

Business Analysis Report

LIMES ELECTRIC SCOOTER RENTALS

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Table of Contents

Table of Contents

Table of Contents	1
Executive Summary	2
Objective	2
System Modelling	3
Rich Picture	3
Use Case Diagram	4
Context-Level Data Flow Diagram	5
Stakeholder Analysis	7
Stakeholder Identification	7
Analysing Stakeholders	8
Power/Interest Analysis	10
Stakeholders Management Strategies	10
SWOT Analysis	12
Strengths (Internal)	12
Weakness (Internal)	13
Opportunities (External)	14
Threats (External)	15
Prioritised SWOT Analysis	15
Possible Strategies	16
Problem Identification & Description	18
Problem 1 - Injuries	18
Problem 2 - Litter/scooters being discarded (Helmets)	18
Problem 3 - DUI	19
Problem 4 - Laws/power concerns	19
Next Step	20
Injuries	20
Litter	21
DUI	21
Laws/power concerns	21
Referencing	22
Appendices	23

Executive Summary

Looking into the “Limes Electric Scooter Rentals” company we have had to look at the stakeholder, create a SWOT analysis, identifying problems along with the next steps that would be needed to help solve the found problems. Throughout these sections of the report we believe there are some important areas to take note of.

Knowing the stakeholders are very important, stakeholders identified were Customers, Suppliers, Partners, Owners, Employees, Competitors, Regulators, Managers, Investors and Residents. Here we take note of the most important Stakeholders we must focus on finding that these Stakeholders were Suppliers, Owners, Regulators, Managers and Investors.

Within the SWOT analysis we identified the company's Strength, Weaknesses, Opportunities and Threats. The company's best strength was Investment and partnerships with large companies, Weaknesses was lower valuation and investment compared to competitors, Opportunities advancement in technology and Threats Clash with laws, governments and regulation. From this we could come up with possible strategies to take advantage and to reduce risks.

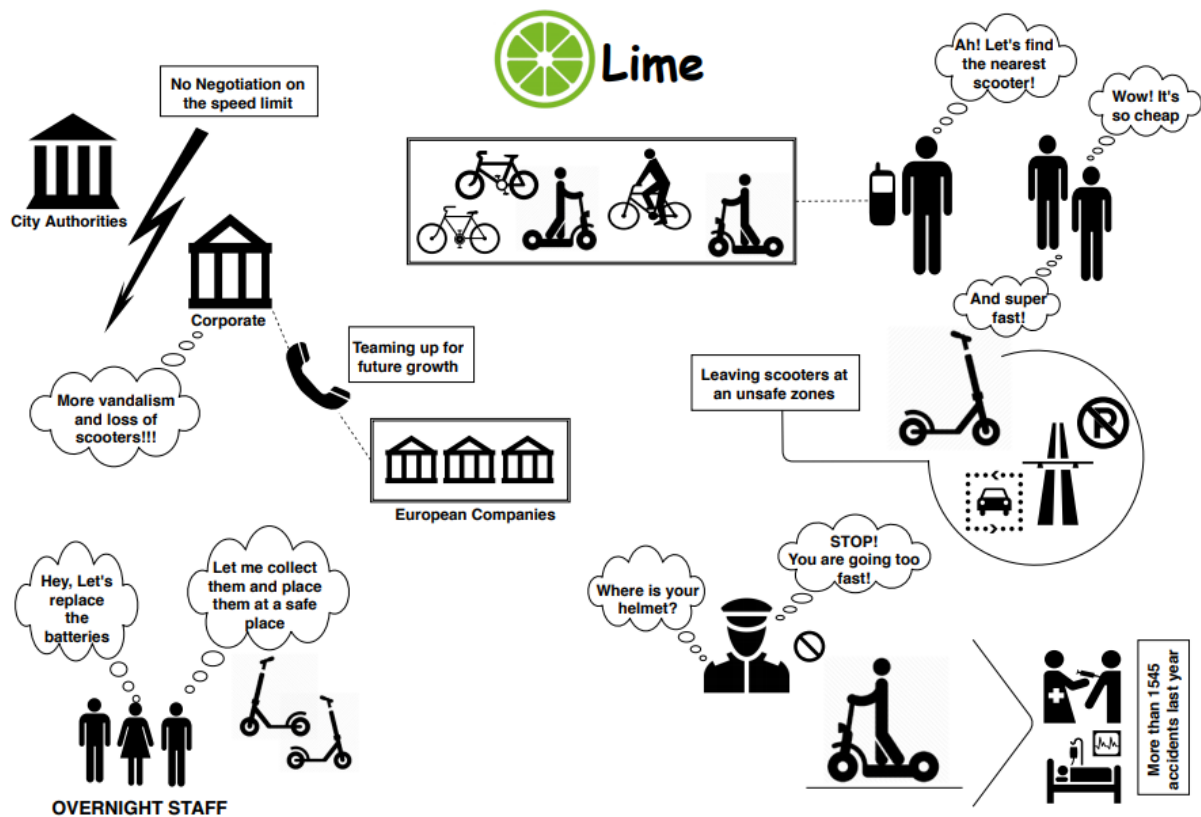
Problem identification found 4 major problems injuries, Litter, Driving under the Influence and Laws. Next steps aim to come up with solutions for the issues to reduce or stop the problems. Most ideas come from creating discouragement for breaking rules by handing out fines for removing a customer right to use the scooter. The company can do background checks on their driving history to make informed decisions if they would be responsible along with idea to help encourage good behaviour on the scooters through its tutorials and notifications.

Objective

Our report aims to evaluate and identify operational and strategic issues within that of Lime's business “Limes Electric Scooter Rentals”. For us to make this evaluation we must look into the business and create models and analysis to create an understanding of the business. Using the information, we collect with the models and analysis we will be able to identify potential problems in the business and the steps that will be needed to take to resolve the problems in the future. Our goal is to identify the problems within the business and aim to create plans to resolve the problems quickly and with minimal to no disruption to the business.

System Modelling

Rich Picture



The rich picture below shows all aspects of the Lime-S business system.

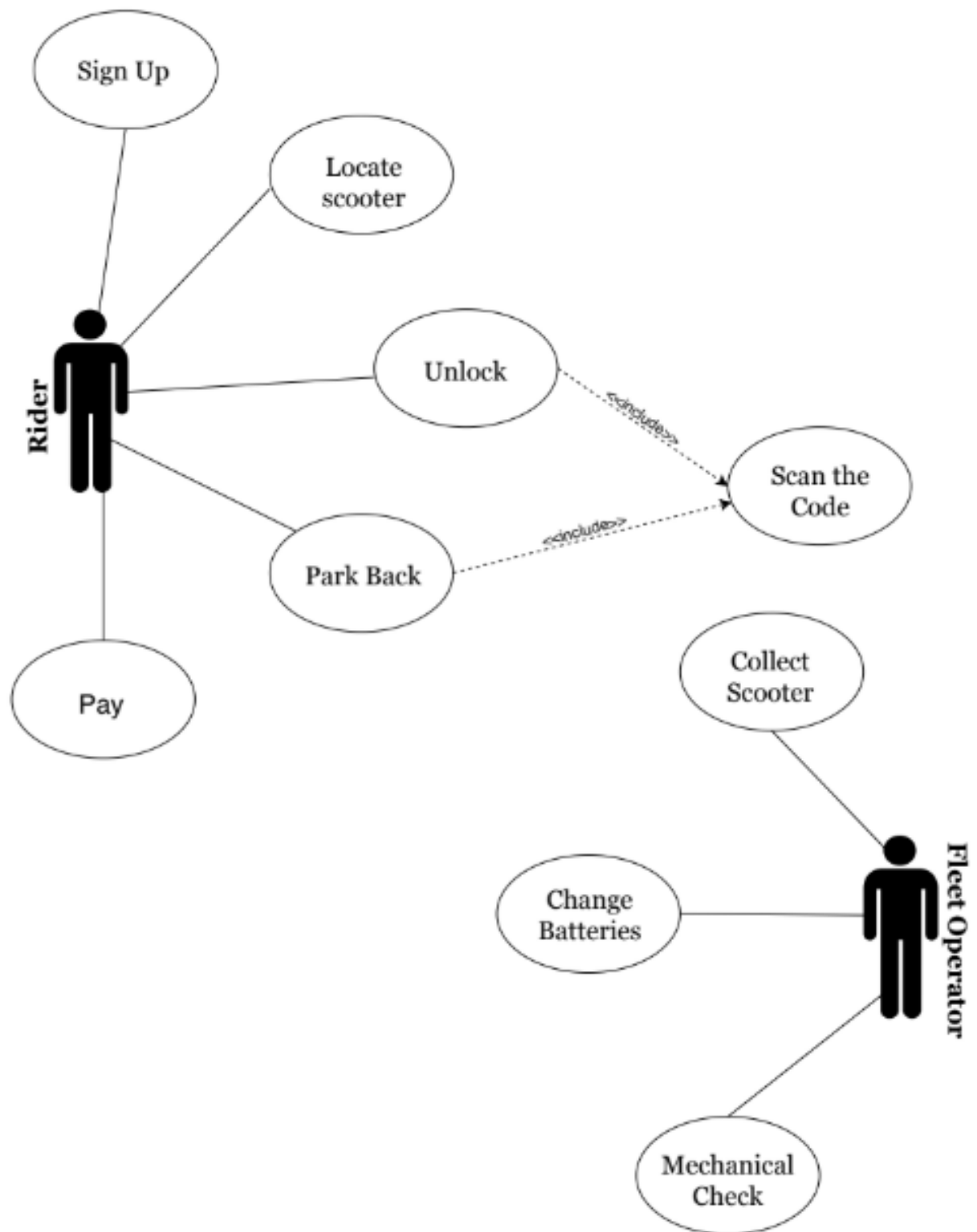
Starting from the left, you could see the clash between the company and city authorities as there's no negotiation between them due to the speed and power of the scooters. Some of the state's road rules mandate that motorised scooters can't travel faster than ten kilometres per hour or have an electric motor with more than a 200-watt output but on the other hand, Corporate keeps teaming up with other European companies to make the service even better.

Down there, Overnight staff is out to collect all the scooters from un-usual places to leave them at safe spots for other person to pick and replacing batteries with the fully charged ones.

On the right-hand side, Riders are happy with the service as it's so cheap than other services and, the speed is faster than the normal scooters. But below that, we can see the scooters at un-usual places, riders leaving their bikes wherever they feel like it, throwing them into rivers and more has been a problem around the country, which Lime clearly hopes to avoid.

At the bottom if we look, Policeman is charging riders riding scooters with no safety gears and over speeding which has caused more than 1545 accidents last year in Australia.

Use Case Diagram



The Use-Case Diagram shows two actors with around 9 Use cases. Each use case connects to an actor, the brief descriptions of the use cases are below:

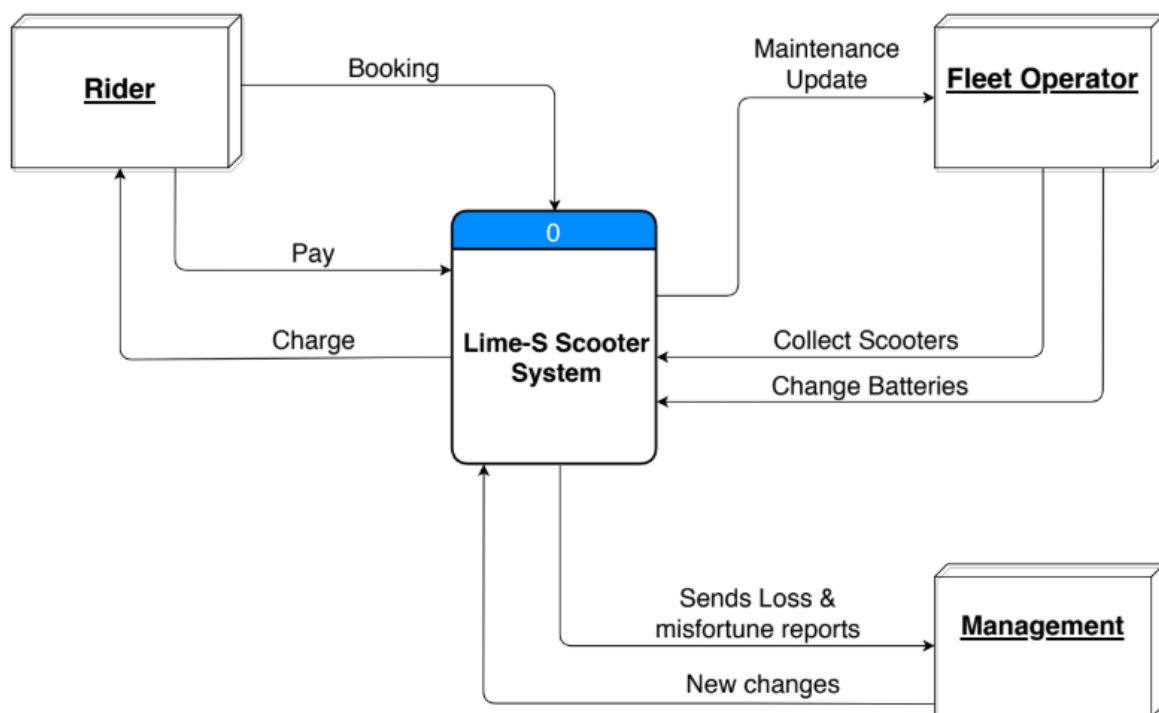
Actors:

1. Rider: Riders are basically customers who can unlock the scooters by way of a mobile app, can ride them wherever they like, and leave them at their destination.
2. Fleet Operator: They are the staff who collect the scooters and install fully charged batteries and do mechanical checks for the safety of the customers.

Use-Cases:

1. Sign Up: Allow user to create a lime account which requires their personal info. Eg: Contact number, first and last name.
2. Locate Scooter: Allow customers to locate the nearest bike by using their location.
3. Unlock: Allow customer to access the bike by a process of scanning a barcode.
4. Park Back: Allow customer to park the bike back anywhere in a safe place.
5. Pay: Allow customer to pay the rent for the service they used depends on the time taken.
6. Scan the Code: Allow customer to scan the barcode when starting and ending the ride.
7. Collect Scooter: Allow the staff to collect the scooters from the area and park them at some safe place.
8. Change Batteries: Allow the staff to replace the batteries with the charged ones to use for the next day.
9. Mechanical Check: Allow the staff to check the scooters if they're physically fit anymore or not.

Context-Level Data Flow Diagram



Entity: Rider		Entity ID: 01
Type: Internal		
Data Flow (s):		Description: Rider locates the nearest scooter through the application and scans the barcode to book that scooter for a ride. System charges the rider with the amount calculated by the time he used the scooter service plus the unlocking fee. Rider pays for the service through his card details.
1.	Booking	
1.	Charge	
1.	Pay	

Entity: Fleet Operator		Entity ID: 02
Type: Internal		
Data Flow (s):		Description: .System tells fleet operators if any scooter requires maintenance or needs to replace so that it could get fixed. Fleet operator collects scooter at night from unsafe places and put them at a safe place. Fleet operator change batteries of the scooters at night and install the fully charged ones.
1.	Maintenance update	
1.	Collect Scooters	
1.	Change Batteries	

Entity: Management		Entity ID: 03
Type: Internal		
Data Flow (s):		Description: System sends the reports which includes the loss of scooters and any related incident happened Management applies new changes to the system
1.	Sends Loss & misfortune reports	
1.	New changes	

Stakeholder Analysis

Stakeholder Identification

Customers: Lime-S's customers are private people who would rent a scooter in one of the cities in which Lime operates. This service can be used by everybody who has the Lime App on his smartphone or who uses Lime Access. Therefore, Lime's customers could come from all around the world, as even tourists, who only stay temporary in a city in which Lime operates, could use a Lime scooter. For the purpose of this report we will distinguish between regular customers (who use a Lime scooter at least once a week) and occasional customers (who use Lime scooters less than once a week).

Suppliers: The biggest supplier of Lime-S is the Chinese based company Ninebot Inc. which owns Segway as well. Ninebot is an essential supplier for everybody in the e-scooter business – it is estimated that 4 out of 5 e-scooters worldwide were produced by Ninebot (or by a company owned by them).

Other Lime suppliers are the smaller Chinese companies InMotion Technologies Inc. and Zhejiang Okai Vehicles Co., Ltd. (Bergen, M. & Brustein, J., 2018) There is at least one other Lime supplier. However, the company does not name it. (Marshal, A., 2018)

Partners: One major strategic partner of the company is Uber (Uber also owns a minority stake of the company). In some cities Lime services can also be seen within the Uber App. (Dickey, 2019) Another strategic Lime partner is PayNearMe which makes it possible for Lime to offer its services to customers who don't have a smartphone or a credit card. (Lime, 2019)

Owners: Neutron Holdings Inc. which is doing business as Lime is a privately-owned company. Important people who own a share of the company involve the founders Toby Sun, Brad Bao, Adam Zhang and Charlie Gao. (Crunchbase, 2019) Also, Uber owns a minority share of the company and has already shown interest in purchasing the whole company. (Gonzalez, 2018)

Employees: Of course, Lime-S employs many permanent employees in areas like finance, marketing, legal, logistics, The company also employs mechanics on an independent contract basis. (Lime, 2019) However, Lime-S employs many casual workers (so called "Juicers") as well, whose responsibility it is to charge the scooters overnight. (Hawkins, 2019)

Competitors: Lime-S's biggest competitor in the e-scooter business is Bird. Other smaller competitors involve Scoot Networks, Spin, Skip Scooters and Neuron Mobility. All of these companies are US-based like Lime. (Craft, 2019) For the purpose of this report we will distinguish between major competitors (=Bird) and minor competitors (=other companies)

Regulators: Regulators are an important stakeholder as well because they can create laws and ban e-scooters from the roads. So, currently it is not allowed to use e-scooters at roads in Sydney and Melbourne. (Marsh, 2018) What is more, it might require limited purchasable permits to be allowed to operate in the e-scooter business in certain cities (like it is in San Francisco at the moment). (Dickey, 2019)

Managers: Like every company Lime-S has many managers. These involve senior managers like Brad Bao and Toby Sun but also many middle and lower level managers. (Crunchbase, 2019)

Investors: Many big companies have already invested in Lime-S. For example, there are Alphabet (holding of Google), Uber, Andreessen Horowitz, IVP, Fidelity Management and Research company

and Atomico. (Lime, 2019) For the purpose of this report we will divide this group into major investors and minor investors.

Residents: The residents in cities in which Lime-S operates are important stakeholders as well. Residents might complain that scooter riders don't follow laws or/and drive scooters in inappropriate areas like pedestrian areas. As a result, the public opinion might pressure the local regulators to introduce even stricter laws or stricter law enforcement for e-scooters. For example, in the Swiss city Zürich a pedestrian lobby exists which tries to ban the e-scooters from pedestrian areas. (Aeschlimann, 2018)

Analysing Stakeholders

Customers: For both groups of customers (regular customers and occasional customers) true that they have no power or authority over Lime-S. The typical customer is not even part of the organisation and cannot force organisational decisions alone in any other way. Therefore, customers have no power and authority. However, when it comes to attitudes there are differences between the two groups:

- **Regular customers:** Customers who use the services of Lime-S at least once a week are highly affected of every change in Lime-S's services. They will feel benefits of better services directly, but this is also true for possible negative effects. Therefore, regular customers have high interest in Lime-S.
- **Occasional customers:** Customers who do not use services of Lime-S on a regular basis will be less affected by company decisions than regular customers. Therefore, they will feel less concerned about changes in the project. However, they are still customers and use the services from time to time. So, occasional customers have at least some interest in Lime-S.

Suppliers: All of Lime's suppliers will have high interest in the project because potential bad decisions of Lime may also affect their own reputation and therefore their profit as well. The interest of all suppliers is high.

When it comes to the suppliers' power over the project, we can make a differentiation between Ninebot and smaller suppliers.

- **Ninebot:** As mentioned above, Ninebot is an essential supplier in the e-scooter business. This means that they can put much more pressure onto Lime than smaller suppliers what can have a big influence on certain decisions. Ninebot's power is high.
- **Smaller suppliers:** Smaller suppliers might be able to pressure Lime in certain situations as well but definitely not to the degree Ninebot can do this. Therefore, smaller suppliers have only some power.

Partners: Lime's partners have naturally high interest in the success of Lime-S because this would normally mean more success and profit for them as well. In terms of power partners have some power over Lime when it comes to certain topics like joint projects. However, the power is not indefinite, and partners cannot force Lime to take decisions in areas that have nothing to do with the agreement. So, partners have only some power.

Owners: Lime's owners have naturally a high interest in the success of Lime-S because more success of the company means more profit and success for them personally. As the company's owners they are in a leading position when it comes to making decisions. Their power is high.

Employees: Lime's employees (permanent and casual employees) have very low power over company decisions because they cannot really influence what managers decide. Their interest in the company is medium because if their performance is good and the company gets higher profits, managers might be able and willing to pay higher wages for the normal employees as well. The same is true for the so-called Juicers, but the probability is much lower, that this would happen to a casual employee. However, there is no legal guarantee for higher wages in a normal working contract. So, Lime's employees have some interest in Lime-S.

Competitors: Lime's competitors have, of course, high interest in Lime's decisions. If Lime can add a new feature to its scooters which is liked by customers, the competitors will have to copy these features fast in order to keep their own customers. The same is true when Lime makes bad decisions: in this case the competitors will have to take the opportunity to get some of Lime's customers.

When we look at the competitors' power we can say that they do not have too much influence in company decisions. Of course, they might have some influence – for example when they add new features or decrease their prices. In these cases, Lime will be well advised to copy these features (in case customers like them) and try to decrease their prices as well. Therefore, it can be said that competitors have some power over Lime's decisions.

Regulators: Regulators have high power over company decisions because they can create laws and regulations that either forbid the company to operate at all or restrict operating in certain areas. As other regulators are responsible for enforcing the laws and regulations as well, they have high interest in company operations and project decisions because they have to overwatch that everything what is happening is in accordance with the law.

Managers: Managers are the people who make decisions in a company. Therefore, their power/authority is very high. Also, they will often be paid more if they achieve better results and gain a better reputation if their department performs well. So, their interest in the company itself is also very high.

Investors: All investors have in common that they have high interest in the company and its decisions because they invested their money in the company and will get more money in the future if the project is a success.

When talking about power, a distinction between major and minor investors can be made:

- **Major investors:** Major investors will have much to say in company decisions because their higher input of money comes with more speech and often even a place on the board. They have high power.
- **Minor investors:** Minor investors, however, have almost no power because of their low input of money.

Residents: If no problems occur the interest of residents in project decisions will be low. They will not care much about Lime-S if it doesn't really affect their personal lives. However, if problems occur, they can become very interested very fast (like it is the case in the example in Zürich mentioned above). Their power is medium because residents can potentially form groups and pressure local authorities to sharpen laws and regulations. What is more, residents can potentially engage in vandalism against e-scooters what results in more repairing costs for Lime.

Power/Interest Analysis

High power			Ninebot, owners, regulators, managers, major investors
Some power	residents		Smaller suppliers, partners, competitors,
No power		Occasional customers, employees,	Regular customers, minor investors
	No interest	Some interest	High interest

Stakeholders Management Strategies

- **Occasional customers:** As occasional customers have some interest in the project it is important to keep them informed. This can be done by regular email newsletters about new offers and changes in the project. Also, public meetings with company authorities can be held to answer questions and explain the projects progress. Lastly, the company could ask them for their opinion on the product by requesting feedback what can give the customers at least a little feeling of power and influence.
- **Regular customers:** This group has high interest in Lime-S but not the power to change anything in the project. So, they have to be kept informed like the occasional customers, but it is advisable to do this even more regularly with this group of stakeholders. So, the strategy involves regular newsletters, public meetings and feedback requests as well but on a more frequent basis.
- **Ninebot:** Ninebot as a very important supplier should be kept informed about what is going on at the project (of course, only up to the degree to which this is possible as Ninebot is still another company and cannot be told Lime's internal secrets). So, there should be regular meetings between executives of Lime and Ninebot. Ninebot should be asked about their opinions on the projects. The companies need to try to find solutions that are desirable for both companies so that a future cooperation is secured.
- **Smaller suppliers:** Smaller suppliers should be engaged in and informed about the project as well. The major difference to Ninebot is that meetings can be a little less regularly. However, Lime still needs to actively approach its other suppliers and consider their concerns to keep a good relationship because all of them may become bigger suppliers one day what would result in a rise in power as well.
- **Partners:** For partners the same is true as for smaller suppliers. They need to be engaged in and informed about the project. There has to be frequent and positive communication between Lime and its partners. Lime has to be aware that it can always happen that partners get bigger and their services might be essential to Lime one day what would increase their power. So, Lime must make sure that relationships with partners are actively managed.

- **Owners:** Lime's owners need to be actively informed about all steps in the project and also about planned future steps. As they have the power to shut the whole project down there must be regular meetings in which every step in the project is explained to them by the managers and also the opportunity is given to them to raise their concerns or make some suggestions on how to proceed in the project.
- **Employees:** Employees should be informed about Lime-S. This involves frequent newsletters and meetings with their managers. Also, they need to be asked for feedback on the product, so that they feel involved. Also, they should be asked about their concerns about the project and the current operations. To keep especially the casual employees ("Juicers") satisfied there can be certain benefits for them if they charge a certain number of scooters every night (like discounts for Lime services)
- **Competitors:** Lime needs to actively watch its competitors to recognize early when they develop new features that give them economic advantages. If that happens, these features should be quickly copied by Lime. The biggest threat here is Bird – so Bird's actions need to be watched closely. However, smaller competitors must not be ignored because they can also gain size quickly if they can bring novelties on the market. In such a case, Lime should consider buying the small competitor before it becomes too big and a real threat.
- **Regulators:** Regulators can be a huge threat for Lime-S. So, there should be regular meetings with the local authorities in which current regulations and plans for future regulations are discussed. In these meetings Lime can also take away possible scepticism of the regulators about the project. This may result in more acceptance in the future and weaker and more welcoming regulations for the e-scooter business. After every incident in which Lime comes in conflict with local authorities, Lime should actively communicate with the specific authority to be able to learn from the incident and to improve its practices in the future.
- **Managers:** Managers are naturally involved in the project as they are the ones who make and carry out decisions. However, it is important to recognise that in a project like Lime-S every single senior manager should be actively and regularly approached and asked about his/her concerns and the viewpoint of his/her department. Lower level managers should be informed and asked about their opinions as well, but this can happen on a less frequent basis than with senior managers because lower management naturally has less power and influence.
- **Major investors:** Major investors should be actively approached and informed about the project and about planned future steps. So, regular meetings have to be held in which the project is explained, and the investors are asked for their opinion. Whenever there is a(n) (unexpected) change within the project, they should be informed immediately.
- **Minor investors:** To manage minor investors it will be enough to keep them informed with newsletters and offers to come to meetings with company representatives to discuss current events.
- **Residents:** To manage residents successfully, Lime should talk to representatives in that area to find out how the public feels about e-scooters. With those representatives' issues can be discussed and Lime should try to design its services in this area in a way that is liked by the residents. So, Lime can prevent resident complaints and keep this group of stakeholders satisfied. However, even with the best preparation there is the risk that e-scooter incidents occur, and the public begins to worry about e-scooter services. To manage such a case, it is important not only to talk to the representatives but also organise public meetings every resident can attend and voice his concerns.

SWOT Analysis

Strengths (Internal)

- Lime might argue that it is more secure and easy to track as compared to dock less bicycles. The fact that they track its location means it may be easier to reduce street clutter therefore arguing that it may be a better option compared to the dock less bikes. (Ward and Curran, 2019)
- Easy access for the riders & allows riders to monitor battery life – their app allows users to track battery life and they are easily accessible since all you must do is have their app and scan the code to use the scooter.
- Environmentally friendly. The scooters have low gas emissions, which is likely to attract more customers in a world that is increasingly becoming concerned with the climate.
- Economic – compared to other forms of transport, it is quite economic for short distance travelling considering it only costs a dollar to unlock the scooter. Riders could opt to use a cheaper alternative when available and Lime offers that.
- Lime has an advantage of heavy investment backing from companies such as Uber, Alphabet and partnerships with Uber. (Wiggers, 2019) This helps Lime in the development of their products which could be an added advantage over other competitors.
- In the developing scooter sharing and micro-mobility market, Lime has become one of the top companies in that sector and is also considered one of the pioneers alongside Bird, and it also became 1 of the fastest ever US companies to reach billion-dollar valuation.

Strength	Valuable	Rare	Inimitable	Organisationally feasible	Priority
More secure and easy to track	✓	✓			5
Easy Access	✓	✓	✓	✓	3
Environmentally friendly	✓				4
Economic	✓				3
Investments and Partnerships	✓	✓	✓	✓	1
One of the top docks less e-scooter companies.	✓	✓	✓		2

Weakness (Internal)

- Subject to vandalism – the fact that they are always going to be in the public means that they are also subject to vandalism, resulting in serious damage that can even prevent people from using them and could cost Lime for repairs.
- Safety. There can be electric scooter related injuries involved and Lime could be held accountable because of this. Some of these safety concerns could result in lawsuits, which if lost, could prove costly to Lime. Other concerns about the power and speed of the electric scooters have the public questioning the safety of the scooters themselves.
- They may be prone to hacking and, in such cases, Lime could be held responsible for such actions.
- Despite having a high valuation and a lot of large companies such as Uber and Alphabet investing in Lime, competitors such as Bird are acquiring investment at a higher rate and have a high valuation twice that of Lime (Kolodny and Levy, 2019). This could put the competitors at an advantage when it comes to technology advancement because of the investments.

Weakness	Rare	Inconvertible	Costs	Priority
Subject to Vandalism		✓	✓	2
Safety	✓		✓	2
Prone to hacking		✓	✓	3
Lower valuation compared to competitors	✓	✓		1

Opportunities (External)

- Increasing popularity of electric scooters in general. Lime has seen a popularity soar in countries and other places it is available. It has also recorded 5.5 times increase in trips. (Wiggers, 2019). When it was introduced in New Zealand, it clocked up to more than 300,000 rides within a month. (Ward and Curran, 2019)
- R&D funding and investment – considered the future of technology and electric vehicles in general, there could be a lot of investments coming in from the outside. Venture capitalists are betting that this fledgling market will grow rapidly. (Kolodny and Levy, 2019)
- Advancement in technology by manufacturers may reduce unit costs and make Lime more profitable. Technology innovations such as increased battery life and sturdier e-scooters with better materials, efficient construction, and larger wheels could reduce costs and increase unit life. (Ajao, 2019)
- There has been an increase in concern of climate change and the need to move from use of fossil fuels. Socially, the recent generation prefer being associated with trends that are climate friendly and the scooters are compatible with urban lifestyle.

- Positive reception and feedback from the areas Lime already operates in could offer a chance to be able to expand into other countries, cities or markets.

Threats (External)

- No electric scooter lanes unlike bike lanes, which could result in clashes with cyclists, pedestrians or motorists. Pedestrians might not like the introduction of electric scooters and them being used on pedestrian pavements and this could result in complaints about the safety of the riders themselves and pedestrians.
- Competition in an increasingly popular industry/competitive market. Other companies such as Bird are also vying for the top spot in the industry.
- Clash with laws and government authorities, and regulation. Some authorities may impose strict restrictions on the electric scooters. Riders in Sydney could be restricted to people over 18 years old who hold a driver's licence and could only be ridden during the day (Dye 2019). These restrictions could make it difficult for Lime to operate as they require.
- Experience of the riders themselves and obeying the law. The company has no control over how their users act when their using the electric scooters and negative actions by the riders could still affect Lime. The company also may not be able to trace if the riders are legal or not.
- Environmental concerns over the lifecycle and manufacturing of the scooters. The impacts associated with the manufacturing, materials and transportation used to collect them for recharging have a significant impact on the environment. (Hollingsworth, Copeland and Johnson, 2019).

Prioritised SWOT Analysis

The internal strengths for Lime were ranked based on VRIO (Valuable, Rare, Inimitable, Organisationally feasible) criteria. This criterion allowed to determine the importance of each strength, compared to the other strengths. As for the weaknesses, they were ranked according to a set of competitive liability criteria, which is rareness of the weakness, if the weakness is inconvertible and if the costs associated with the weakness cannot be passed on to another stakeholder.

Strengths <ol style="list-style-type: none"> 1. Investment and partnerships with large companies. 2. One of the top companies in the dockless e-scooters market. 3. Economic 4. More secure and easier to track compared to dockless bikes. 5. Environmentally friendly 6. Easy access for the riders & allows riders to monitor battery life. 	Weaknesses <ol style="list-style-type: none"> 1. Lower valuation and investment compared to competitors. 2. Safety. 3. Subject to vandalism 4. Prone to hacking.
Opportunities <ol style="list-style-type: none"> 1. Advancement in technology 2. Expansion into other countries with positive reception. 3. Research and Development (R&D) funding. 4. Increase in popularity in general and in the technology industry. 5. Associated with helping fight climate change. 	Threats <ol style="list-style-type: none"> 1. Clash with laws, governments and regulation. 2. No electric scooter lanes unlike bike lanes 3. Competition in an increasingly popular industry/competitive market. 4. Environmental concerns about the manufacturing process. 5. Being held liable for rider's mistakes.

Possible Strategies

Quadrant 1: Strengths/Opportunities

Lime has acquired a lot of investments from large technology companies, including Uber and Alphabet. The funding from these companies could assist Lime in further research and development to develop new or improved electric scooters and services, which may result in competitive advantage. Another external factor that could benefit from the investment is the opportunity to expand into other markets or countries due to the positive reception they receive from areas their scooters already operate in.

Quadrant 2: Weaknesses/Opportunities

To overcome the safety concerns which could result in lawsuits against Lime, the company could work on terms that make it clear that they focus on the safety of the riders and pedestrians, providing evidence for such, and working on improving the electric scooters to make them as safe as possible. Lime may also have to convince the public that their electric scooters are safe for the road, despite the power and speed of the electric scooters. This is the best way for Lime to avoid being

held accountable for some injuries to riders as they may have made it clear they cannot control rider's actions such as excessive speeding.

Addressing the safety issue may also change public perception and will help in case they wish to expand into other areas.

Quadrant 3: Strengths/Threats

Lime's place in the electric scooter market and their partnerships may be crucial in keeping them ahead of competitors. From investing in other innovative aspects of their products, to focusing on increasing their market share by expanding into other countries and partnering with other micro-mobility companies, Lime can stay ahead of the competition in the market because of these factors, possibly reducing the threat of both established and growing competitors.

There could also be a possibility of increased influence and in such cases, it is an added advantage that could reduce some of the strict regulations set by authorities in certain areas.

Quadrant 4: Weaknesses/Threats

To be in a favourable position to overcome some regulation and clashing with laws, Lime may need to focus on improving the safety of the riders and ensuring the safety of the general public from their riders. As for having investments less than that of their competitors, one strategy that might work at such a point is that they will have to come up with more innovative or unique ideas for their products and operations using the financial resources that are already available to them, which may allow them to keep up with companies such as Bird.

Problem Identification & Description

Problem 1 - Injuries

<https://www.businessinsider.com.au/minimum-of-1500-us-e-scooter-injuries-in-2018-2019-2?r=US&IR=T>

<https://www.brisbanetimes.com.au/national/queensland/riders-unaware-of-dangers-80-lime-scooter-riders-injured-in-two-months-20190508-p51l5h.html>

Injuries are one of the primary discussions when Lime S scooters are brought up. The high-powered scooters making a breakthrough in mobility around busy cities are creating quite the health hazard for people who aren't properly educated. The Queensland ambulance service reports during April and May of 2019 over 80 people had to be treated for injuries, that's an average of more than 1 per day. The ambulance service believes blame should not be placed on Lime S scooters and should be placed on the riders. Riders that are not understanding the power and hazard these scooters possess is the biggest threat of injury. Factors contributing to injuries include lack of helmets, riding under the influence of alcohol or illicit drugs, riding on the road and the sheer power of the scooters themselves. These factors make the injury rate quite high and need to be addressed in order to bring the injury rate down and allow the scooters to better flourish as the future of mobility in high population cities. Bugs and glitches are also of high concern for lime as some very dangerous glitches in their system have surfaced over time. When users sign up for the lime service they are required to go through a process which teaches you all about the safety and process of riding the scooter in the safest manner while also providing a set of the local road rules and a reminder to wear a helmet. Safety communication is of high importance for lime and will continue to be considered a high priority.

Problem 2 - Litter/scooters being discarded (Helmets)

<https://www.abc.net.au/news/2019-03-30/electric-scooters-riders-fined-safety-breaches-brisbane-qld/10956110>

One of lime's major problems is how the scooters are parked creating litter and image concerns they leave with the city they are being used in. Concerns like the scooters being thrown into lakes or just left lying on the ground on the street need to be addressed. ABC news talks about the helmets, helmets are provided with each scooter but aren't attached to each scooter. This results in the helmets being littered which as well causes another concern for litter and missing helmets. The scooters need to have a requirement to be parked correctly maybe offering some suggestions for good locations to leave them, also potentially adding some hubs to leave them. Helmets need to be reattached to the scooter before the user leaving it so that helmets are readily available to each user as they wish to use the service. This will allow other users to use the service more effectively and help preserve the city's image. Some of the suggestions do hurt the convenience aspect that lime is going for with their tap and go leave it anywhere system, some investigation into better ways to overcome these problems and challenges would be beneficial to try and preserve the convenience aspect of lime scooters. Overcoming these challenges will help lime to be more accessible to people that don't plan to use e.g. not carrying a helmet or any safety equipment they might desire to use the service.

Problem 3 - DUI

Driving under the influence of substances that will hinder your reactions and perception and make it difficult to drive effectively. This doesn't change for riding e scooters and is potentially more dangerous than in a car. E-scooters don't have the safety features a lot of cars do now and that makes accidents far more dangerous than they are in cars. This means that the lax policing on DUI on e-scooters is detrimental to their safe use. Lime would like to see injury rates on scooters reduced. To do this scooter need to be used with a very low blood alcohol content or not under the influence at all. E-scooters need to be used under the legal driving limit of alcohol or even with no blood alcohol content to ensure that safe use is upheld. No drugs should be in a user's body while using the e-scooters to ensure the safest use possible. Due to the nature of scooters being used not on the road policing DUI through conventional means is very difficult. There isn't an obvious ethical way to test blood alcohol content remotely without jeopardizing the convenience aspect that lime is known for. Driving under the influence is a real concern for lime with no simple solution for rectifying.

Problem 4 - Laws/power concerns

Some reference links on these on the specification page with more research to come

<https://www.budgetdirect.com.au/blog/australias-electric-scooter-laws-by-state.html>

Lime-s Scooters are more powerful than anything that has come before them. This pose's concerns to current state laws and regulations. Currently in Queensland the scooters must only have a 200 watt or smaller motor and reach a maximum speed of ten kilometres per hour. Currently Lime have a trial permit that has been extended allowing them to exceed this. Outside of Brisbane however this permit does not apply, currently over 22 scooters have been confiscated on the Gold Coast for exceeding laws says an article by budget direct. Similar trials were offered in other states with varying levels of success, Brisbane is by far the most lenient to Lime with their laws so far.

Next Step

We have identified five problems/ issues within the company “By” that could impact the success of the company. Problems such as Injuries on scooters, littering scooters, DUI, Laws/power concerns, road rules (talked about in detail above) can have a bad effect on the company creating a bad image. In order to prevent or minimise the issues the company must take steps towards these issues in attempted to solve. We have analysed this issue and suggest ways they could be solved below:

Injuries

One of the major problems is the injuries that have been caused by the use of the scooters. The blame can be placed on many things such as the rider themselves not using the scooter properly hurting others or themselves due to negligence or just uneducated. Lastly glitches within the scooters have also raised since the launch that have causes accident.

In order to solve or minimize these issues, there are a few actions that Limes Electric Scooter Rentals could take when it comes to the rider. Right now, a rider when they first use the scooter is put through a tutorial on how to use the scooter. Our recommendation to add to this tutorial, sign up and notification system is as follows:

- Teach users how they should be surveying their surroundings so they can judge safe paths.
- Make it so new users have to use scooters on a lower power mode for the first run to get an understanding of the scooters power.
- Riders will not always be the reason for an accident, it could be caused by negligence by pedestrians. During the tutorial it needs to teach the user to avoid pedestrians they could see problems occurring.
- Create more reminders for safely such as wear your helmet and reminders about using and surveying surroundings when using the scooter. These reminders show when you first start the scooter.

These are some options the company could take to solve/minimize the risks of the problems occurring. They could choose to act on all suggested ideas of just some. The basis of these options is to further educate the users on how to use the scooter in a safe way that will reduce the risk of hurting themselves and others. Furthermore, is the idea to add a training run on a user's first use to ensure they understand the power of the scooter and also background checking users driving history to ensure they are a trustworthy person to use the scooters in a sensible manner.

The last thing that have caused injuries is glitches happening on the scooters themselves. This issue can be solved by doing more intensive testing before they are put in the streets. The scooters should have constant check-ups whether or not weekly fortnightly to ensure scooter are in working order.

These are just some suggestions that could be implemented to help reduce the risk of injuries that can occur.

Litter

The company must also solve the issue of the scooters and their helmets being litter around the cities they are in. This creates image concerns for the company and the city. To solve this issue there are some simple things that can be done to discourage the behaviour:

- Place hubs around the city where scooters can be parked
- Making areas to clip the helmets too on the scooter
- Apply GPS to scooter to know if they have been left in an inappropriate place
- Create logs on the scooter of past users to know if a user littered the scooter. Fi so you can lock them out for using the scooter

Form these ideas the company could apply some or all of these to reduce the amount of litter created by the scooters being thrown away inappropriately. Unfortunately, due to the unpredictable nature of people we cannot completely stop the litter, but we can discourage it and lower the amount that does happen.

DUI

Driving under the influence is a massive problem when it comes to the scooters as they do not have many safety features. In order to reduce the amount of injuries that is caused by DUI the company could apply some of the following:

- During sign up make it so they need proof of identity such as driver's license this than could be used to see if they have a record of being under the influence. From that the system than could judge if they are allowed to use the scooter based on past driving.
- Notification system at the start warning about DUI
- Get police to monitor the use of scooter and if they find people using them under the influence enforce a fine.
- Educate the dangers of DUI in the tutorials

This issue is much the same as littering and is extremely hard to fully stop due to the nature of people. The best the company could do is background checks on users based on their driving history, reminders about the dangers of DUI and make it discourage to DUI by creating fines for doing so.

Laws/power concerns

Lime Scooters are high powered scooters that create power concerns in most cities. As of right now they have a permit to run in Brisbane but outside of this, they are not allowed in order it remove these concerns the company can do some or all of the following:

- Create restrictions on where the scooters are allowed to go. If a user does not follow the restrictions could be fined or locked out of using the scooters for a time frame.
- Lower the power of the scooter to fit into the limits of the cities
- Get permits in each city they wish to have the service in like they have done in Brisbane.

Lime scooters must enforce where their scooters can be taken to prevent them from leaving the city bounds. They will also either need to change the power of the scooters to follow the rules of different areas or get permits to allow them in different areas. Unfortunately, one of these ideas must be followed as they must follow the laws restrictions.

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Appendices

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