitan kasi election sa December."

Interviewer: Ilang years? Kapag election lahat mapapalitan?

Interviewee: "2 years. Depende kung may kalaban."

Interviewer: Pero lahat ng position mapapalitan?

Interviewee: "Oo, lahat mapapalitan."

Interviewer: Anong dating pangalan? At kalian napalitan?

Interviewee: "Strawberry nung 1999 tapos BUCCT nung 2000."

Interviewer: Yung Ban Trans, kalian nagstart?

Interviewee: "2006."

Interviewer: Iveverify ko lang po to, kapag nakasakay na yung limang pasahero sa van

1-hour lang po ba yung waiting time tapos aalis na kahit di puno?

Interviewee: "Dito sa Baguio pupunuin talaga yan, kung tumagal ng mga 3-4 hours.

Desisyon na ng driver yan kung aalis na siya. As long as nakuha niya yung quota."

Interviewer: Ilan po yung quota?

Interviewee: "At least minimum of 10 or 11 passenger's para makaalis na. Yung sinabi mo kanina yun yung pang Nueva Ecija, 5+1. Sa Cabanatuan 8+1 tapos 30 minutes waiting. Sa San Jose going to Baguio punuan din yun. Yung 5 passengers lang naming dito is from 4 am – 7 am kasi obligado kang ibaba kapag 6 passengers kasi ikaw yung priority dun na kargahan."

Interviewer: Yung 4 am – 7 am, di po siya punuan?

Interviewee: "Oo. 4 am – 7 am, 6 passengers aalis na yung van."

Interviewer: Yung recording po nito 4 am – 7 am, di po ba sarado pa yung office? Eh di

sila na po ba yung magsasabi?

Interviewee: "Meron kaming dispatcher hanggang 7 am na nagbabantay."

Interviewer: Para saan po yung community funds?

Interviewee: "Para sa mga drivers yun, incentives ng mga drivers yung community

funds."

Interviewer: Pinaghahatian po ba nung mga driver yun?

Interviewee: "Not necceserily pinaghahatian. halimbawa may project ang transport tapos

magpapamigay sila ng t-shirt or uniform, dun nila kukunin."

Interviewer: Ano yung SOP?

Interviewee: "Maintenance lang ng office."

Interviewer: Ano ibig sabihin ng SOP?

Interviewee: "Parang miscellaneous lang yun."

Interviewer: Ano po yung ibig sabihin ng SOP?

Interviewee: "Wala po siyang acronym."

Interviewer: Kapag sainyo po magaarkila, sainyo po ba papasok (office)? Magkano po

sweldo nun?

Interviewee: "Oo, depende sa destination. Parang normal na treatment."

Interviewer: Depende na po sa dagdag kunwari buong araw? Basta booking lang po

yung makuha?

Interviewee: "Kapag aarkila kasi terminal to terminal lang. Kapag terminal to terminal lang ang biyahe, parehas lang ang kaltas sa regular. Kunwari magpapahatid sila sa bahay nila outside ng barabarangay, magaadditional na yung nagaarkila."

Interviewer: Sa driver po na ba yung dagdag kapag nagpahatid?

Interviewee: "Oo, driver na. Kumbaga additional na nila sa gasoline yun."

Interviewer: Kunwari yung ticket ko na kinuha is Cabanatuan tapos magpapalit ako agad

ng ibang lugar?

Interviewee: "Kunwari Cabanatuan tapos pinalit mo San Jose, papalitan parin namin pero ibabalik naming yung sobra sa pera mo. Halimbawa 240 na Cabanatuan niless ko yung 215 na San Jose, kukunin ko yung ticket niya tapos ichachange ko ng 25 pesos."

Interviewer: Ilan yung vans dito na nakaregister sainyo?

Interviewee: "55 units as of now."

Interviewer: Yung driver binibilang niyo din ba?

Interviewee: "55 din pero ang usually kasi per unit its either yung nagmamaneho operator

or meron silang driver. Isang operator, meron siyang apat na unit kaya nagging 55."

Interviewer: Kapag aalis yung driver dito sa company, anong process nun?

Interviewee: "Di ko alam kasi di sila strikto, ang pagpasok sa driver ay base sa operator. Kunwari ikaw na operator maghahanap ka ng trusted mo na driver tapos ipapasok mo siya dito with corresponding documents tapos kapag okay pasok. Ngayon, kung halimbawa natanggal siya operator na ang kausap niya. Ikaw tinanggal mo yung driver mo pero since member siya dito kasi nagbabayad sila ng membership fee, willing parin siya magtrabaho dito pero kailangan niya parin kumuha ng clearance niya sa dati niyang operator."

Interviewer: Yung usual na stakeholders niyo mga pasahero lang?

Interviewee: "Oo, yung mga pasahero, operators. Yun lang."

Interviewer: Pwede po ba makuha yung specs ng printer at yung router?

Interviewee: "Oo, sige."

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