Digitizing Freight Forwarding in Ecuador: A Transformational Blueprint

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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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STS Research Paper

Introduction

Latin America has generally been playing catch up with advances going on around the world, that contribute to overall quality of life. These advances, political, economic, or social, all share the same feature, which is the access to technology. Countries around the world are innovating and investing in technologies of streamlined systems to improve the functionality of their systems, while many countries Latin America struggle to meet the basic needs of people, such as clean water, electricity, and high poverty rates. The circumstantial differences between first world, more advanced countries, contribute to a lag effect in Latin American countries when it comes to technological advances. Among those countries is Ecuador, a country located just below Colombia and above Peru, in the northwestern part of Latin America. Ecuador is ranked second among Latin American countries in gross national income (GNI) per capita, an indicator for quality of life (*Poorest Countries in South America 2024*, n.d.) . With a national poverty rate estimated around 25% (*Ecuador 2023 IFRC Network Country Plan (MAAEC003) - Ecuador | ReliefWeb*, 2023), and an unemployment rate of 3.9% (*Ecuador - Unemployment Rate 2018-2028*, n.d.) , this third world country needs to focus on important industries that contribute to creating more employment and improving the quality of life of the people living there.

Businesses in Ecuador are slowly learning from first world countries and applying the technological innovations to their group. Some have been successful, some have failed, and most have not tried. Among those that have not tried is the freight brokerage industry, specifically, the trucking transportation coordination. A freight broker is an organization or entity that acts as an intermediary between a shipper and a carrier. A shipper books a load through the freight broker, who matches the shippers needs with a carrier that is available and meets specific requirements.

Currently, there are many issues in this industry in Ecuador such as informality, loss of goods, impunctuality, theft, and many more. It is not an exciting market for someone to engage in, from both the side of the shipper and the carrier. This paper focuses on creating a digital freight marketplace in the form of a mobile application that connects shippers and carriers. The application specifically targets trucks as the shipping method, as it is the method that shows more practicality with the application's vision. Through digitalization of the freight brokerage industry, there is more accessibility, transparency, and efficiency when engaging in activities related to shipping goods. Therefore, the risk for common issues like those mentioned above decreases by a substantial amount.

Methods

Research question: What are the sociotechnical and economic systems that impact the potential for digital freight brokerage in Ecuador?

Documentary research is used to compare and analyze existing literature based on the topic of digital freight transportation. This includes industry reports, case studies, and academic papers evaluating the disruptive potential of digitalizing the freight forwarding industry. Such a comprehensive review serves to understand the current landscape of the freight forwarding industry and identify challenges and opportunities that the digitalization of the freight forwarding industry presents. As a complementary method, an auto-ethnography is utilized to incorporate personal experiences, research, and observations. The two methods combined, allow for an in-depth understanding of the potential for digital freight brokerage in Ecuador.

Background

Digital freight brokerage is a specific industry within freight brokerage that focuses on connecting shippers and carriers through technological methods, adding efficiency and transparency to the process of booking and shipping freight. Technology is the "middleman" in the case of digital freight brokerage. The following quote clearly shows the distinction that "Digital freight brokerages are online marketplaces that allow shipping companies and truck drivers to connect via the use of a digital app. Whereas traditional freight brokerages are carried out by phone or fax, often taking days or even weeks to organize, digital freight brokerages can connect shippers and carriers directly, often removing the need for a middleman and streamlining the whole process." (*What Is Digital Freight Brokerage?*, n.d.). Furthermore, in digital freight brokerage, the middleman is not a person, but a marketplace with data of truck drivers able to ship goods from one place to another, at a given time with specific requirements. It allows access to options that best suit the shipper regarding price, shipping date, or specific truck requirements. Examples of digital freight brokerage businesses are Uber Freight and Frete.com. This industry is estimated to have a revenue of around $21 billion by the end of 2026, which is a compounded annual growth rate of approximately 43 percent from 2018 to 2026 ("Digital Freight Brokerage Market Set to Reach Over $21.4 Billion by 2026," 2021). Ecuador has minimal background in the digital freight brokerage industry, with failed attempts and only business models.

The freight brokerage market in Ecuador faces challenges that impact both parties. Shipping goods in Ecuador is a nontransparent, inefficient, and informal process, which makes it not enjoyable and unpredictable. On the shipper side, those engaged in freight brokerage encounter several issues. Theft and loss of goods are frequent in relation to other freight brokerage services around the world. Additionaly, the country is currently battling against large

gangs that are engaging in illegal activities with Colombian, Mexican, and Albanian drug traffickers. This has affected the homicide rate of the country, as it has spiked from 13.7 per 100,000 people in 2021 to 45 per 100,000 people in 2023 (Human Rights Watch, 2023). This is a problem that must be solved by a strong government with the sufficient support and funding to win the war against drugs and corruption. Ecuadorians are forced to adapt to the difficult conditions and live in a way that mitigates their exposure to dangerous situations. Businesses must do the same and adapt to this situation that is mostly out of our control. Another problem faced when engaging with freight brokerage is the lack of transparency throughout the shipping process. This involves shippers not being able to obtain the exact location of their shipment at any moment in time. The package is shipped initially, and a few updates are sent to the shipper, mostly if requested, and they are inefficient because they require making phone calls and engaging in human interactions that could be inaccurate and biased.

STS Framework

Applying Langdon Winner's theory of technological politics (Schraube, 2021) to implementing a digital freight brokerage platform in Ecuador show how technology shapes society and influences the way power is distributed in a society. Currently, traditional freight brokers are prominent in Ecuador, this suggests introducing a digital plaform could alter the way that power is distributed among the industry. Additionally, the government might need to introduce new policies and regulations to address issues that are not as frequent in traditional freight brokerage as they are in digital freight brokerage. Examples of these issues are related to security, privacy, data leaks, and ensuring legal compliance and fair competition.

The cultural perception in Ecuador on truck driving is that it is not a privileged job to have, and it is one of the reasons that the freight forwarding market in Ecuador is not reliable and

inefficient. However, it this perception is not far from reality. This paper dives further into Ecuador's specific work environment, where informality and lack of communication is prevalent an adds to the struggles of the industry and the people interacting with it. Freight brokerage businesses do not offer efficient communication tools that end up causing delays, loss of goods, robberies, or canceled orders. The system, overall, performs poorly. The business and its employees lack of sense of satisfaction when performing their jobs because it comes with a various obstacles that they are aware that could be solved easily, if there only were more transparency and constant communication during the process. This which creates a downward spiral in employees performing their jobs at minimum effort because there is no sense of improvement, which ends up in shippers being unhappy with the service they received when engaging with the business.

Results and Discussion

This study found that implementing a digital freight brokerage platform in Ecuador can be a successful solution to the inefficiencies of the current state of the freight forwarding industry in the country. With the digital freight brokerage market on the rise, it is an opportunity to offer efficiencies in the process of shipping goods. Customers obtain a more transparent way to ship their goods, with efficient booking processes, and increased safety. Businesses save up operational costs by automating processes and reducing manual work. Ecuador has characteristics such as frequent natural hazards and increased crime, that need to be considered when implementing a digital freight brokerage platform. However, examples like Frete.com show that it is possible for a company like this to succeed in a landscape like Ecuador's. More research in the market demand and legal requirements needs to be done, but this is a significant step in embracing digitalization in the freight forwarding industry in Ecuador.

Transitioning from manual labor to technology in the worlplace in a third world country is often neglected. The lack of education and opportunities in Ecuador's society results in fear of change and failure to view the overall benefits of technology. This is another factor to consider that needs more research in order to understand how people in Ecuador feel towards technology driving the workforce and making it more efficient.

The Rise of Digital Freight Forwarding

The digital freight brokerage market size was $2.7 billion in 2022, while in 2030, it is projected to be at $22.4 billion ("Digital Freight Brokerage Market Size, Opportunities & Forecast," n.d.). The digitalization of the freight forwarding industry consists of moving on from the traditional ways of working, reducing manual operations, and enhancing efficiency for shippers and carriers. According to The Boston Consulting Group (BCG), this industry seems promising, as venture capitalist invested more than $3.3 billion in digital shipping and logistic startups between 2012 and 2017, where a significant portion was allocated to freight forwarding (Riedl, Chan, et al., n.d.). Aside from showing that capital is being invested, these numbers show that people and corporations have confidence in the opportunities that come with digitalization in this industry. For current freight forwarders, this opportunity is more like a requirement to survive, as digital startups like Convoy, Frieghtex, and EasyPost, receive funding and aim to continue their growth (Riedl, Jentzsch, et al., n.d.). The road freight transportation market has historically been a low margin business, with an annual 6 to 8 percent yearly profit of the income per truck (Murray, 2022). Digital freight forwarding startups pose opportunities for costs reduction, where manual processes are automated and could reduce operational costs by 40 percent (Riedl, Chan, et al., n.d.). From a BCG study of the road freight industry in Western Europe, more challenges are identified within the industry. A recurring challenge the current

freight transportation industry in Western Europe is the highly fragmented market, where the biggest player in the market only has about 2.1% of market share (Riedl, Jentzsch, et al., n.d.). Additionally, there is a sense of distrust among the many competitors in that market, preventing them from collaborating and benefiting from high competition (Riedl, Jentzsch, et al., n.d.), resulting in a similar customer experience among a large number of businesses. Furthermore, customers are largely affected by the inefficiencies of current traditional freight forwarding businesses. An area of improvement is highlighted in the scenario where "a shipper who asks a forwarder for a quote can wait as long as 100 hours, …" (Riedl, Chan, et al., n.d.). Customers go through lengthy processes when engaging with traditional freight forwarders, whether it is when trying to obtain a quote, upload documentation, track the shipping process, or other tasks (Riedl, Jentzsch, et al., n.d.).

Successsful digital freight matching platforms offer valuable solutions that can improve the business landscape and overcome the challenges mentioned. This paper analyzes Frete.com, which is a freight forwarding startup based in Brazil. In 2021, the company reached $390 in funding, reaching unicorn status (*Frete.Com Achieves Unicorn Status with a US$ 200 Million (R$ 1.14 Billion) Round Led by SoftBank and Tencent.*, n.d.). Frete.com is a key example that showcases valuable strateiges and technological features that could be implemented in a similar project based in Ecuador. This platform connects shippers and carriers through a digital plaform that enhances customer experience by improving matching efficiency, increasing safety, and make it a more transparent process for both the shippers and carriers (*Frete.Com Achieves Unicorn Status with a US$ 200 Million (R$ 1.14 Billion) Round Led by SoftBank and Tencent.*, n.d.). It also aims to get rid of inefficiencies like truck drivers running empty 40 to 60 percent of the time because the drivers were afraid of potentially losing better deals, which resulted in low

revenue for the drivers and a negatively impacting the environment with trucks driving without a purpose (*Frete.Com Achieves Unicorn Status with a US$ 200 Million (R$ 1.14 Billion) Round Led by SoftBank and Tencent.*, n.d.). Aside from the innovative way of reducing inefficiencies and improving drivers' performances, it is an important example for this research paper because it is based in Brazil, which is also a country in Latin America, and has many similar characteristics with Ecuador. Even though Ecuador's freight transport market is not as prominent as Brazil's, the fundamentals can still be applied. However, it is to important further dive into Ecuador's current state to identify speficic areas where modifications have to be made in the implementation of this business.

Ecuador's Transportation Sector

The transportation sector in Ecuador contributes to around 7 percent of the country's Gross Domestic Product (GDP), which is an indicator for quality of life (Acurio et al., 2016). According to a study conducted by the National Institute for Energy Efficiency and Renewable Energy in 2016, the transportation sector accounted for 42 percent of the total energy consumption, growing 7 percent annualy (Acurio et al., 2016).

Roadways in Ecuador are mostly unpaved, with 35,055 km of 43,950 km being unpaved (*Ecuador Transportation 2023, CIA World Factbook*, n.d.). This results in tricky conditions for truck drivers, and is one of the main causes of the vehicle being damaged. Unpaved roads can cause damage like: increased tire wear, damaged suspension, increased use of fuel, and leaks (*6 Ways Driving on Dirt Roads Affects Your Vehicle*, n.d.). A shipper relying on a driver in a damaged vehicle is more likely to experience delays given the uncertainties with the state of the vehicle.

With natural disasters being concurrent in Ecuador, the transportation sector is largely affected by it. Natural hazards that occur in Ecuador include earthquakes, floods, landslides, and others (Reid, 2018). En example of a natural disaster was the April of 2016 earthquake. This event killed around 700 people and severly injured around 6,000 people (Reid, 2018). With earthquakes and El Nino rains, the transportation landscape faces uncertainties that directly affect truck drivers.

Lived Experience and Revenue Sources

During my time working as an intern at a leading catering company in Ecuador, inefficiencies in the freight transportation industry became noticeable. The two main facilities were in Quito and Guayaquil, where the latter one received raw material from the other facility once a week. A truck driver was hired to deliver those goods, however, they always returned to Quito empty loaded. This major inefficiency in the system showcased that there is opportunity in the Ecuadorian market to implement a solution such as the digital freight brokerage market. A business plan was formulated with peers from Ecuador. It displays three sources of revenue.

1.) Subscriptions: accounting for most of the revenue. Users of the plaform would have to pay a specific dollar amount to have access to the marketplace. Shippers would have access to carriers and specific truck types at any given time, and book at their own convenience. Carriers would have access to a marketplace of shippers looking to book loads, while also having transparency on current market prices.
2.) Revenue Sharing: the revenue from each booking is split between the platorm and the carrier. This is commonly done by other freight matching platforms around the world and shows to be successful in motivating carriers to book more loads.

3.) Advertising: this innovative source of revenue focuses on plain white trucks around Ecuador. They pose an opportunity to add advertising to the sides and generate more revenue from it, which would also be shared with carriers.

Costs for this business model are similar to those of existing freight matching platforms.

Supporting the STS framework, this platform offers additional ways to improve the lives of users of the application. Health issues in long-haul truck drivers are common, 69 percent are obese and 51 percent use stimulants (D'Amico, 2022). Sedentarism is part of the job, and they need to take action in order to keep themselves healthy, mentally and physically. Along with the main features of the platform, it also offers different free courses to better the lifestyle of the users. These courses include topics like: eating, staying active in a sedentary job, parenting, exercise plans, meditation, and more health and wellness courses. This creates a sense of confidence and closeness in a business where personal contact is low, as most of their time they are drivng from one place to another. This plaform aims to improve more than efficiencies by showing users opportunities to improve their lifestyle, resulting in increased enjoyment when working.

Limitations

While this paper dives into digital freight brokerage, identifying key players in the market and its potential implementation in Ecuador, there are still several limitations. First of all, this paper relies on documentary research that is not based in Ecuador and personal experiences that should not be generalized to the full logistics landscape of the country. More quantitative data specific to the country such as market growth, supply and demand, and failed attempts, would provide significant insight to further answer the research question. Finally, the revenue models

and numbers given above are theoretical and could largely differ when realizing the project. I do plan on continuing this research to get more insight on the industry to potentially implement this solution in Ecuador.

Conclusion

Ecuador has specific characteristics that impact the implementation of a freight matching platform. For one, natural hazards cause inefficiencies and uncertainties by damaging the roads and the vehicles, increasing the risk of delays. Ecuador is currently facing increased crime activities which increase uncertainties in the state of supply and demand. However, the movement of goods is vital in a country's economy, so it does not affect the operations significantly. Given that truck driving is not a luxurious job in Ecuador, this platform aims to offer benefits to the employees making them feel more motivated to do their job. Implementing a digital freight matching platform in Ecuador can be a promising business tackling the inefficiencies of the industry's current state. This paper dives into successful businesses' strategies that have enhanced customer experiences while reducing operational costs through automation. Further research needs to be done in areas like environmental laws, safety risks, and crime rates, to have a deeper understanding and tailor the business to fit Ecuador's requirements, but this paper is an important step in digitalizing the freight forwarding industry in Ecuador.

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