Digital Freight Brokerage in Ecuador: An Innovative App-Based Solution for Efficiency in Transportation of Goods

(Technical Paper)

Exploring the Social Impact of Technology on Ecuador's Evolving Supply Chain Landscape

(STS Paper)

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

The transportation coordination landscape in Ecuador faces numerous challenges that impacts both the truck drivers and shippers around this country. During my time at Trebol Verde, one of the largest catering companies in the country, I noticed that truck drivers engaged in the moving of goods face significant inefficiencies in their jobs. I worked in the Guayaquil office, and we often received shipments of raw materials and products from our facility in Quito. The journey from Guayaquil to Quito, a distance of approximately 400 kilometers, presented various challenges for truck drivers. Upon completing their one-way deliveries, they frequently return to Quito with an empty truck, resulting in a significant waste of resources that includes fuel, time, and money. The long drive back home brought no benefits to the driver, while the truck depreciates faster and contributes to unnecessary greenhouse gas emissions.

Those engaged in shipping goods in Ecuador also face challenges. The process of sending goods through truck drivers or carriers is not transparent in Ecuador, as it includes issues such as, loss of goods, lack of information, unsafety, and impunctuality. Shippers need a reliable platform that allows them to ship goods within the country coupled with complete transparency and without worry. Constant communication between the shipper and the carrier through a new communications platform will allow for increased efficiency and improved performance.

The goal of this project is to analyze the current state of Ecuador's supply chain, specifically the hiring of truckers to ship goods. I consistently came across this issue throughout the duration of my internship experiences in Ecuador, both in a catering company and a chemical products company. The shippers experience constant delays and low transparency throughout the process of shipping goods, while the truckers are affected by inefficiencies such as not having a client for a return trip to their original destination. Operating in a digital marketplace allows for

transparency and efficient processes. However, it is important to identify crucial factors that can allow us to implement this project in Ecuador. This paper studies the various issues present in the Ecuadorian trucking industry that affects both shippers and carriers. The paper will explore the improvement of the industry by proposing a digital freight transportation marketplace in the form of a freight matching mobile application.

Technical Discussion

Like many countries in Latin America, poverty is a significant issue for the people in Ecuador. With a poverty rate of 14.4%, Ecuador ranks fourth in Latin American countries living on less than $3.20 as of 2020 (SRD, 2023). GDP is one of the leading factors when it comes to measuring the quality of life of a country, and it turns out that road freight transportation generates a significant amount affecting the GDP of a country (Londoño-Kent, 2009). Ecuador has an estimated GDP of $115.05 billion as of 2022 (*World Bank Open Data*), and while it is the eight best in Latin America (*Latin America & Caribbean*, 2023), it has a long way to go when compared with the other countries. This explains the importance of focusing on improving the supply chain industry in Ecuador which has potential to improve the quality of life of people.

The demand for a digital freight marketplace is increasing. The digital freight brokerage marketplace is expected to grow more than 43 percent annually between 2018 and 2026 (Caribbean Business, 2021). Slowly, more projects are being developed throughout South America that affect digital freight brokerage.

Developing a mobile application for the freight carriers has the potential to make it easy for them to plan their daily operations minimizing the waste of their resources. Furthermore, the crime rate in Ecuador measured to be 25.6% (Mantilla et al., 2023) continues to increase due to

criminal groups engaging in activities related to drugs and corruption. Consequently, a factor that must be considered is the safety of the users of the mobile application.

Based on the outcomes of similar platforms like Uber Freight and Frete.com, this paper focuses on creating a digital freight marketplace in a defectuous logistics industry in Ecuador. These digital freight brokerage platforms enable a freight broker to act as the intermediary between the carrier and the shipper. Given the supply chain inefficiencies in this country, the costs for truck drivers and carriers continues to increase, while the shippers lack a reliable platform for improving their shipment of goods. In 2020, Uber leaders labeled their digital freight business Uber Freight is one of the fastest growing businesses among Uber Technologies business units (Cassidy, 2018).

An improved communications digital marketplace platform, such as Uber Freight, could be of significant value to the implementation of this project in Ecuador. Some of Uber's offerings include tendering loads fast and efficiently, the capability to obtain real-time transparent quotes, and access their digital freight marketplace (J. F., 2018). Carriers benefit from having a digital marketplace with spot rates where they can book loads and generate profit, unlike returning home with an empty load. This project idea is based on a market that has not been professionally managed. Historically, in developing countries, truck driving is not seen as an attractive job. The need to improve the level of service and give them a tool to make use of existing technology for their personal and economic benefit. By leveling the playing field, they can feel like they are benefitting from technological advancements.

An outline on how this technical project is comparable to Airbnb in its industry. This business model is called a two-sided marketplace, wherein the company serves both shippers and carriers. Shippers have a transparent and efficient way to send their goods, while the carriers

have access to a larger platform of shippers. This model will include three sources of revenue. First, the application is subscription based, meaning that the shipper needs to pay a membership fee to have access to the platform, login credentials, and the ability to register their trucks. The second stream of revenue is revenue sharing between the truck driver and the platform. The third source of revenue involves assisting truck drivers, normally having plain white trucks, by selling advertisements that will be displayed on the vehicles.

On the cost side of this project, there is not much. To begin with, the company will not own any trucks. It will be like Airbnb. The business will need a competent team of developers and IT experts that have had experience in creating apps such as these in Latin America, as their expertise is more valuable because of the unique state of the country. They can facilitate the process of making a streamlined mobile application with all the features mentioned above.

This project poses a viable strategy to create a digital platform where shippers and carriers in Ecuador will benefit. As of 2022, approximately 52% of the Ecuadorian population owns smartphones (SRD, 2023). Meeting demand is something that has to be considered to make this project sustainable. As previously mentioned, empty return trips are usual. Drivers need to get back to their homes to work on their other jobs and take care of their families. This challenge is considerably larger in Ecuador given that it consists of creating an entirely new market, the digital freight brokerage marketplace.

STS Topic

How can the lives of truck drivers improve in developing countries such as Ecuador? How important is the need for an efficient supply chain for the economy and society? Are inefficient routes a major problem for truck drivers in Ecuador? Is the quality of roads in

Ecuador good enough for shippers to rely on trucks to deliver their goods? Are factors that includes crime rates important for shippers and carriers in their decision to ship goods? Do commercial shippers in Ecuador hire truck drivers to deliver their goods or do they use other methods utilizing air and water? I intend to answer these questions through rigorous research.

The supply chain industry is one of the most influential industries in the world. Everyone depends on it given its impact on their daily lives. Consequently, improving the functionality of this industry in Ecuador can potentially generate more jobs, increase wealth, and keep truck drivers healthy and like their jobs. Truck drivers are among the most important people in every economy.

To document the importance of truck drivers in the supply chain, I will investigate how a disruption in the supply chain affects the world. The strike of truck drivers in Brazil of 2018 is one example of the importance of truck drivers in the economy and society. The truckers were on a 10 day strike because they were unhappy with the cost of fuel and their low freight payments (Schlindwein & Ison, 2020). This resulted in an estimated $1.75 billion in losses in the agricultural sector of Brazil (Woody, 2018). Families were harmed by the lack of food, as the supermarkets could not replenish their shelves. Gas stations ran out of fuel, and airports started canceling flights (Woody, 2018). There was no alternative to transport basic goods anywhere. In this case, there was not a specific entity to blame, but each individual has the criteria to evaluate if their rights are being violated and if so, they have the right to demand them.

The lifestyles of many truck drivers in Latin America are far from optimal. Their schedules are unpredictable, and their daily lives become increasingly dependent on when the next shipment will be requested. Driving for extensive hours each day, truck drivers are prone to suffer from a range of health problems that includes diabetes, hypertension, and obesity

(Zamparoni Victorino et al., 2023). A study conducted by the National Institute for Occupational Safety and Health documented the prevalence of obesity in truck drivers in the United States at 69%, compared to 31% of the other workers in the United States (NIOSH, 2014). These health constraints in any country are detrimental to truckers lives and their families, their attitude, all of which affect customer service and limit the number of hours they can work.

Neutral regulation is a factor that must be considered when operating businesses in countries with a history of corruption like Ecuador. This means that everyone within an industry must be treated with the same regulations so that there is a competitive market. While this project has not been implemented in Ecuador, the circumstances of the country could bring unpredictability and lack of trust into the market. Furthermore, Ecuador has long been considered one of the most peaceful countries in Latin America. However, the crime rate hit the highest point in 2022, at 25.6%(Mantilla et al., 2023). Therefore, it is important to analyze whether truck drivers are at all affected by this, directly or indirectly. Other factors limiting the effectiveness of the project are road conditions, education, and the cost of insurance.

The app-based solution proposed in this project aims to improve the lives of truck drivers. This project is expected to involve as many truck drivers in Ecuador as possible. This will include individual truck drivers who own a truck, or companies that have several truckers. Including the individual truck drivers will make the platform stand out given the large number. This socially inclusive component is beneficial to both parties. As the world is constantly striving for a better quality of life, it is important to notice this key industry people rely on.

Conclusion

The technical project and STS research paper chosen are meant to evaluate the potential of creating an app-based solution to improve the freight brokerage supply chain in Ecuador. Research shows that mobile apps are a useful tool to facilitate the lives of many around the world. Freight brokerage has entered the digitalization era and many companies have created digital marketplaces that allow for an efficient and transparent bidding, for shippers, and booking, for carriers, process. This has been done mostly in developed countries, where factors such as quality of life, crime, education, and economy are not as big of constraints compared to Ecuador. However, third world countries have been able to adapt to their circumstances while providing solutions to their communities.

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