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## **MSc in Engineering Management**

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### **Forever Bikes**

Group 21

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## Executive Summary

Technology has the potential to resolve a wide range of problems. Forever Bikes is one of the businesses that prioritizes customer concerns and incorporates technology to resolve their concerns. It is a bike company that promotes innovative riding experiences to as many people as possible. Initially based in a rural location, the company later relocated to an industrial estate to gain exposure. To build a strong brand reputation, the company emphasizes the use of good quality and sustainable materials. Forever Bikes' current product lineup consists of two products named United One and Compact One. The United One is an electric cargo bike aimed at young families for road leisure. The cargo bike can be used by the parents to stroll their kids or pets around the city or even to carry groceries. The unique selling point is the foldable base that converts the cargo bike into a standard bike. Using an average pricing strategy, the price is set at £750. The Compact One, on the other hand, is an electric foldable bike designed for road commuters. The bicycle can be folded and easily stored in a compact space. The unique selling point is the detachable battery, which makes charging more convenient and reduces battery theft. Using an average pricing strategy, it is priced at £700.

Forever Bikes introduced the United One in the third quarter of Year 1, followed by the Compact One in the fourth quarter of Year 3. The company initially sourced its raw materials from Williams, but switched to Chang at the end of the fourth year to promote sustainability. Forever Bikes is beneficial due to their approach to Quality Control. The company uses a fishbone diagram to determine the root causes of problems in advance; as a result, the return versus sales ratio decreased, which increased the profits indirectly. Moreover, the company's staff capabilities are a significant asset, with a highly skilled and knowledgeable management team that takes pride in developing solutions to confront customer concerns. As part of its brand promotion strategy, Forever Bikes conducts extensive market research. After conducting research, the company decided to promote its products via multiple channels, including television and radio advertisements and social media. The company also established export distributors and online retail as its primary sales channels, as these channels had the greatest potential for sales growth. At the end of the fifth year, Forever Bikes reported a net profit of £163,436, sales of 4,905, and a net asset value of £3,432,491. The company achieved their level 3 targets in all three areas. The numbers themselves demonstrate the immense business potential and financial health of the company. With its unique offerings, solid financial reports, and exceptional staff capabilities, the company has massive prospects to become a market leader in its industry.

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Executive Summary	Miten Shah & Rahul Bangad
Introduction	Miten Shah
Product Portfolio	Rahul Bangad
Sales & Marketing	Miten Shah
Legal Aspects	Rahul Bangad & Maierdanni Nasier
Financial Reporting	Yunze Zhang
Project Management	Zhequan Yu
Risk Assessment	Zhequan Yu & Chenyi Cui
Roadmap	Maierdanni Nasier & Miten Shah
Conclusion & Recommendations	Miten Shah & Rahul Bangad



## 1. Introduction

The bike market is anticipated to grow as people's focus shifts to environmental consciousness. Considering only the United Kingdom, the bike market would be worth approximately £1.9 billion in 2022, 19% more than in 2019 [1]. **Forever Bikes** is the company aiming to make an impact in this market with its product line. The company's tagline, "Your Forever Choice," indicates that it intends to reduce customer concerns with its products, thereby making them the customers' forever choice.

The motivation behind the business is the opportunity to improve customers' lives through the use of technology, or simply to promote the use of bikes and provide features that make a small difference in their livelihoods. In addition, the logo was designed with an infinity symbol to represent the term forever. The shade of blue was used to reflect trust, and the shade of purple was used to depict the use of good quality materials. The logo is displayed below.



Figure 1: Logo

The current product lineup consists of two products. The first is the cargo bike named **United One**, which is essentially an electric bike with an added cargo that parents can use to carry their children or pets throughout the city or even to hold groceries. The motivation behind this product is to make travelling with children easier and more environmentally friendly for parents. The second product is named **Compact One**, which is primarily a foldable electric bike with a detachable battery. The motivation behind this product is to reduce thefts and to create a bike that adults can use to travel in an eco-friendly manner without having to worry about storage space since it can be folded into a compact bike.

### 1.1 Business Profile

#### 1.1.1 Management Team

The management team of the company consists of six professionals. **Miten Shah** is the CEO of Forever Bikes and is known for his leadership skills. He earned a bachelor's degree in computer engineering from IIT Mumbai and an MBA from London Business School, where he received an award for excellence in asset management. Therefore, he will manage the overall



operations of the company. **Rahul Bangad**, the organization director, has eight years of experience assisting employees to align with business objectives. He is well-known for his organizational and creative abilities, as well as his mentorship and collaboration skills. He was one of the top ten holders of the Master of Business Administration degree from University College London. Therefore, he will manage the employees and establish long-term goals. The Operations Director is **Maierdanni Nasier**, who has seven years of experience in operations and program management. He is skilled in the road bike industry, cash transfer programming, emergency response, analytical skills, and civil defense activities. He is an accomplished operations expert with a PhD in business administration. He will therefore be in charge of daily operations and production. **Chenyi Cui**, the Sales & Marketing Director, has 10 years of sales experience and is acclaimed for his communication and creative abilities. He also holds a Master of Business Administration in Marketing from Imperial College London. Therefore, he will implement brand-building marketing strategies. **Zhequan Yu** is the R&D Director, and he is well-known for developing new products and deploying researchers to create technologies that will be used in them. He holds a Doctor of Philosophy in Product Design from the University of Edinburgh and has ten years of experience conducting research on foldable and detachable technologies. Therefore, he will conduct research to develop new, innovative products. **Yunze Zhang**, the Financial Director, is well-known for financial management, accounting organization, analysis and prediction of profit loss thresholds, and annual financial budget. He holds an MBA in Finance from the University of Warwick and is recognized for his ability to maintain the company's economic efficiency even during recessions. Therefore, he will be responsible for the company's overall finances.

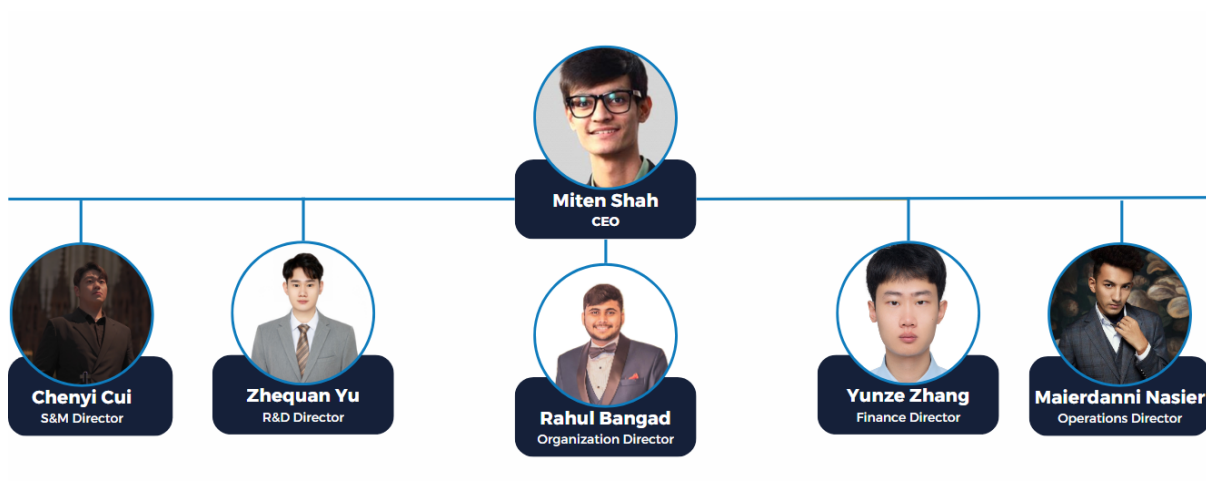


Figure 2: Management Team

### 1.1.2 Business Background

The initial location of the business was in a rural area, but it was moved to an industrial estate in the second quarter of the third year to increase exposure. When new products were introduced, production was increased, and resources were utilized, the size of the premises grew to 2,000 square meters by the end of the fifth year. The company began with a



single employee and had approximately 51 employees by the end of the fifth year, making it one of the mid-sized businesses. Two crowd funding loans worth £138,556 and £171,046 were taken out at the start of year 1 and year 3, respectively. Both loans had a term of 5 years. With the exception of small retail and direct sales channels, credit control was chosen as invoice financing to save funds. Furthermore, the directors are the sole acquirers of the company's equity.

### 1.1.3 Mission Statement

Forever bikes' mission statement states, "Our mission is to prioritize customer needs and provide innovative riding experiences to as many people as possible." This would demonstrate the company's focus on developing technologically-based solutions for their customers.

## 2. Product Portfolio

There are currently two products in Forever Bikes' product lineup. The first is an electric cargo bike named United One, and the second is an electric foldable bike named Compact One. These are listed in the table below.

Table 1: Product lineup

Sr. No.	Name	Type of bike	Tagline
1.	United One	Cargo bike	Keep your family with you forever
2.	Compact One	Folding bike	Keep your bike with you forever

### 2.1 United One

United One is an electric cargo bike aimed at young families. The parents can use it to carry their children or pets across the city or even to hold groceries. This product solves the problems parents encounter when travelling with children and is an environmentally friendly alternative to driving a car. Additionally, the cargo box is detachable, and the base on which the cargo is placed can be folded, enabling parents to use the cargo bike as a normal bike when they do not need the cargo.

Furthermore, United One is available in a single size and two-color options:

1. Black (#000000)
2. White (#FFFFFF)

### 2.1.1 Prototype of United One

The prototype includes a 250W battery, a detachable box, a foldable base, a harness, a raised-line design, and a tube-based framework, among other features. These are displayed in the image.

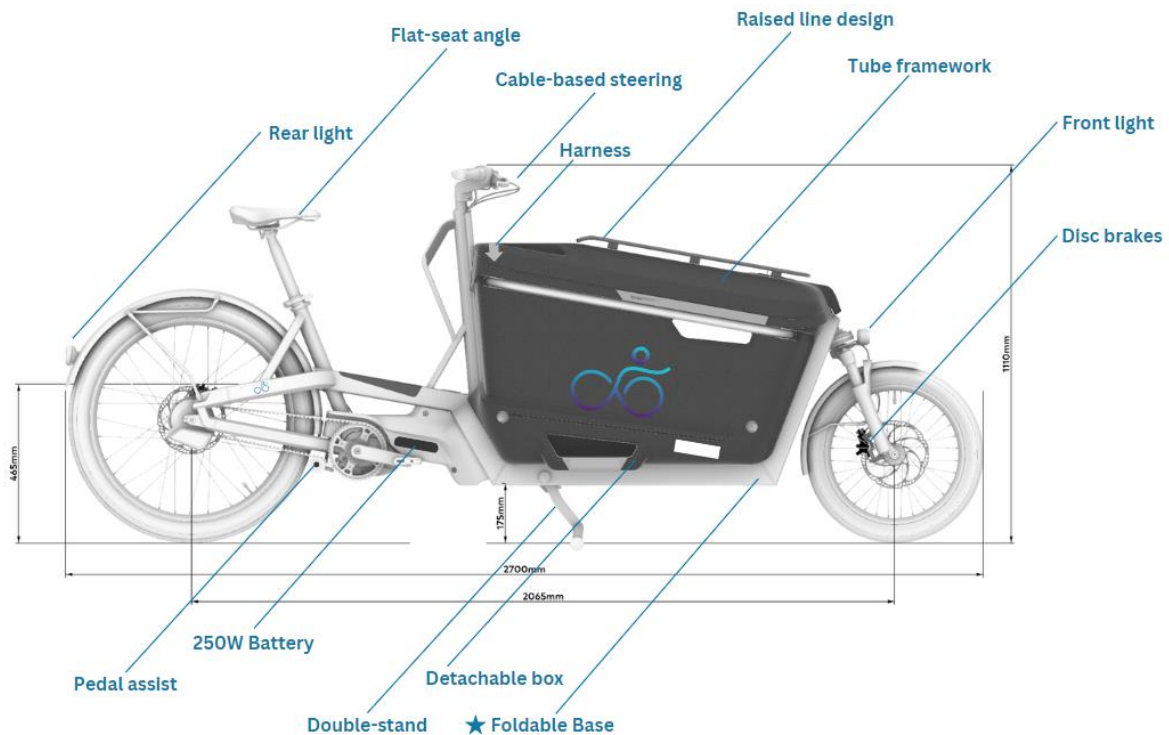


Figure 3: Prototype of United One

The product is designed with safety in mind, especially for children. The harness would serve as the children's seatbelts. The raised line design is intended to minimize injuries in the event of a fall. The raised bar would hit the ground first, and assuming the child wore a seatbelt, the child's head would not be subjected to major impacts. In addition, the tube framework would provide increased safety. In addition, the base on which the cargo is placed would be larger than the box itself to ensure that the box is balanced. With the assistance of a hinge and locking mechanism, the base would also secure the box. The cable-based steering makes it easier to turn the bicycle.

### 2.1.2 Technology Implementation

The cargo box is placed on the foldable base with a hinge and lock mechanism. The hinge connects two parts of the cargo box mechanically, allowing the aluminum section to pivot on itself. This allows the cargo box to be extended or removed. When the cargo box is extended or removed, the lock secures the aluminum section in place. The lock is a mechanism that prevents unintended movement or rotation of the aluminum section. It provides the cargo box with stability and security, ensuring that it remains securely in place while riding. The hinge





and lock facilitate the movement of the cargo box while simultaneously ensuring its stability and security at all times.



Figure 4: Hinge and lock mechanism

### **2.1.3 Technical Specifications of United One**

The technical specifications of United One are given in the next page.



Table 2: Technical Specifications of United One

<b>Tyre size rear (inch)</b>	27.5	<b>Front light</b>	LED Power E80
<b>Tyre size front (inch)</b>	20	<b>Grips</b>	Silicon foam
<b>Bike Length (mm)</b>	2700	<b>Handlebar</b>	Aluminum Alloy Material
<b>Bike Width (mm)</b>	700	<b>Stand</b>	Aluminum double stand
<b>Bike Height (mm)</b>	1110	<b>Number of gears</b>	7 (Three Modes)
<b>Cargo Box Length (mm)</b>	845	<b>Frame Material</b>	Aluminum Alloy
<b>Cargo Box Width (mm)</b>	565	<b>Bike load capacity (kg)</b>	225
<b>Cargo Box Height (mm)</b>	700	<b>Battery type</b>	Lithium-ion
<b>Cargo Box Load Capacity (kg)</b>	70	<b>Battery power output</b>	250W
<b>Box Material</b>	Expanded Polypropylene (EPP)	<b>Battery charger</b>	36V 2.1A
<b>Rear brake</b>	RT-66 203mm (disc)	<b>Waterproof</b>	Yes
<b>Front brake</b>	RT-66 180mm (disc)	<b>Maximum speed (miles per hour)</b>	15
<b>Total Bike Weight (kg)</b>	50	<b>Charging time</b>	3-4 hours
<b>Rear light</b>	LED 6V-36V	<b>Average Range (miles)</b>	30 - 40



The specifications were chosen with legal requirements, comfort, safety, practicability, and sustainability in mind. For instance, aluminum was used for the frame because it is resistant to corrosion, has a high strength-to-weight ratio, is eco-friendly, and much more. In addition, EPP was utilized in the construction of cargo boxes due to its high energy absorption, 100 percent recyclability, resistance to water and chemicals, and numerous other attributes. The battery output was not kept above 250W because British law requires a license if the output is greater than 250W [2].

### 2.1.4 Customer Segment of United One

The customer segment of United One is young families. The cargo bike is intended to make travelling with young children simpler and more enjoyable. In addition, the sub-segment would be road leisure. It holds the largest market share with 29.41% of the overall market. The table depicts the market share of every subsegment.

Table 3: Sub-Segment

Sub-Segment	Market Share (%)
Road Commuting	23.53
Road Racing	17.65
<b>Road Leisure</b>	<b>29.41</b>
Road Fitness	17.65
Road Touring	11.76

The leisure activities of young families include strolling with their children or pets throughout the city or going shopping as a family to spend quality time together. United One makes travelling with children or pets easier and more convenient due to the cargo box, which can also facilitate groceries. Additionally, using a cargo bike instead of a car will contribute to a more sustainable lifestyle.

### 2.1.5 Pricing of United One

The revenue model of United One is pay-per-unit, and its launch price is £750. When establishing prices, the manufacturing cost was accounted by examining the cost of raw materials. EPP, aluminum, saddle, silicon foam, tires, disc brakes, suspension, lithium-ion battery, and many others are among the raw materials. The cost of a 600 mm wide EPP sheet, which can cover an entire cargo box, is approximately £14.95 [3]. In addition, the RT-66-disc brake with a 203 mm rotor costs approximately £17.99 [4]. Similarly, the remaining costs of raw materials were incorporated into the manufacturing cost.



Additionally, United One intends good quality at a fair price. As a result, the average pricing strategy was used to determine the product's price.

		Price		
		HIGH	MEDIUM	LOW
Quality	HIGH	Premium	High value	Superb value
	MEDIUM	Over charging	Average	Good value
	LOW	Rip-off	False economy	Economy

Figure 5: Pricing Strategy

In addition, market research was a crucial consideration during pricing. Focus group market research was conducted to determine the price range customers anticipated based on product design and technology. The table depicts the percentage of people who would expect paying for United One.

Table 4: Focus group of United One

Price Range (£)	620	640	660	680	700	720	740	<b>760</b>	Remaining
Proportion (%)	12	0	14	2	19	0	2	<b>19</b>	32

Moreover, competitors' prices were also taken into account. Outbound Bikes was the most significant competitor in the Road Leisure segment. Their products were made with low-quality materials and sold for £550. Since Forever Bikes intended to emphasize good quality materials and innovative technology, a higher price was established. In the sales and marketing section, a comprehensive competitor analysis will be addressed.

### 2.1.6 USP of United One

The unique selling point of United One is its foldable base which transforms the cargo bike into a normal bike. The base can be configured into two different positions, including one with a cargo box in the front and one in which the cargo box is removed, the base is folded, and the



wheel is returned to the same initial position as the other bikes using a hinge and lock mechanism. When the cargo box is extended or removed, the hinge allows the aluminum sections to pivot or move relative to one another and fold in on themselves, while the lock keeps the sections securely in place. Overall, the multifunctional folding base mechanism is versatile and user-friendly.

## 2.2 Compact One

Compact One is a foldable electric bike with a detachable battery. The battery can be charged separately and reinstalled based on the user's preferences; this would also prevent the theft of batteries. This product was created to reflect the brand's mission statement and tagline, "your forever choice." United one targeted young family, whose children become commuters once they are old enough to attend college and work. As a result, the company developed Compact One to showcase their forever choice. This product solves the problem of storage space, which is prevalent among adult commuters, and reduces bike thefts because the customer can carry the compact bike with them.

Furthermore, Compact One is available in a single size and four-color options:

1. Black (#000000)
2. White (#FFFFFF)
3. Light Pink (#FFB6C1)
4. Light Green (#90EE90)

### 2.2.1 Prototype of Compact One

The prototype includes a 250W removable battery, a folding clamp, derailleur, a handlebar, and a saddle, among other features. These are displayed in the image.

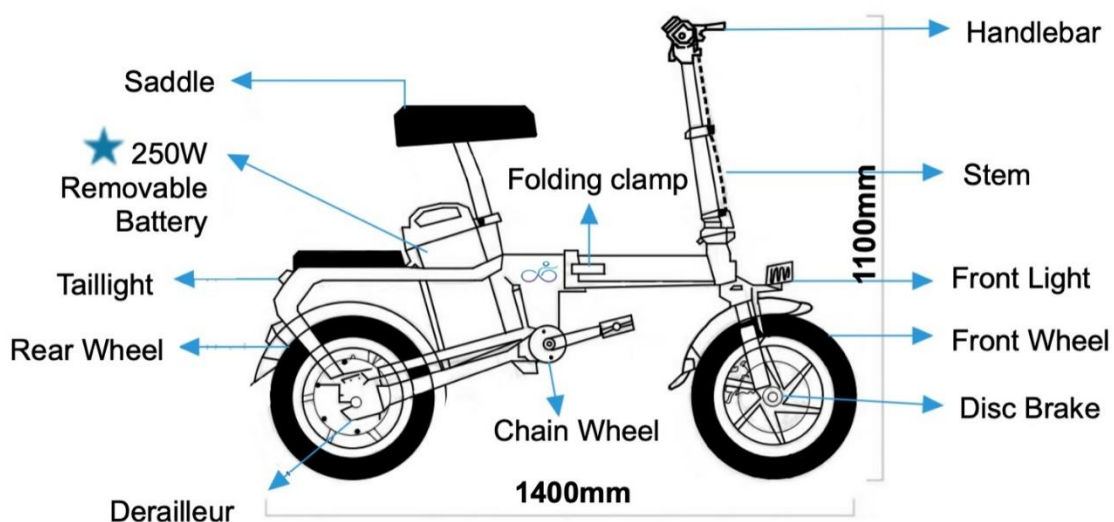


Figure 6: Prototype of Compact One



Pulling the folding clamp allows the bike to be folded. The image depicts the folded bike.

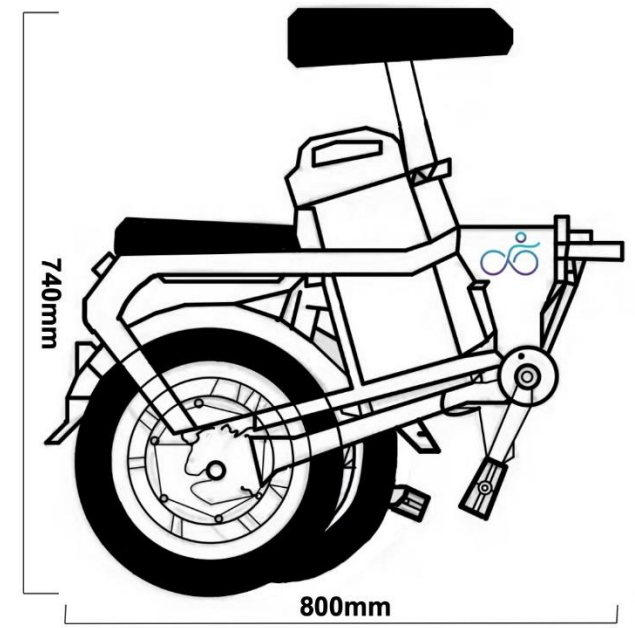


Figure 7: Prototype of Folded Compact One

### 2.2.2 Technology Implementation

The bike can be folded using the steps below.

1. To fold the headtube of the folding bike: Unclip the head pipe and rotate the buckle anticlockwise to fold it.



Figure 8: Folding the headtube

2. To pull up the folding clamp and fold the bike: Loosen the middle frame buckle, pull the folding clamp up, and fold the bike.



Figure 9: Pulling up the folding clamp

3. To lower the saddle and fold the pedal: Reduce the saddle and fold the pedal upwards by pressing it towards the frame and lowering it.



Figure 10: Lowering the saddle and folding the paddle

### 2.2.3 Technical Specifications of Compact One

The technical specifications of Compact One are given in the next page.



Table 5: Technical Specifications of Compact One

<b>Tyre size rear (inch)</b>	20	<b>Front light</b>	LED Power E80
<b>Tyre size front (inch)</b>	20	<b>Grips</b>	Silicon Foam
<b>Unfolded Bike Length (mm)</b>	1400	<b>Handlebar</b>	Aluminum Alloy Material
<b>Unfolded Bike Width (mm)</b>	570	<b>Stand</b>	Aluminum stand
<b>Unfolded Bike Height (mm)</b>	1100	<b>Number of gears</b>	7 (Three Modes)
<b>Folded Bike Length (mm)</b>	800	<b>Saddle height</b>	81cm-124cm
<b>Folded Bike Width (mm)</b>	400	<b>Battery position</b>	Central
<b>Folded Bike Height (mm)</b>	740	<b>Battery type</b>	Lithium-ion
<b>Total Bike Weight (kg)</b>	17.5	<b>Battery power output</b>	250W
<b>Frame Material</b>	Aluminum Alloy	<b>Battery charger</b>	36V 11.6Ah 18650 battery
<b>Rear brake</b>	RT-66 203mm (disc)	<b>Waterproof</b>	Yes
<b>Front brake</b>	RT-66 180mm (disc)	<b>Maximum speed (miles per hour)</b>	15
<b>Bike load capacity (kg)</b>	120	<b>Charging time</b>	3-4 hours
<b>Rear light</b>	LED 6V-36V	<b>Average Range (miles)</b>	30 - 40





Similar to United One, the specifications of Compact One were also chosen with legal requirements, comfort, safety, practicability, and sustainability in mind. For instance, lithium-ion batteries were used because they are lightweight, have an IP67 rating that makes them waterproof in water up to 1 meter deep, are sustainable, and much more. In addition, the maximum speed was not kept above 15 miles per hour because British law requires a license if the speed exceeds 15.5 miles per hour [2].

### 2.2.4 Customer Segment of Compact One

Commuters make up the customer segment for Compact One. This would include college students and individuals going to work. In addition, the sub-segment would be road commuting. As shown in table 3 previously, it holds the second largest market share with 23.53% of the total market. Furthermore, students and young single workers make up 23.53% and 35.29% of this segment, respectively. The table depicts the demographics of road commuting.

Table 6: Demographics of road commuting

Demographics	Market Share (%)
<b>Students</b>	<b>23.53</b>
<b>Young Single Workers</b>	<b>35.29</b>
Teenage Families	11.76
Young Families	23.53
Working Families, No Children	5.88
Early Retirees	0.00

The primary expectations of road commuters are comfortable commute and compact storage for their bike. The foldable concept of Compact One addresses these concerns. The foldable bike can be easily stored at the workplace and carried in subways, buses, and much more.

### 2.2.5 Pricing of Compact One

The revenue model of Compact One is pay-per-unit, and its launch price is £700. Similar to United One, when establishing prices for Compact One, the manufacturing cost was accounted by examining the cost of raw materials. Folding clamp, LED lights, aluminum, saddle, silicon foam, tires, disc brakes, suspension, lithium-ion battery, and many others are among the raw materials. The cost of a 36V rear light is approximately £15.19 [5]. In addition, the lithium-ion battery costs approximately £97.23 [6]. Similarly, the remaining costs of raw materials were incorporated into the manufacturing cost.

Additionally, similar to United One, the Compact One also intends good quality at a fair price. As a result, the average pricing strategy was used to determine the product's price as depicted in figure 5.



In addition, market research was again a crucial consideration during pricing. The table depicts the percentage of people who would expect paying for Compact One.

Table 7: Focus group of Compact One

Price Range (£)	620	640	660	680	700	720	740	760	Remaining
Proportion (%)	16	20	5	7	14	0	0	16	22

Moreover, competitors' prices were also taken into account. Cameron Cycles was the most significant competitor in the Road Commuting segment. Their products were also made with good quality materials and sold for £650. Since Forever Bikes intended to highlight innovative technology, a slightly higher price was set. As mentioned earlier, in the sales and marketing section, a comprehensive competitor analysis will be addressed.

### 2.2.6 USP of Compact One

The unique selling point of Compact One is its detachable battery. It provides the rider with greater charging flexibility, as the battery can be removed and charged indoors or in a remote location. Additionally, a detachable battery can make transporting the bike easier, as the battery can be removed to reduce the bike's weight. Furthermore, the removable battery options allow customers to store their batteries safely when not in use, thereby reducing thefts of expensive batteries.

## 3. Sales & Marketing

### 3.1 Sales Strategies

The initial aspect was branding. Since the product line was designed for road leisure and commuting, the customer anticipates comfort and practicality. Therefore, the branding was centered on providing the best comfort and practicality, and efforts were made to achieve this goal.

The other aspect involved demographic market research. Since the product line's targeted customer segment consisted of young families, students, and young single workers, demographic market research was conducted to determine the type of customer exposed to major promotion or sales channel. The information is depicted in the following tables.



Table 8: United One Demographics Research

United One Customers	Promotions	Targeted Sales Channels
Young Families	TV & Radio Adverts (90%)	Export Distributors (100%)
	Public Relations (70%)	Web Retail (80%)
	Social Media (70%)	Small Retail (60%)

Table 9: Compact One Demographics Research

Compact One Customers	Promotions	Targeted Sales Channels
Students	Social Media (90%)	Export Distributors (100%)
	Public Relations (70%)	Small Retail (100%)
	TV & Radio Adverts (50%)	Web Retail (90%)
Young Single Workers	Social Media (80%)	Export Distributors (100%)
	Public Relations (70%)	Web Retail (80%)
	TV & Radio Adverts (70%)	Direct (70%)

According to market research, social media, public relations, and television and radio advertisements were the most engaging platforms for the targeted customer segment. Thus, the majority of funds were allocated to these promotions. Additionally, export distributors, small retailers, and web retailers were identified as having the potential to increase sales. As a result, the number of sales visits in small and web retail was increased, and export distributors were offered a greater discount to acquire more outlets.

### 3.2 Promotion Strategies

The power of the brand was in the term "forever." It demonstrated the company's commitment to addressing customer concerns and demonstrates that the products are made of durable, good quality materials. The term "forever" was used in social media captions frequently to promote creativity and build brand alongside it. The company's bio also included the phrase "Your Forever Choice." The image below depicts Instagram bios and the creation of story highlights for various products.



Instagram

- Home
- Search
- Explore
- Reels
- Messages
- Notifications
- Create
- Profile



foreverbikesss

Edit profile

Ad tools



18 posts

8 followers

5 following

Forever Bikes  
Your Forever Choice  
[www.foreverbikes.co.uk](http://www.foreverbikes.co.uk)



Compact One



United One



New

POSTS

REELS

SAVED

TAGGED

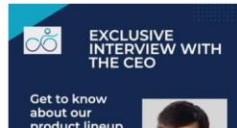


Figure 11: Instagram bio

In addition, an Instagram marketing strategy was devised to promote the company and the product (s). The strategy is illustrated on the next page.

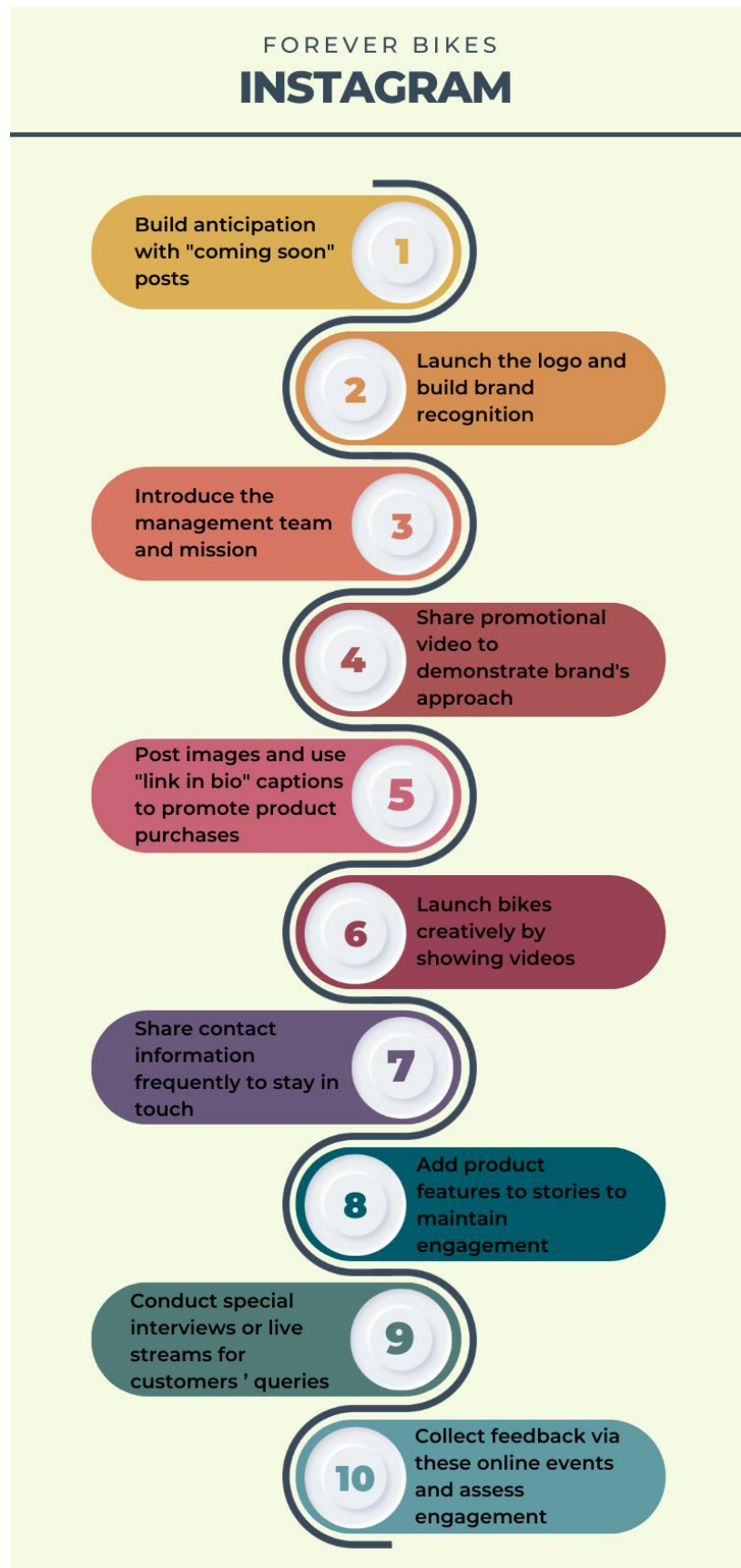


Figure 12: Instagram Strategy



Using screenshots, the execution of some of the strategy's steps is demonstrated. The screenshot of the innovative "coming soon" posts is included in the image below.



Figure 13: Coming Soon posts



In addition, the image below includes a screenshot of the captions that revolve around the term "forever" in an effort to increase brand recognition.

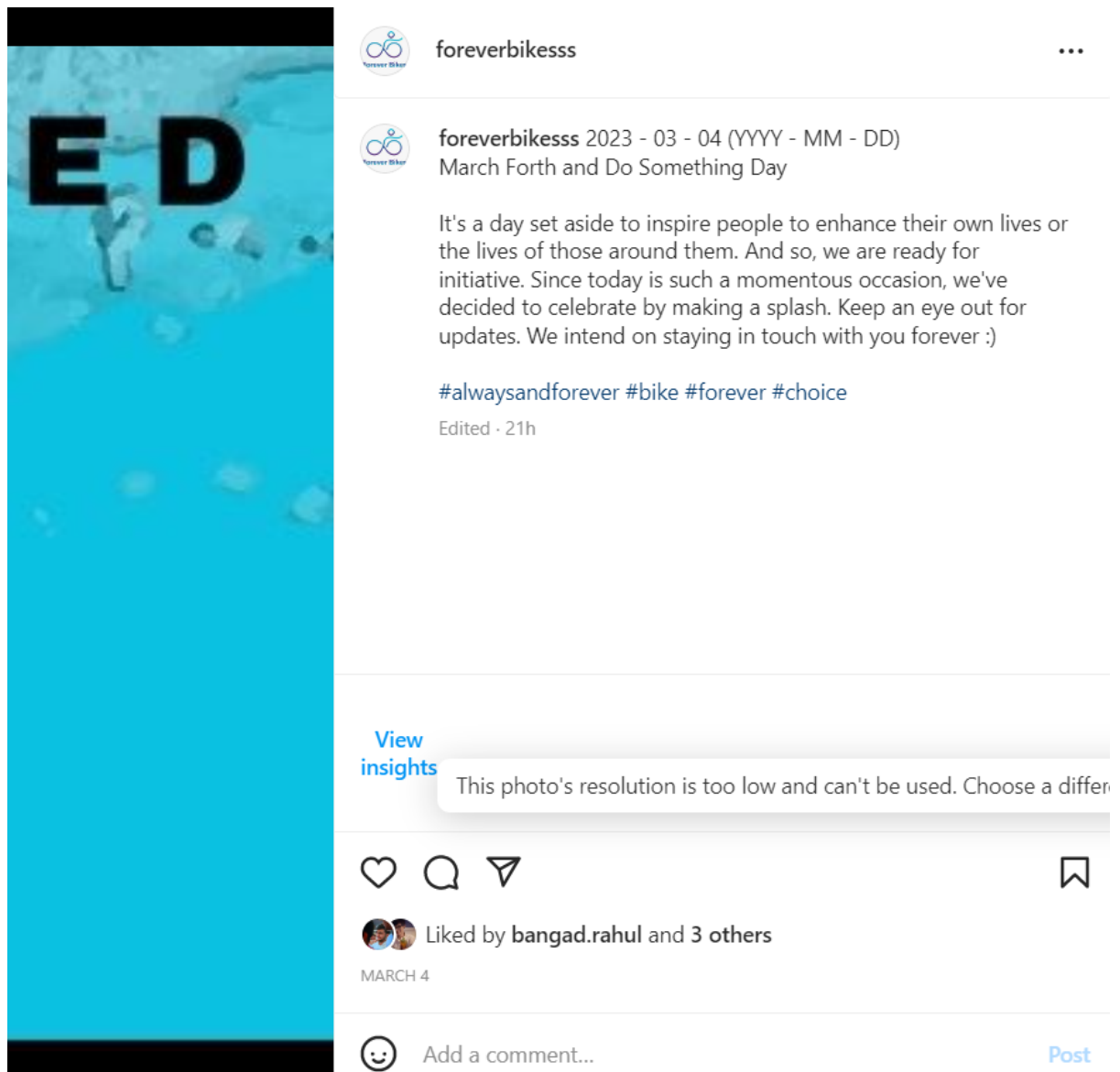


Figure 14: Innovative captions

Furthermore, Appendix A contain screenshots of management team posts and product prototypes shared on social media with "link in bio" captions to promote product purchase.



The image below includes a screenshot of the Instagram story highlight about the product.

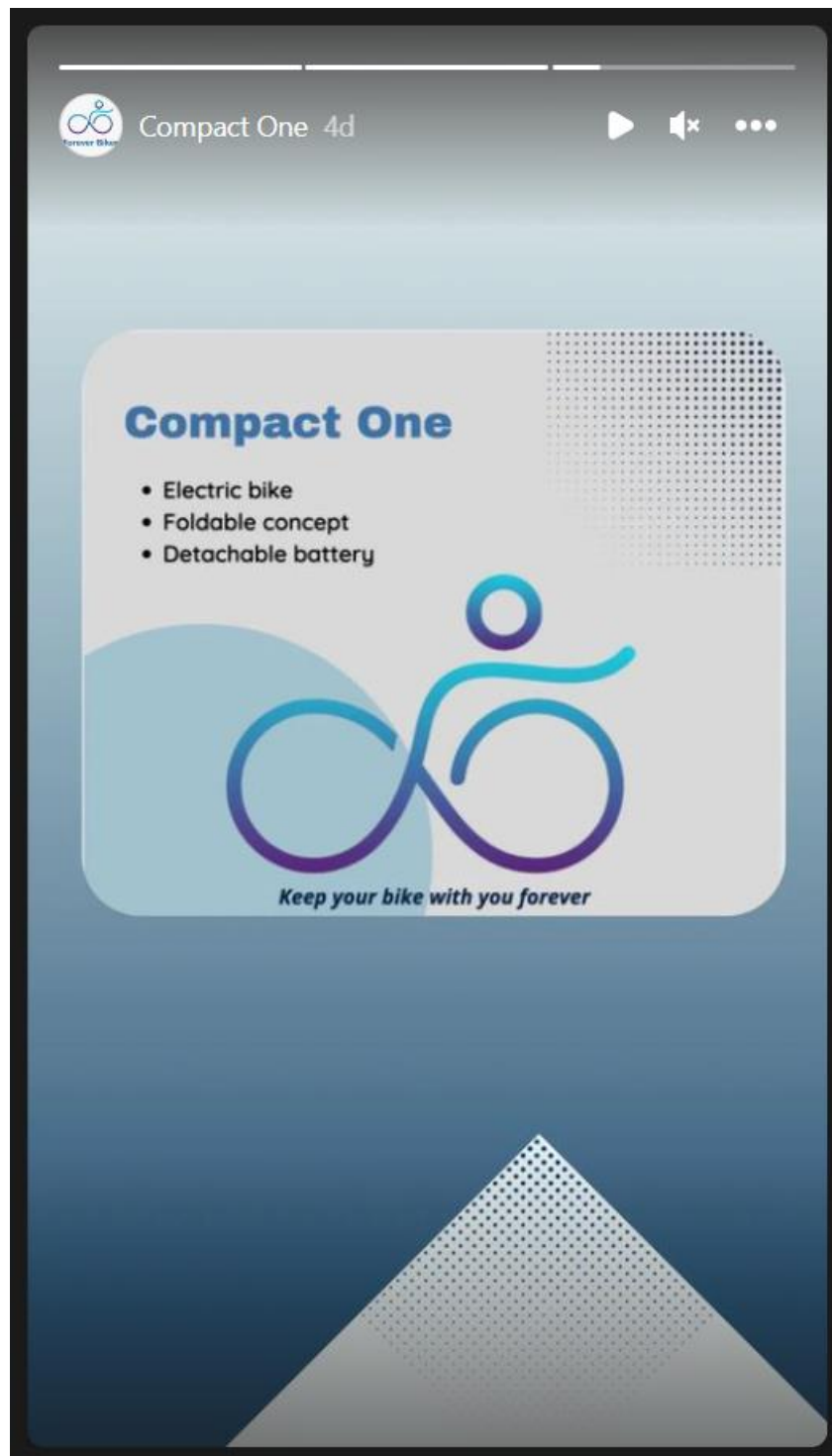


Figure 15: Instagram story highlights





Moreover, Appendix A contains a screenshot of posts related to sharing contact information for inquiries. In addition, the image below contains the post of an interview with the CEO regarding customer inquiries pertaining the product line.

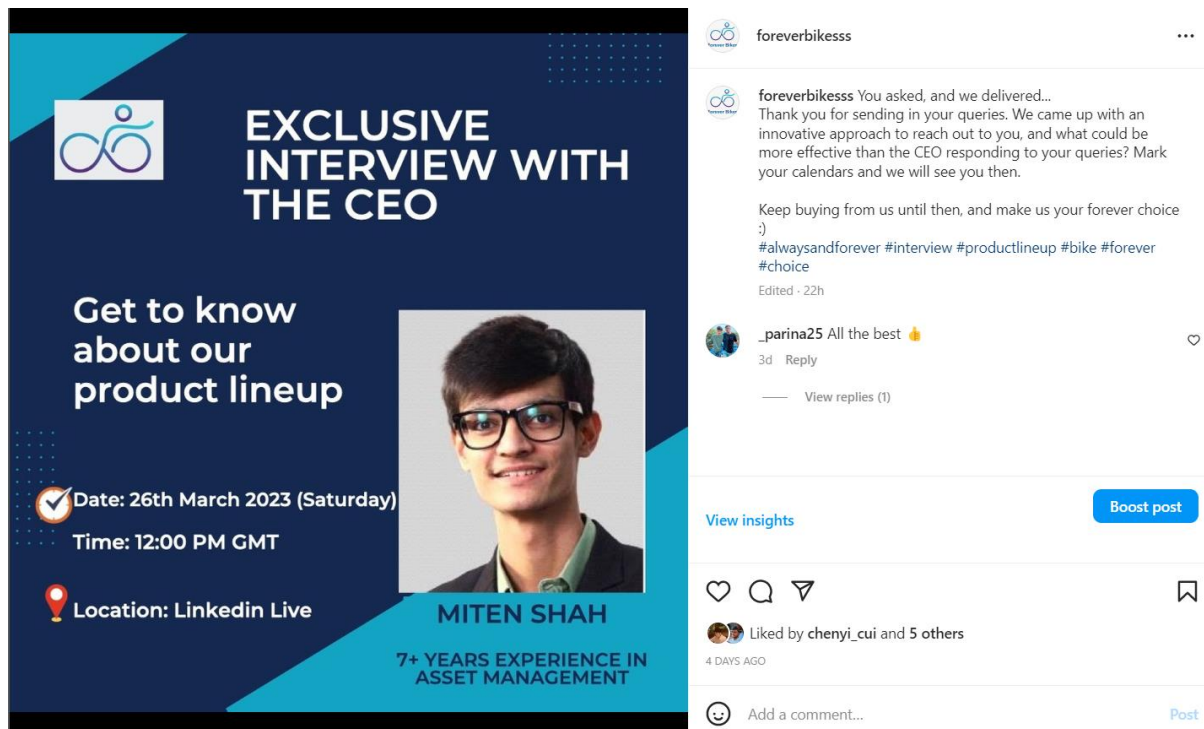


Figure 16: Interview post

The link to the Instagram channel containing promotional videos and posts created to increase engagement is provided below.

Link: [Forever Bikes](#)

### 3.3 Research Analysis

Before entering the market, research was conducted to determine the market's potential. For United One, research was conducted regarding cargo bike sales. In the year leading up to May 2022, electric cargo bike sales in the United Kingdom increased by 37% compared to the previous year [7].

After entering the market and introducing the product, the BCG matrix and product lifecycle were utilized to comprehend the present and future possibilities.

### 3.3.1 BCG Matrix

The BCG Matrix at the end of the fourth quarter of the fifth year is depicted below.

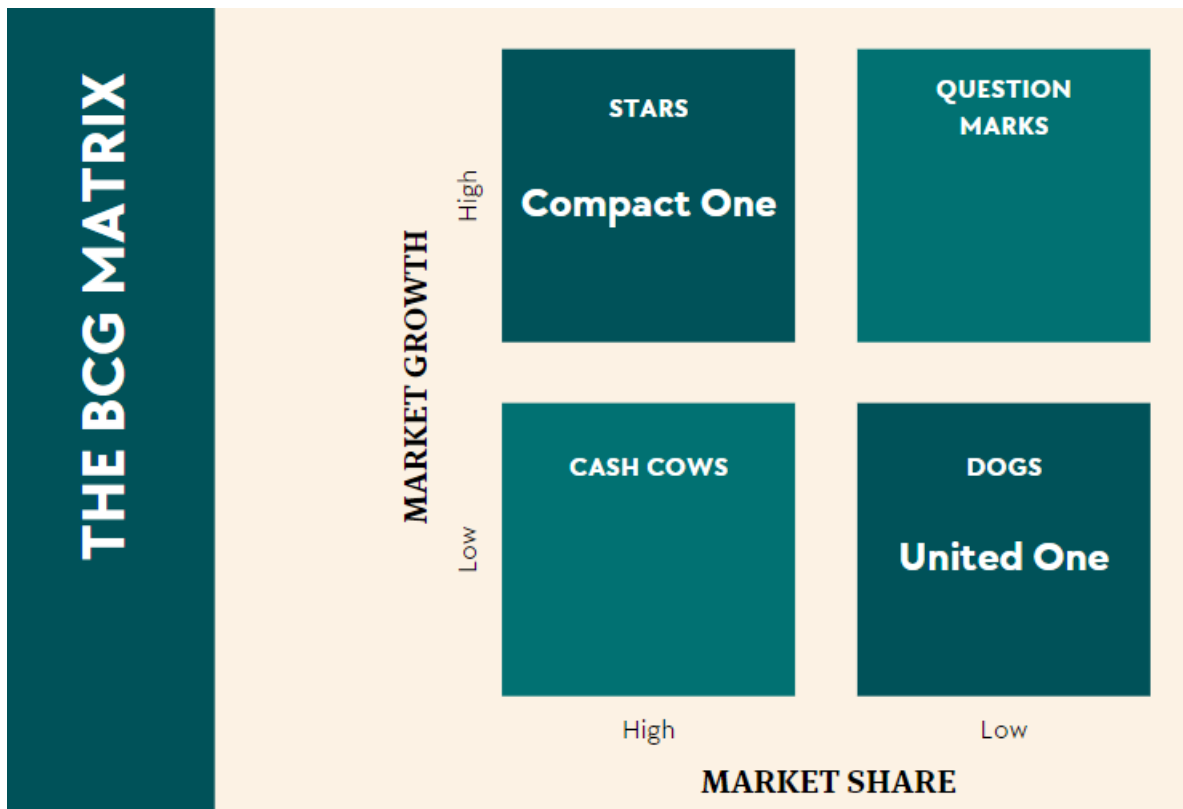


Figure 17: BCG Matrix

United One was introduced in the third quarter of the first year and gained popularity by selling approximately 1,450 units at the start of the third year. It was placed in the "question mark" in the first year and moved to the "Stars" at the start of the third year. Towards the end of the third year, Compact One was introduced, and within the first quarter, around 600 units were sold. This growth moved United One to the "Cash Cows" section and Compact One to the "Stars" section. At the end of the fourth quarter of the fifth year, United One's sales dropped to 166, causing it to be relegated to the "Dogs" section, whereas Compact One's sales totaled more than 4,700, allowing it to remain in the "Stars" section.

### 3.3.2 Product lifecycle

The Product lifecycle at the end of the fourth quarter of the fifth year is depicted below.

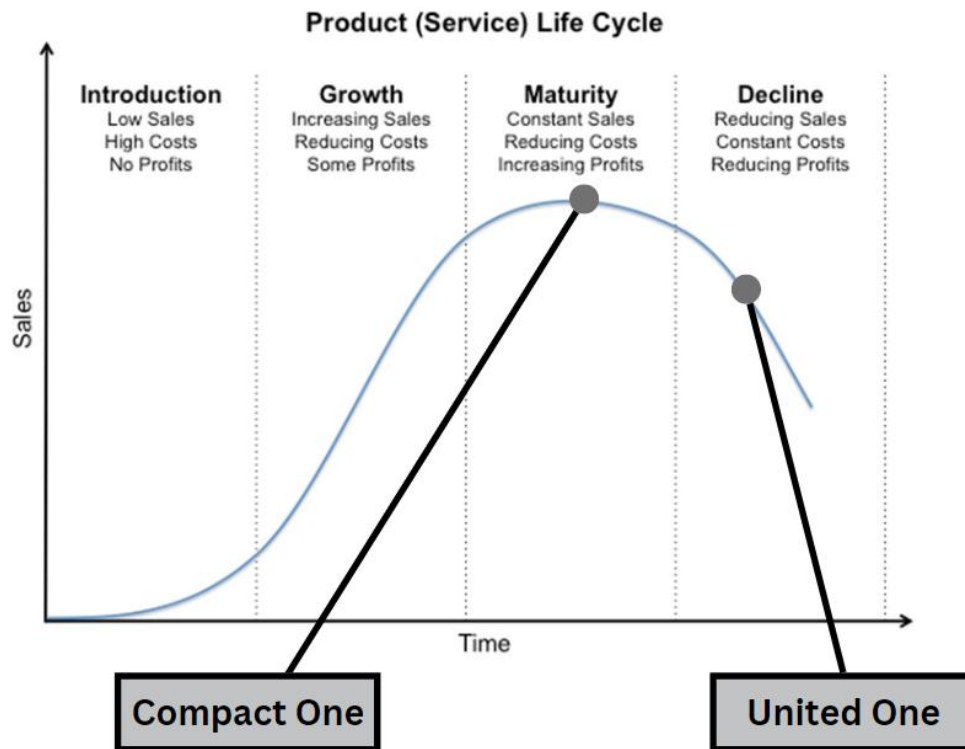


Figure 18: Product lifecycle

United One grew in popularity and reached the "Maturity" section at the beginning of the third year; however, after the release of Compact One at the end of the third year, United One sales decreased. Compact One reached the "Growth" section immediately after its introduction to the market, and at the end of the fourth quarter of the fifth year, it was placed in the "Maturity" section due to its continued customer popularity. In contrast, United One's sales began to decline, placing it in the "Decline" section.



### 3.3.3 Competitor Analysis

Outbound Bikes is the primary competitor for United One in the road leisure segment. The competitor analysis of United One is depicted below.

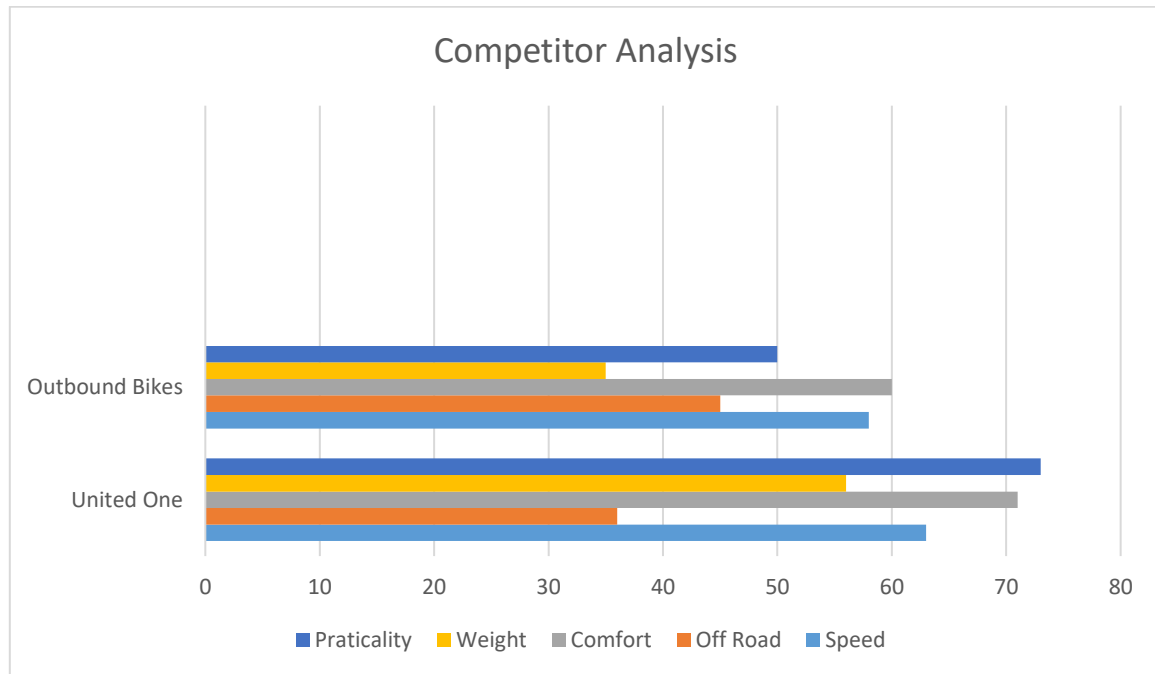


Figure 19: Competitor Analysis of United One

As mentioned in the "Pricing of United One" section, Outbound Bikes costs £550, which is noticeably less than United One, which costs £750. Nevertheless, the graph above demonstrates that United One outperforms its competitor in almost every category. Since the target market is Road Leisure, the customer expects high levels of practicality and comfort. And due to the presence of cargo and the utilization of good quality materials, United One's product technology was better, resulting in a larger market share despite a higher price.

Cameron Cycles is the primary competitor for Compact One in the road commuting segment. The competitor analysis of Compact One is depicted below.

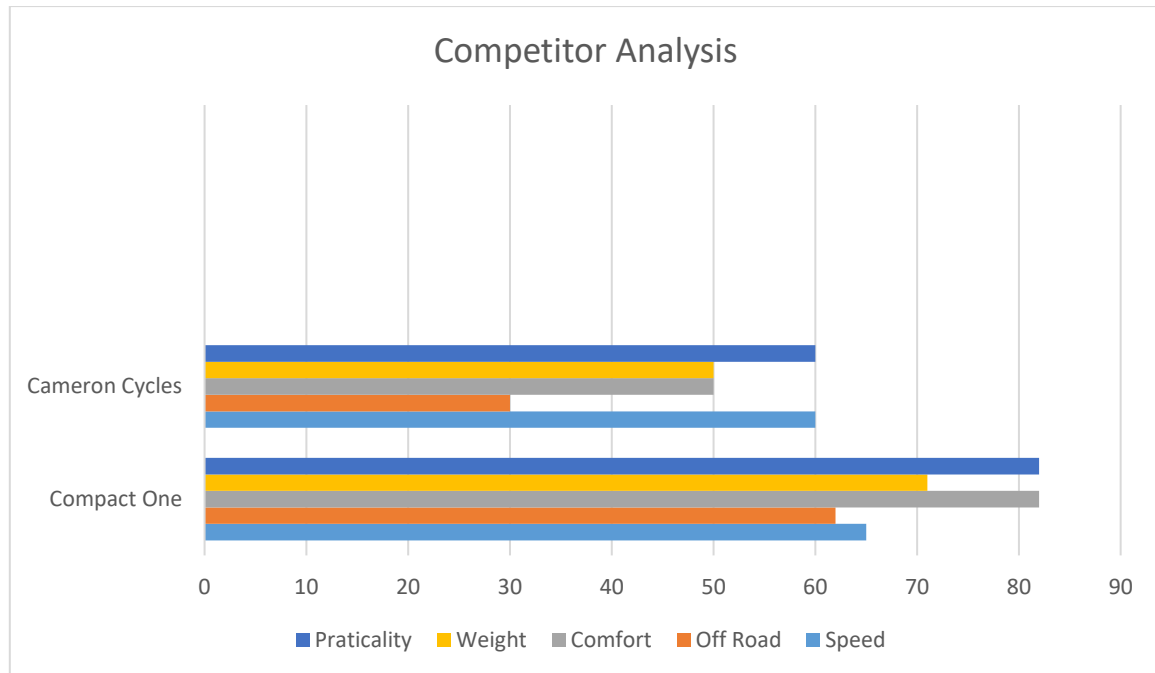


Figure 20: Competitor Analysis of Compact One

Cameron Cycles, as mentioned in the "Pricing of Compact One" section, costs £650, which is comparable to United One, which costs £700. Nonetheless, the graph above shows that Compact One outperforms its competitor in every category. With a nearly comparable price and better technology, Compact One was able to gain a larger market share, increase its sales, and become popular when it was introduced to the market.

## 4. Legal Aspects

Patents, trademarks, copyrights, insurance, and product safety and liability are among the most key legal aspects applied to bikes in the United Kingdom.

### 4.1 Patents

In the context of the bikes, the patent would be applied to the foldable base technology, which transforms the cargo bike into a standard bike. The UK Intellectual Property Office (IPO) will evaluate whether the innovation is new, inventive, and industrially applicable after receiving the patent application. If the patent is granted, Forever Bikes will have the exclusive right to use and license the technology for a predetermined time period [8]. The IPO charges an application fee of at least 60 GBP. Moreover, the patent will be valid for five years. If we want



it to remain in effect beyond that point, we will renew it annually for a maximum of 20 years. The IPO will publish the complete application around 18 months after it is submitted [9].

## **4.2 Trademarks**

The trademark will be applied to the brand name, logo, and tagline associated with the bikes. To obtain the trademark, a request will be submitted to the IPO, which will evaluate whether the proposed mark is distinctive and not too similar to already existing marks. If the trademark is granted, Forever Bikes will have the exclusive right to use it on its products and services.

In the United Kingdom, trademarks can be registered using the IPO's online service. The application fee begins at 170 GBP, and the typical application process takes several months. Additionally, the cost of obtaining a trademark may be increased by factors such as legal fees and the trademark's complexity [10].

## **4.3 Copyrights**

Product manuals, technical drawings, such as prototypes, and marketing materials pertaining to bikes will be protected by copyrights. When a creative work is created in the United Kingdom, copyright arises automatically and registration is not required. Therefore, Forever Bikes would not register further, but registering copyrights with the IPO can provide additional legal evidence [11]. And therefore, this factor may be considered in the future.

## **4.4 Insurance**

Forever Bikes will consider purchasing liability insurance, which protects the business from lawsuits filed by third parties for harm or damage caused by the company's operations. Instances include injuries sustained by customers or members of the general public while utilizing the products or services [12].

Property insurance is another choice because it protects the business against the loss or damage of property, such as inventory or equipment. This can include protection against events such as theft, fire, and flood damage [13].

## **4.5 Product Safety**

This regulation mandates that the new bike must include certain safety features. These aspects include manually operated brakes with the left brake controlling the rear wheel and the right brake controlling the front wheel. Moreover, every bike must be equipped with a bell and white or yellow reflectors on both sides of each wheel. The bike must also have a white front wide-angle reflector and a red rear wide-angle reflector. Additionally, there must be yellow reflectors

on the front and back of each pedal [14]. Although these components may appear insignificant, Forever Bikes considers them crucial for ensuring the safety of riders on the road.

## 4.6 Product Liability

Under the Consumer Protection Act of 1987, the manufacturer or seller of a defectively designed, manufactured, or labelled product is liable for any injuries or damages caused by the product [15]. To ensure that Forever Bikes reduces such liabilities, fishbone diagrams are used to identify the root causes of major problems so that the impact of these issues can be mitigated in advance by taking the appropriate measures. Brake failure is among the most common causes of injuries. The diagram below depicts the Quality Control examination into brake failure causes. The blue boxes represent the major causes, the green boxes represent the minor causes, and the light grey boxes represent the influences.

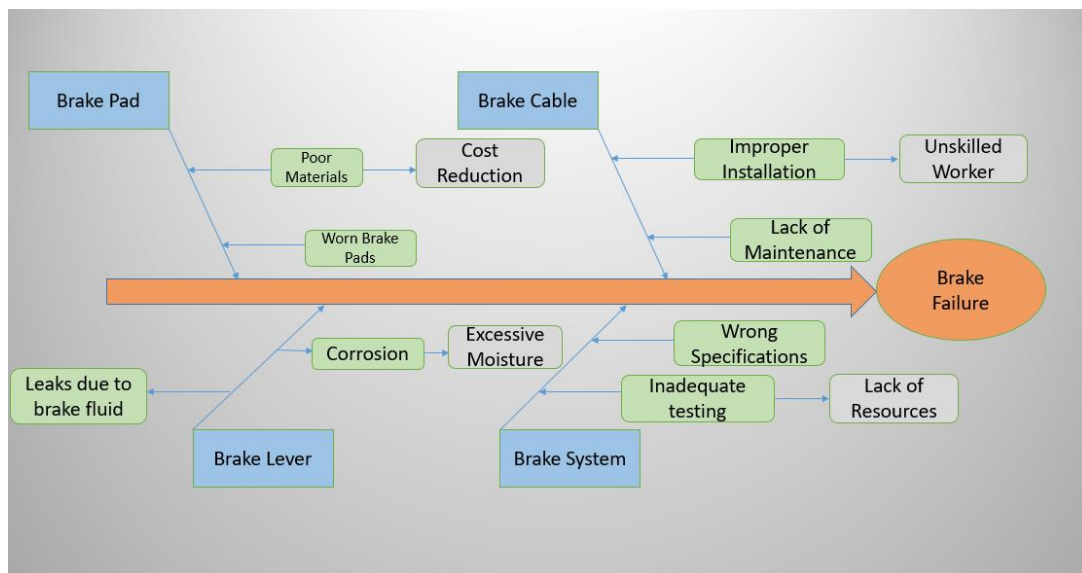


Figure 21: Quality Control

## 5. Financial Reporting

### 5.1 Overview of Year 1

During the first quarter of the company's fiscal year, £138,556 was raised through crowdfunding at a 7% interest rate with a five-year repayment term. The cash flow enabled the company to not only complete the design of the new product in the second quarter of the first year, but also invest in technology development, sales channel expansion, site expansion, and market research over the course of the remaining three quarters of the first year. Therefore, by the beginning of the second year, Forever Bikes was already well-established in terms of technology development and had a large number of sales channels and premises space, providing a solid foundation for future expansion.

## 5.2 Comprehensive Analysis of Year 2

The corporate and financial strategy is categorized by department as described below.

- **Organization**

Due to the increase in production volumes and the expiration of leased space and contracts, the company's space was increased to 300 sqm on a rolling basis in the second quarter. This was implemented to prevent paying high liquidated damages if space had to be changed, and the rolling basis allows for more flexibility in changing space based on production requirements. The level of credit control was increased from mild to firm for small retailers, from mild to invoice financing for large retailers, and from mild to invoice financing for online retailers. The company will be able to quickly recover the outstanding amount due to the stricter credit control. In an effort to increase the department's efficiency, a new employee was hired and one new piece of equipment was purchased for the organizational department's human resources department.

- **Operation**

The company's strategy of expanding its sales channels has been successful, and customer demand for bikes has increased, resulting in a gradual increase in production from the initial 50 units to 820 units. The increase in employees, equipment, and quality of production control has led to an increase in costs, but the profits generated by the increase in sales volumes have made it possible to invest without constraint in these areas.

- **Sales & Marketing**

In order to maintain positive relationships with distributors, the company decided to increase the discount on popular sales channels to around 30 percent in the second year. In addition, based on the quarterly marketing report, the company has increased its investments in expanding its popular sales channels and promotional platforms in order to increase the product's exposure. In consideration of the focus group market research, the company also made timely adjustments to the pricing and sales discounts for the first product in order to increase sales.

- **R&D**

Since the company's primary product features are centered on comfort and functionality, the company continued to invest in technological research and development in these three areas throughout the second year's four quarters,

The achieved versus aspirational targets for the second year are shown in the table 10. The goal was to achieve at least level 2 in all aspects, which the company accomplished.





Table 10: Achieved versus aspirational targets for year 2

	Average Net Profits	Average Sales Count	Net Assets
End of Y2 Q4	£35059.5	491	£191000
Target data (Level 1/2/3)	£10,000/£14,000/£18,000	160/240/350	£100,000/£150,000/£250,000

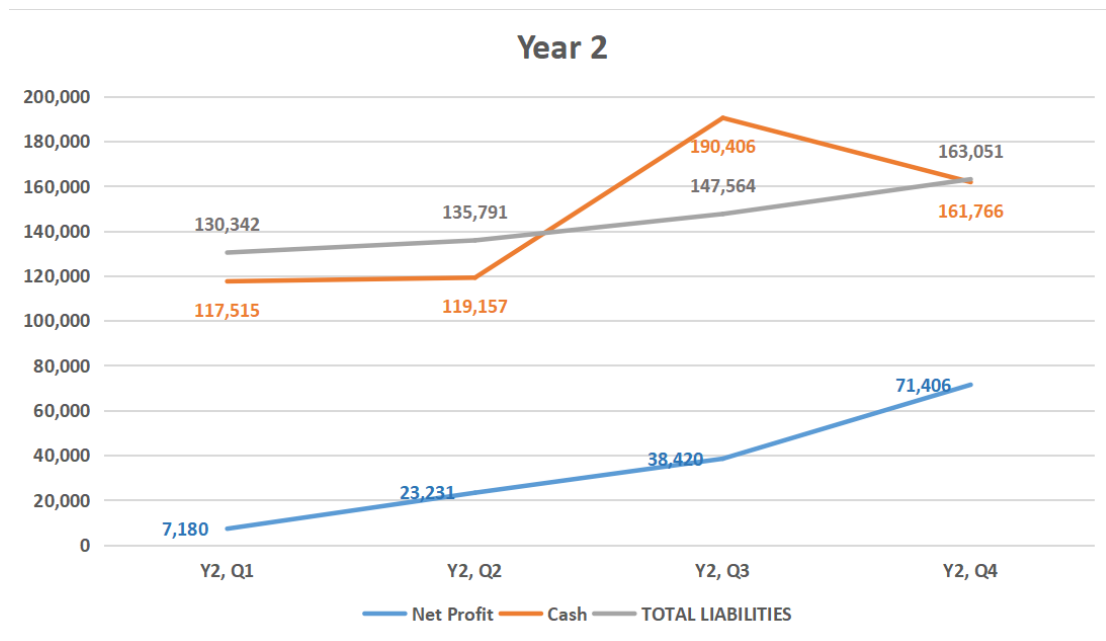


Figure 22: Year 2 Data

The overall figures for the company's second year show that the company met the level 2 targets in terms of net profit, sales count, and net assets, and that the company's net profit increased throughout the year. Despite the initial borrowing that led to an increase in the company's debt, the company's net worth has been increasing, proving that its strategy of developing technology and expanding the scope of its sales channels was successful.

### 5.3 Comprehensive Analysis of Year 4

The company completed development of its second product in the third quarter of the third year and began selling it in the fourth quarter of the third year. Three years of profitable operation enabled the company to surpass 4,000 orders and achieve a 69% market share. The corporate and financial strategy is categorized by department as described below.

- **Organization**  
Due to the expansion of bike production and the addition of new employees, the company expanded its premises to 2,000 square meters in the second quarter of the fourth year to accommodate the space required.



- Operation

The sales of the first product United One were affected by the introduction of the new product with better technology, which was expected and not a negative experience. Although the company began to reduce production of United One in the first quarter, it ignored its inventory levels, resulting in an increase in unsold stock. In addition, the number of orders for Compact One continues to rise due to the company's high market share and reasonable pricing standards. However, the orders could not be fulfilled due to insufficient production. And production was not significantly increased to prevent the company from exceeding its overdraft limit. During the course of the year, the organization altered its workforce by increasing the number of outsourced manufacturers, thereby reducing its space requirements.

- Sales & Marketing

The company's market share increased from 69% to 91% by the end of the year, propelling it to the top of the bike market. This was largely due to the company's increased marketing expenditures throughout the year, which were made in part to generate sufficient cash flow to support the company's continued market expansion.

- R&D

Prior to the beginning of the fourth year, the company had achieved the expected level of technology in every facet of its products. As a result, the company reduced spending on technology throughout the year.

The achieved versus aspirational targets for the fourth year are shown in the table below. The goal was to achieve at least level 3 in all aspects, which the company accomplished.

Table 11: Achieved versus aspirational targets for year 4

	Average Net Profits	Average Sales Count	Net Assets
End of Y4 Q4	£322280.75	4162	£2510000
Target data (Level 1/2/3)	£35,000/£45,000/£65,000	400/650/800	£350,000/£425,000/£600,000

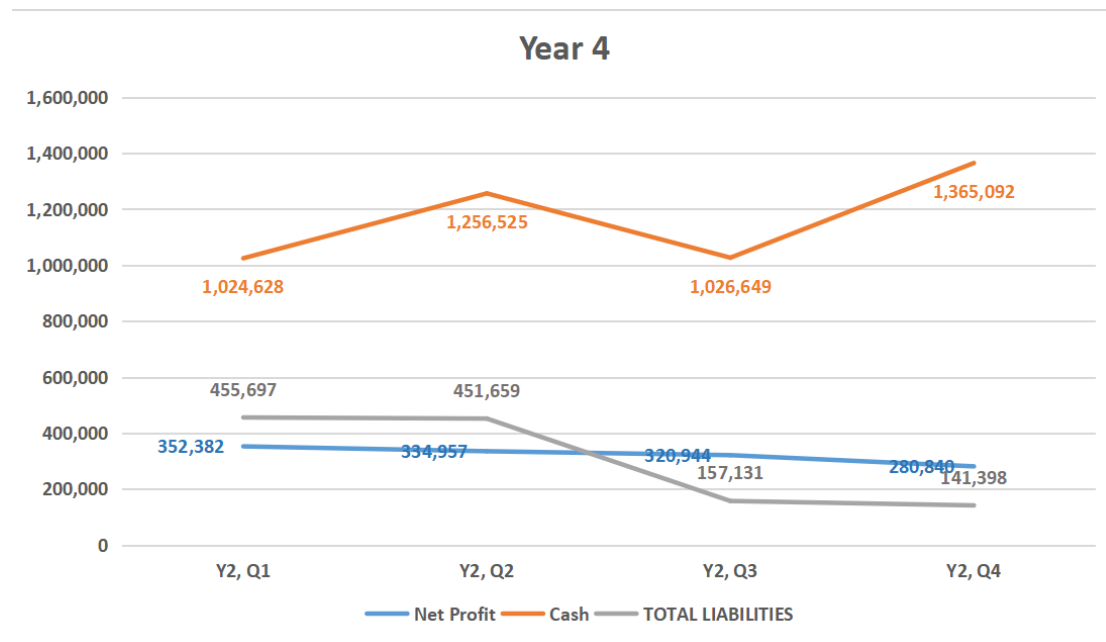


Figure 23: Year 4 Data

The overall figures for the fourth year reveal an outstanding performance in terms of net profit, sales volume, and company net assets, with all three metrics reaching the desired level 3. In addition, the net profit remained high despite a slight decline. In addition, a successful product transition, an overall upward trend in cash flow, and a reduction in the company's debt all contributed to an increase in net assets.

## 5.4 Comprehensive Analysis of Year 5

The corporate and financial strategy is categorized by department as described below.

- **Organization**  
The company did not make any significant changes to this division for the current fiscal year, as product orders were stabilizing and credit control was effective.
- **Operation**  
At the end of the fourth quarter, the company had already identified a significant inventory issue with United One, but this did not acquire sufficient attention. This problem remained unresolved at the end of the fifth year, which had an indirect impact on the company's net profit, despite the company's efforts to reduce the proportion of production output for United One. This was due to the long-term inventory backlog and the sharp decline in orders for United One. Since Compact One was still in demand, the company's losses were reduced.



- Sales & Marketing

The long-term strategy of investing in marketing operations was followed. Thus, during the course of the year, investments were made in sales channels and promotional platforms, which helped to increase the market share to 96%. In addition, purchase discounts for the sales channels were slightly reduced to increase margins.

- R&D

The company has reached the expected level of technology in every facet of its products and has, as a result, reduced its technology finances for the year.

The achieved versus aspirational targets for the fifth year are shown in the table below. The goal was to achieve at least level 3 in all aspects, which the company accomplished.

Table 12: Achieved versus aspirational targets for year 5

	Average Net Profits	Average Sales Count	Net Assets
End of Y5 Q4	£211119.5	4667	£3350000
Target data (Level 1/2/3)	£120,000/£150000/£175,000	1000/1250/1400	£800,000/£1,000,000/£1,200,000

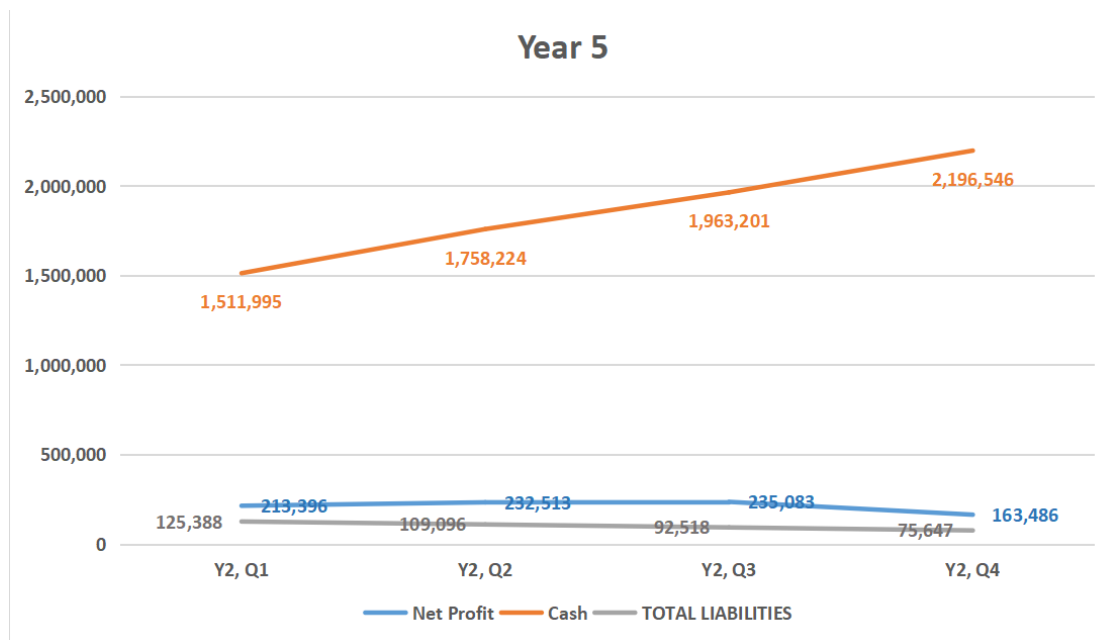


Figure 24: Year 5 Data

In general, the company's accomplishments exceed expectations, but compared to the fourth year, the average profit decreased due to ignoring product inventory. The company's market share has been maintained by its sales strategies, which has resulted in a steady increase in total



product orders. Overall, the fifth year is a successful year, with sufficient cash flow allowing for greater operational and development flexibility for the future.

## 6. Project Management

The team demonstrated effective coordination and collaboration throughout the meetings. Individual responsibilities were assigned based on the strengths and interests of each team member. Constructive criticism was acknowledged, and healthy internal competitions were held to learn about the simventure. Regular meetings were held to discuss progress, exchange ideas, and resolve conflicts with professionalism and courtesy.

## 7. Risk Assessment

To assess the risk, a 5x5 risk assessment matrix is utilized. The evaluation of risks is based on the company and its products.

The risks associated with the company are assessed in the table below. Green represents low risk, yellow represents moderate risk, and red represents high risk.

Table 14: Risk assessment matrix for the company

Risk	Risk description	Probability	Impact	P×I	Resolution
Market competition Risk	As a result of excessive competition and shifting consumer preferences, sales may decline.	5	4	20	Investing in R&D to comprehend customer requirements and stay ahead of competitors.
Legal Risk	If the company violates the applicable laws, it could be subject to hefty fines.	1	4	4	Investing in IP protection strategies, conducting exhaustive searches, or keeping legal counsel.
Cyber Security Risk	The hacking of private data or the downfall of the official website.	2	5	10	Enhance the firewall to prevent exposure to cybercriminals, and hire skilled IT professionals to protect the network.



Materials Risk	Insufficient availability of batteries.	3	5	15	Order in advance, purchase internationally, or select multiple suppliers simultaneously.
Conflicts Risk	The employees' disputes reduce the overall efficiency of the workforce.	4	4	16	Create rules and regulations, provide incentives and penalties based on efficiency, and train employees.
People Risk	Lack of knowledge to accomplish tasks or innovations.	3	5	15	Hire skilled professionals or provide relevant staff training.
Environmental Risk	Utilization of low-quality materials may impact the environment and result in additional penalties.	2	4	8	Usage of sustainable raw materials and collaboration with environmental organizations to meet environmental standards.
Reputational Risk	Rumors of using low quality materials.	1	5	5	Providing transparency to consumers regarding material type.



The risks associated with United One are assessed in the table below. Green represents low risk, yellow represents moderate risk, and red represents high risk.

Table 15: Risk assessment matrix for the product United One

Risk	Description	Probability	Impact	PXI	Resolution
Safety Risk	Cargo bikes are more likely to <u>crash</u> due to their long frames and uneven weight distribution.	3	5	15	Riders should drive slowly, with confidence, while wearing helmets and highly visible clothing.
Security Risk	Due to their high value and advanced technology, cargo bikes are more likely to be <u>stolen</u> .	2	5	10	Installing a GPS tracking device, purchasing insurance, or considering better anti-theft devices.
Weather-related Risk	In rainy and snowy weather, heavy cargo bike is more likely to encounter danger and get wet.	4	2	8	Utilization of good quality brakes, cautious driving, and weather protection.
Functionality Risk	The foldable base does not connect to the detachable box.	1	5	5	Ensuring the use of good quality hinges and locks and undertaking regular inspections



The risks associated with Compact One are assessed in the table below. Green represents low risk, yellow represents moderate risk, and red represents high risk.

Table 16: Risk assessment matrix for the product Compact One

Risk	Risk description	Probability	Impact	PXI	Resolution
Stability Risk	Due to the variable size and foldable nature of electric folding bikes, greater control is required.	2	3	6	Invest in product design to develop a stable and effective prototype.
Quality Risk	Bikes might be repeatedly folded and unfolded, which may result in frame deformation, part displacement, or other safety concerns.	2	5	10	Utilization of good quality materials and technology as well as comprehensive quality testing.
Malfunction Risk	Electrical failures in batteries causing significant effects.	4	5	20	Installation of electrical components with precision and adopting various quality assurance.
Corrosion Risk	The frame material corroding as a result of ageing.	2	4	8	Using the corrosion-resistant materials like aluminum.

## 8. Roadmap

Forever Bikes has successfully navigated the first five years of its journey and attained its targets. The company intends to position itself as the market leader over the next five years, as its reputation among customers has already been established through the "word of mouth" marketing strategy and its market share has reached 96%. To achieve and maintain this position, an offensive strategy will be employed to increase market share by targeting new customer segments. For instance, cargo bikes will be marketed for delivery to grow the customer base. The image on the next page depicts the road map for the next five years.



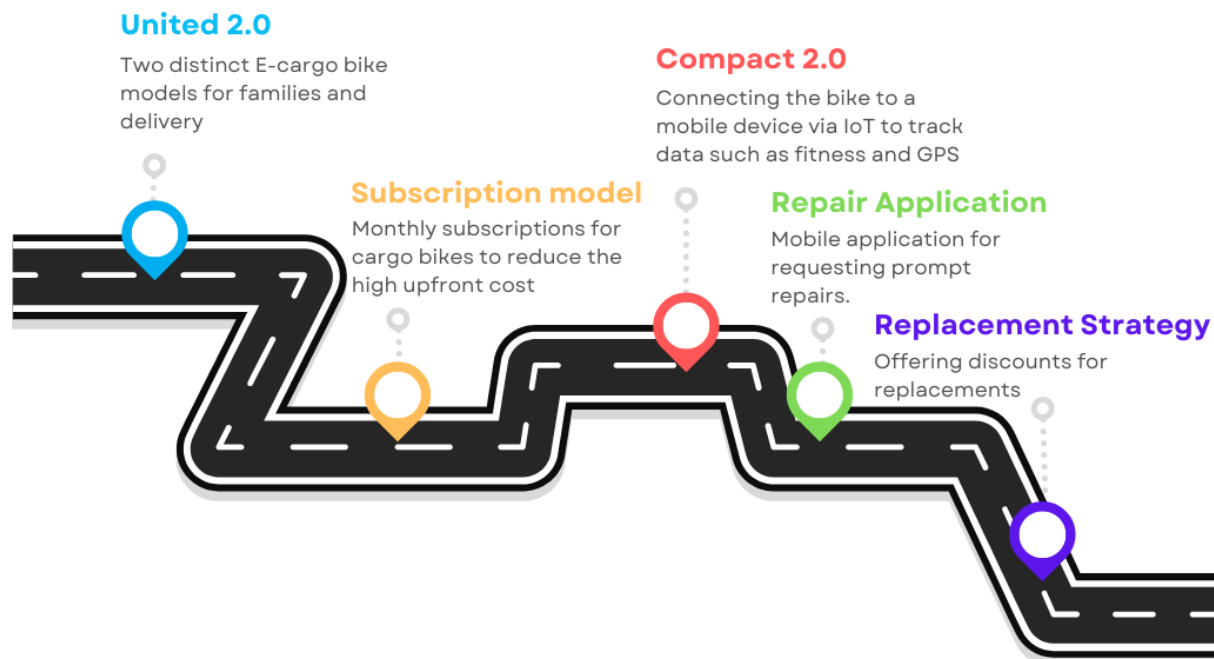


Figure 25: Roadmap

The following table describes the strategies for the upcoming years.

Table 17: Description of Roadmap

Year	Main event(s)	Description
Year 1-5	United One & Compact One	To establish the foundation, funds were invested in R&D and market research. Two products, United One and Compact One, were introduced in the road leisure and commuting segments, respectively, and both were well-received by customers, thereby establishing a positive brand reputation.
Year 6	United 2.0	Two unique E-cargo bike versions of United 2.0 will be introduced to serve the family and delivery markets separately. The family cargo bike would prioritize safety and sustainability, as well as offer multiple sub-versions that include a rain tent to shield the child from poor weather. The delivery cargo bike would be designed for businesses seeking environmentally friendly delivery options, with a focus on providing cargo boxes of varying sizes based on deliveries.



<b>Year 7</b>	Subscription Model	Providing the option to rent cargo bikes on a month-to-month basis to reduce high initial costs. This would be aimed at both families and delivery. For families, once the child reaches adulthood, parents can exchange their cargo bike for a foldable bike at no additional cost and either continue their subscription or purchase a new bike.
<b>Year 8</b>	Compact 2.0	Using IoT, a new foldable bike named Compact 2.0 will be released that connects to a mobile device. Using advanced pedals and handlebars, the device can track a variety of customer data, including distance travelled and pulse rate, among others. In addition, it includes GPS tracking, which reduces bike thefts even further.
<b>Year 9</b>	Repair Application	Repairing cargo and folding bikes is difficult. As a result, a mobile application will be developed to address the concerns of customers regarding repair services, and additional information will be gathered from the customer to estimate the cost and time required to repair the bike. As soon as the customer agrees, the assigned repair team will be notified and work will commence immediately.
<b>Year 10</b>	Replacement Strategy	To promote sustainability, a replacement strategy will be implemented. Customers can exchange their bikes and receive a discount on a new bike. This not only benefits customers, but it also lowers manufacturing costs and protects the environment by reusing old materials of good quality.



## 9. Conclusion & Recommendations

It is essential to utilize technology in unique ways, and Forever Bikes is a company that believes in addressing customer concerns using technology. Its current product lineup includes United One, an electric cargo bike with a foldable base and Compact One, an electric foldable bike with a detachable battery. Due to the company's emphasis on research and development, a market for road leisure and road commuting was identified. The company also contributes to a more sustainable future by utilizing sustainable and good quality materials. A concerted effort was made to select environmentally friendly materials, such as expanded polypropylene (EPP), aluminum alloy, lithium-ion batteries, and many others, so that they can be recycled over time. As of the fourth quarter of the fifth year, Forever Bikes accomplished its targets. With a net profit of £163,436, sales of 4,905, and net assets worth £3,432,491 at the end of the fifth year, the company's financial health is evident. Its 96% market share demonstrates the trust and loyalty of customers. With a strong team, thorough market research, and a commitment to quality, Forever Bikes aspires to become a market leader in the coming years.

Among the recommendations for the company would be to continue focusing on brand awareness and market share by expanding its product offerings to appeal to a wider variety of customers. In addition, it is essential to continue monitoring and mitigating risks associated with economic downturns and supply chain disruptions to ensure long-term stability and growth. For potential bulk selling, another recommendation is to consider the business-to-business segment. Investing in research and development for the creation of sustainable materials and the promotion of eco-friendly strategies would be a further consideration. With a continued emphasis on quality, sustainability, and strategic growth, Forever Bikes can continue to thrive in the highly competitive bike market.

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## Appendix

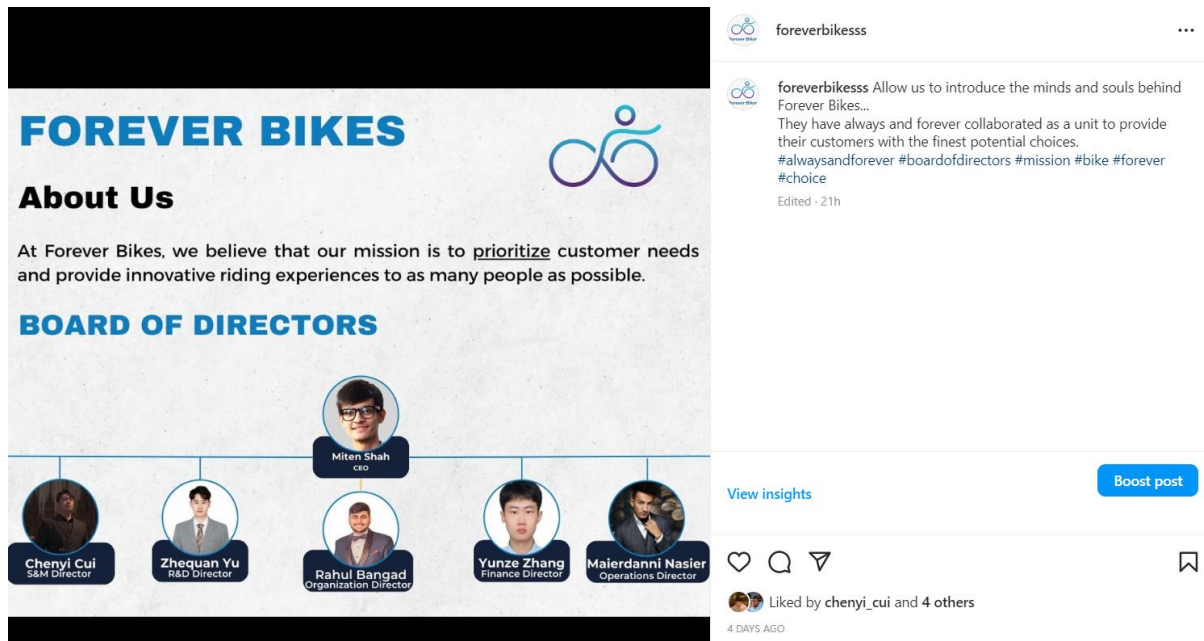


Figure A1: Management Team and mission post

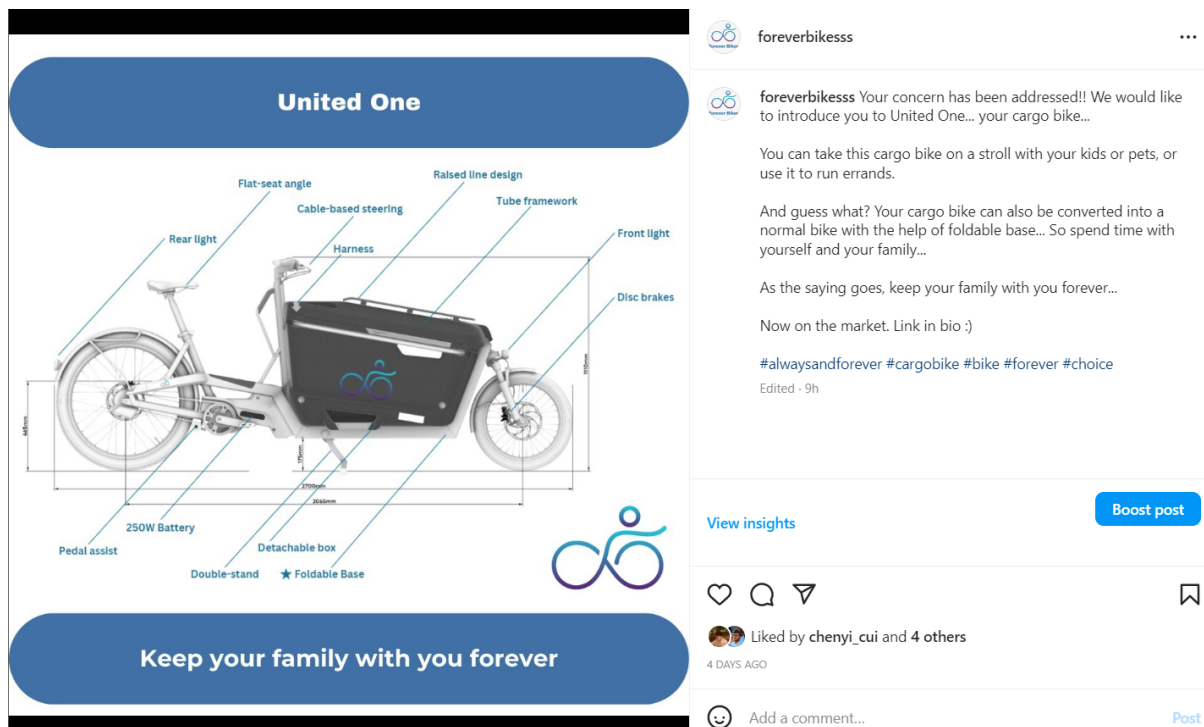


Figure A2: Prototype and link in bio captions



## Appendix (Continued)

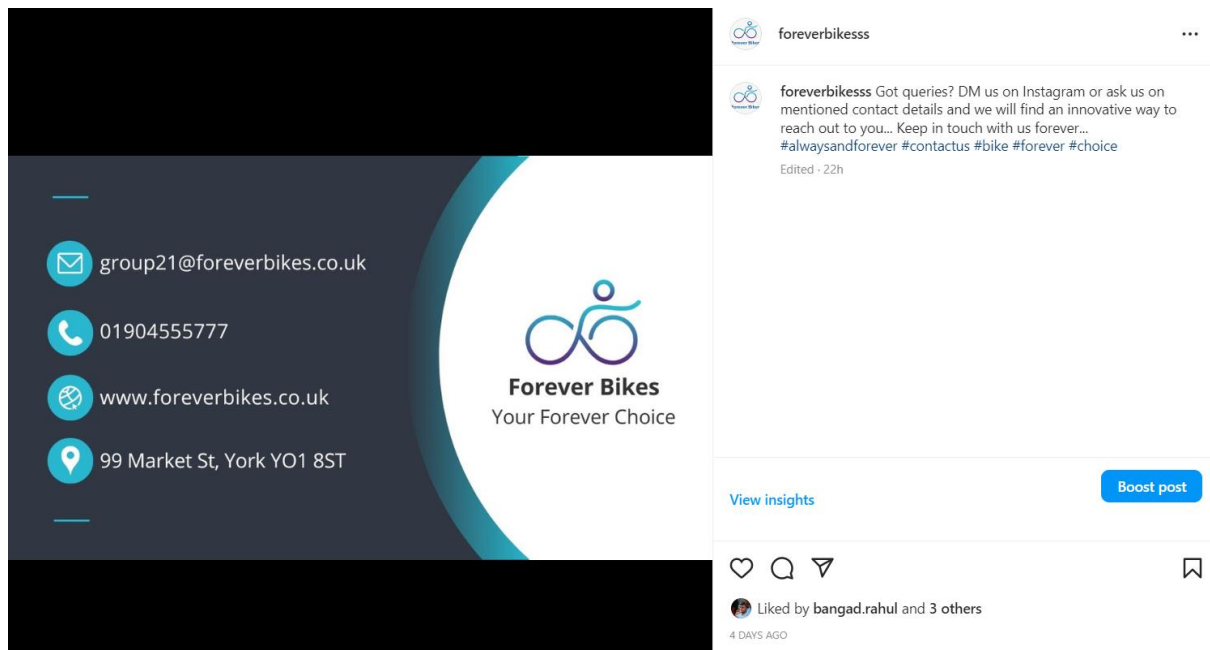


Figure A3: Contact us for queries post