

Business Analysis of E-Bikeshare Start-up

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1. Introduction

E-bike Sharing has appointed us as business analysts to oversee the selection and implementation of business intelligence and analytics platform for development.

The startup is an e-bike-sharing firm situated in Chicago, Illinois. It began in the year 2019, and the E-bike was one of the most cutting-edge and forward-thinking electric bicycles that debuted the year before. The timing of the announcement and the fundraising push, however, could not have been worse, arriving just months before the COVID-19 outbreak.

as the covid outbreak fades, a bike-sharing firm kick-started its operation in January 2022 and experiences an unexpected surge in demand, necessitating the use of business tools.

as a business analysts, we begin by dividing the Balance Scorecard into four stages, including growth, financial, customer, and internal processes tailored to the needs of a startup, then we do a gap analysis to determine existing requirements and compare them to the aim for future scope.

For the technical implementation, we will utilize Tableau to create dashboards and analytics, and for customer relationship management, we will use Monday.com, a low-cost management application that will help us boost sales and customer service.

Finally, we justify the need for a business tool, even for a startup company, to manage the business and convince the shareholders of the cost savings and ease of implementation without disrupting current operations.

2. Background Information

E-bike sharing is the startup company we are going to use for the studies to stimulate the Transportation and bike-sharing mobility domain. This company has been operational 2019 like 3 years now and the company planned to launch all three models of e-bikes Classic Pro, Classic Bike Pro, and E-bike. last summer, if not exactly, but until the world, and the electric bicycle business, in particular, returns to normal, and they did so on 13-Jan-2022 after a long stretch of being a financially unstable small start-up company has managed to come to this stage and they see a sudden increase in demand after four weeks that was never expected,

As they do not have any business intelligence (BI) tools or customer relationship management (CRM) systems at the moment, the company is having difficulty managing sales, and customer support, and is in desperate need of investment to meet the sudden increase in demand, but they are planning to invest in this area for future growth thinking.

For us, the most important goal is to collect as much database of the customers and bike usage as possible so that we can use it in future implementations, as well as to grow our client base and become more popular in the market.



3. Balanced Scorecard:

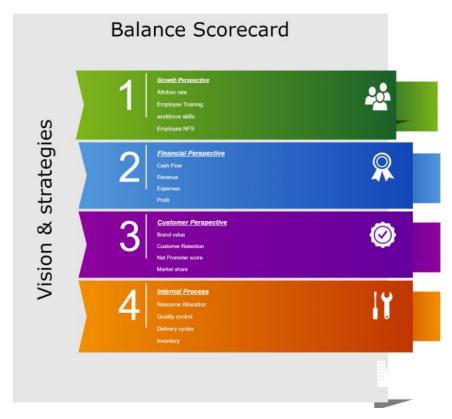


Fig. 1. Balanced scorecard.

3.1. Growth Perspective

The Growth perspective focuses on the first steps which are the data related is gathered and how it is implemented in terms of business to get proper output.

3.2. Financial Perspective

Strategic, operational, and financial metrics all point to the bottom line's progress or decline. The three most common financial objectives are profit, growth, and shareholder value. Cash flow was used to gauge a company's long-term viability; quarterly sales growth and operating income per division were used to gauge its success, and growth in market share and return on equity were used to gauge its prosperity.

3.3. Customer perspective

The ultimate aim of any business is to give service to the customer. This section focuses on customer satisfaction. Feedback is taken from the customer on how the service can be improved. This feedback can be used to use to understand the net promoter score, market share, and brand value of any business

3.4. Internal Process

A company's ability to satisfy its consumers' expectations must be measured in terms of what it has to accomplish internally. In the end, great customer service is the result of a company's procedures, choices, and actions. A company's success depends on its ability to meet its customers'



expectations via its internal operations. Balanced scorecards include a fourth section that provides management with this inside viewpoint.

4. Gap analysis

We brainstormed and constructed a gap analysis using the data we had on hand; the results, divided into three parts, are displayed in the table below.[2]

	GAP Analysis							
	Desired state		Current state	Action steps				
1.	Real time dashboard with dynamic input dataset to analyse sales campaign using statistical data.		Currently the data being maintained in excel format with static manual entries. SMS service currently	Implement Tableau dashboards and visualizations for efficient sales targets, forecasting marketing strategies.				
2.	CRM implementation for mobile application for customers purchase order, customer services.		in used for sales force and customer services. Phone calls and other phone services	2. Implement Customer Relationship Management system for customer services, feedback system and promotional campaigning				
3.	Phone and email directly through CRM to retain customers through loyalty benefits and promote newly launched e-bike types.	4.	manually maintained by a team of individuals.	system. 3. Company's plant expansion strategy using worldwide distribution dashboard. 4. CRM is used to promote new services between the				
4.	E-bike ride stations setup analysis through previous month data dashboards.	5.	distribution. No advertising plans available with the company.	customer to attract new public to use the services.				
5.	Advertising strategies to promote female riders for our company's product and thus boosting sales.							

Fig. 2. Gap analysis.

5. Scope, Innovation, and workflow

Customer relationship management (CRM), as well as associated business intelligence (BI) and analytics, are all included in the activities that will be carried out as part of the system deployment.

The present local database systems will be phased out and replaced with the CRM system to ensure that customer service is provided effectively and that the customer will be more attracted to using the e-bike mobility app(CRM phone) on the daily basis. Get the lead from the different sources either through the social media ads and engaging the personl conversation with casual customers and make them to buy annual plan providing discounts, understand the customer perspective by sending out feed back forms and customer support quickly resolve the technical issues faced by the customers

And the key objectives of the business intelligence application are to provide management with summary statistics and to aid in the expansion of the utilization of bicycles.



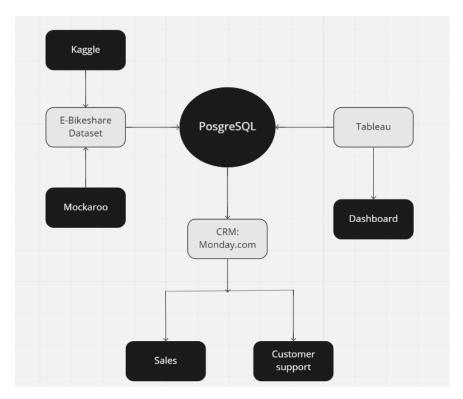


Fig. 3. Process workflow.

Process workflow is as follows:

- **Kaggle and Mockaroo**: we get the data sample from the Kaggle and modified the reference in the macaroo.
- **PostgreSQL:** Is used to store the data and used as the main company's database.
- **Tableau:** We fetch the data from the database and create an effective financial dashboard and other insights in the Tableau tool.
- CRM: Monday.com is used as our customer relationship management tool with this we
 create the sales and customer support pipeline to solve the marketing, sales, and customer
 issues.



6. Design Tools used:

Due to the fact that our company is both new and small, we need to choose design tools and apps that enable increased efficiency, management improvement, and marketing innovation. We were unable to create a high-cost method that would save time but not money because of this limitation. For all of the above reasons, the integrated software and technologies that were merged to support all e-bike processes are PostgreSQL, Tableau, Gmail, and Monday.com CRM.

6.1. PostgreSQL

It is a relational database that can manage large amounts of data. When a PostgreSQL database interface called pgAdmin is utilized, all of the data is stored in a centralized location and can be controlled remotely, allowing the owner to monitor any location while also ensuring that the data is safe.

6.2. Tableau

Performance tableau is an analytical tool that can handle big amounts of data rapidly and has a lot of tools for visualizing the data, unlike Power BI is slow with bulk data. Tableau provides a user-friendly interface that allows us to personalize and create dashboards.

6.3. Gmail:

This will serve as the primary source for marketing. Easy to use and comes as a free package which is ideal for start-up

6.4. Monday.com

We use Monday.com as our CRM tool because it offers a simple user interface, automation, mobile CRM, appealing dashboards, scalability, and other software integrations, At a cheap cost.



7. Database Design:

7.1. Entity-relationship diagram and data dictionary:

we have taken 3 datasets as per the requirement of the client. Station, ride, and customer. Following are the data description in PostgreSQL, datatype and description are shown below

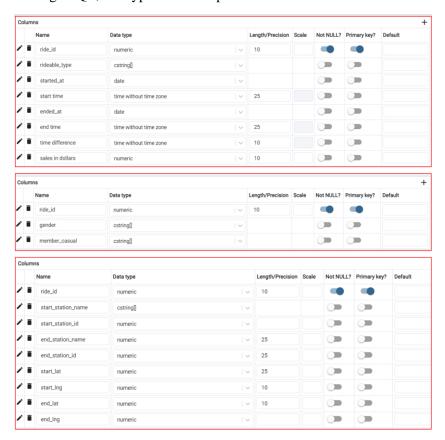


Fig. 4. Stored Postgres data type and description.

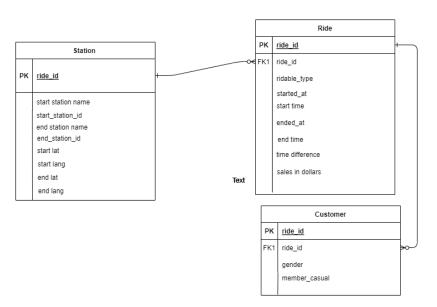


Fig. 5. Entity-relationship diagram.



8. Dashboards:

8.1. Dashboard 1:



Fig. 6. Sales Dashboard.

This is the dashboard that tells us about the total sales of the bicycles.

The bicycles here are divided into three categories that are Classic Pro, Classic Bike Pro, and E-bike. It also tells us that Streeter Dr & Grand Ave Station is the busiest station with 7,760 riders and \$4K.

It is also mentioned the total number of riders from Jan to Apr of which the total count is 873,997 in which the count of Classic Pro Riders is 415,353 Classic Bike Pro Riders is 22,770 and E-bikes rider is 435,980. So, we can see that the E-bikes are more popular among the riders.



8.2. Dashboard 2:

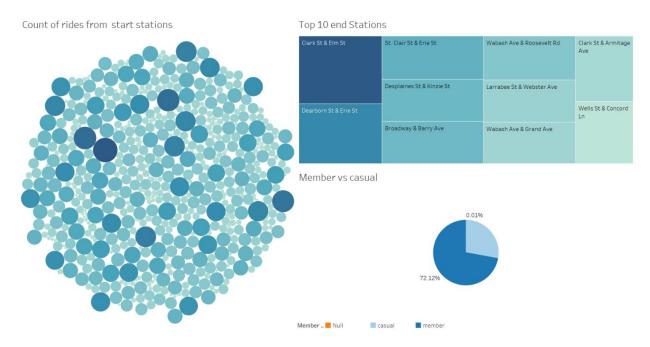


Fig. 7. Station Dashboards.

The dashboard above describes the total stations from start to end destination with a total count of the cycles reached there and also the description of the client that whether they are subscribers (members) or just casual users.

8.2.1. Dashboard 2:

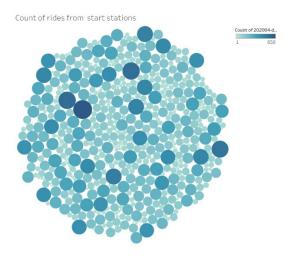


Fig. 8. Breakdown of Station Dashboard

The above Bubble Chart depicts the count of rides from the start station. Here we can see that the size of the bubble denotes the number of counts where the bikes start in ascending order. Greater size indicates that the bikes have started most from that station whereas a smaller bubble shows a slower number of rides started from the source.



8.2.2. Dashboard 2:

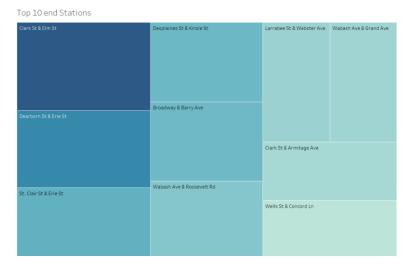


Fig. 9. Breakdown of Station Dashboard

The above TreeMap describes the Top 10 stations where the ride ends.

Clark St. and Elm St. is the busiest station, where the bikers mostly end their ride. As well St & Concord Ln is the station where the rides have ended the least.

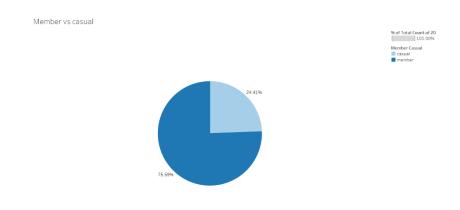


Fig. 10. Breakdown of Station Dashboard.

Here in the following pie chart, we can see the description for the total per cent of Members Subscribed to the E-bike is 79.59% and the casual members who have rented the bikes are 24.41%.



8.3. Dashboard 3:

Avg sales as per weekdays

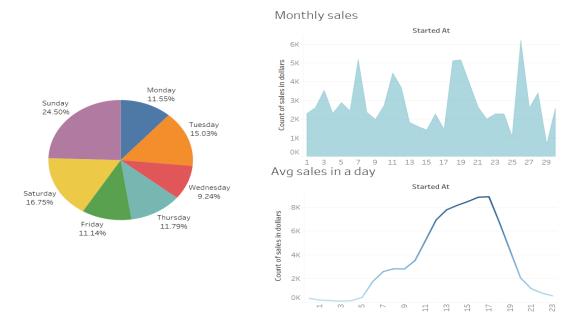


Fig. 11. Average Sales dashboard

The above Dashboard describes sales based on a weekly, monthly, and daily basis. The detailed description is given below with worksheets

8.3.1. Dashboard 3:

Avg sales as per weekdays

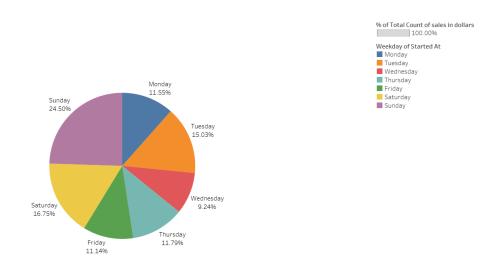


Fig. 12. Detailed explanation on Average Sales dashboard.

This pie chart shows the sales percentage weekly. It is visible that most of the rides have been booked on weekends. The regular weekdays have seen a lower number of bookings



8.3.2. Dashboard 3:

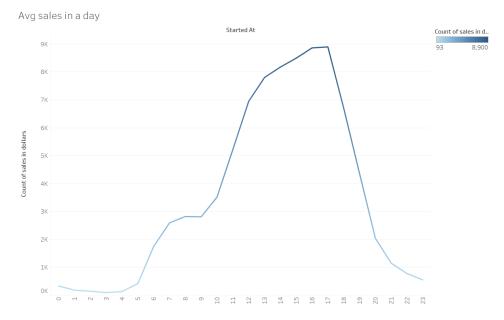


Fig. 13. Detailed explanation on Average Sales dashboard.

The Line chart here tells us about the hourly distribution of sales in a day. It is seen that from midnight to 4 am people don't seem to use their bikes. But a sudden positive trend has been seen after 5 am till 6.30 in the evening that is mostly the working hours of the people. Then after 7 pm, we can see a major decline in the bookings of the bikes.

8.3.3. Dashboard 3:

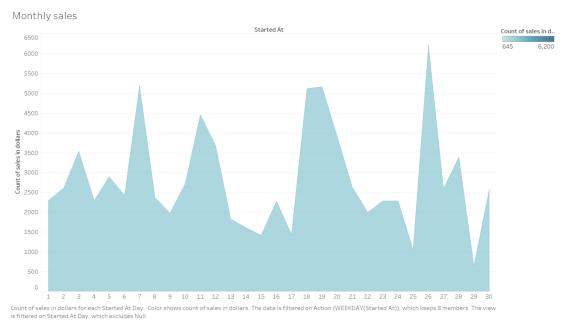


Fig. 14. Detailed explanation on Average Sales dashboard.

Plots depects the monthly sales data gives the detailes sales of each day surge in the weekends can be seen each interval.



8.1. Dashboard 4:

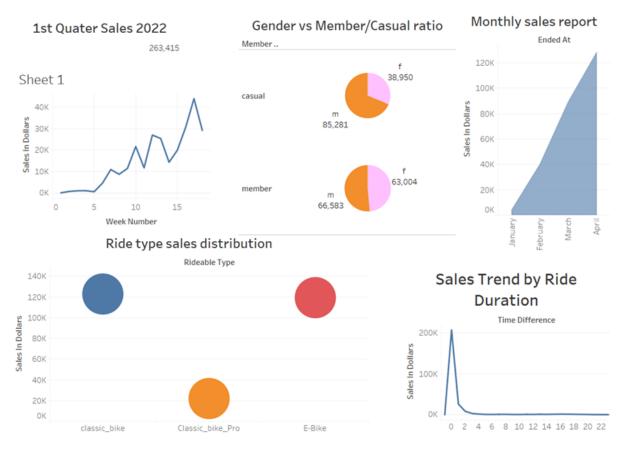


Fig. 15. Sales Overview Dashboard.

The Frist line graphs tell us the 1st quarter sales in 2022 in which we can see the first 5 months were having the less booking with the time the booking gradually increased as we can see that highest number of bookings are in April. AS well as the sales are also shown with the line graph which is directly proportional to the booking hence the month of April has the greatest number of sales.

All the three bike distribution sales are denoted by the horizontal bar where the classic bike has a greater number of sales and classic_bike_pro has the least number of sales.

Member and casual relationship between male and female as shown below as per the pie chart. The ratio of males and females for renting a bike is that males are seen to rent the bikes for frequently than females. But in the member's pie chart, we can see that the number of males and females is nearly the same as 66,583 males and 63,004 females are subscribed to the E-bike sharing.

The last time difference graph tells us that Less number of times has resulted in more revenue



8.2. Dashboard 5:

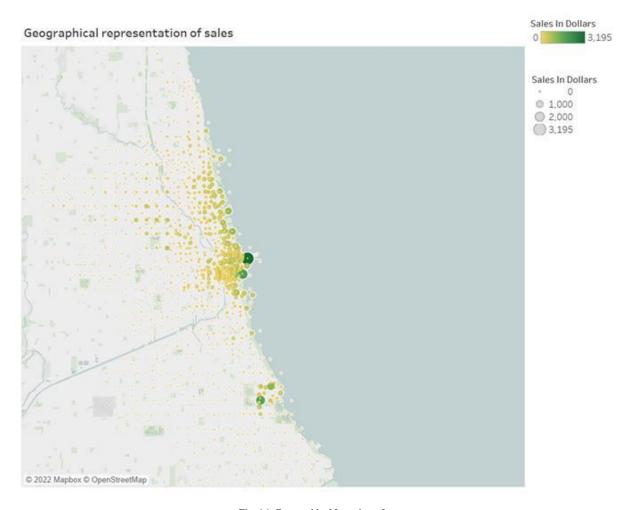


Fig. 16. Geographical Location of maps.

The below geographical location map despite that the more rides are booked in the southern and central parts of the city near the coastal line. More Focused needs to be done on the northern part.



8.3. Dashboard 6:

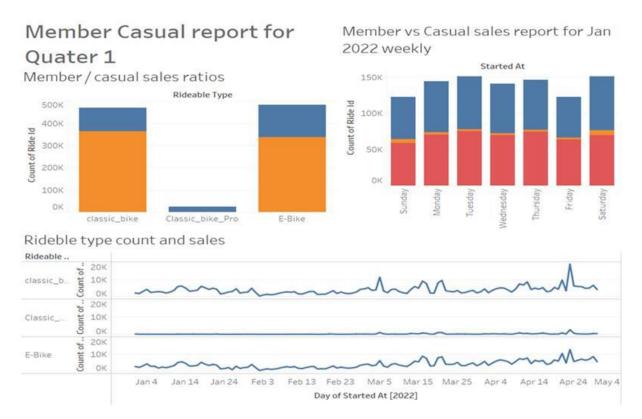


Fig. 17. Members Dashboard.

The 1st bar graph shows bike distribution vs member and casual ratio. It clearly shows that members and more invlovled in the classic and E-bike.

The Line graph shows Ride booking from the month of Jan to April. In Which classic bike pro has least number of votings.

Another bar graph shows weekly distribution of each ride.



9. CRM IMPLEMENTATION

CRM is one such tool that maintains track of and manages existing client relationships while also attempting to attract new ones. To expand, small firms must refine their sales, marketing, and customer service operations.[4]

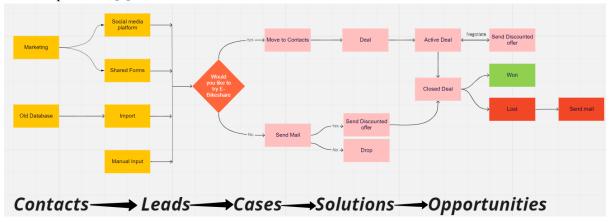


Fig. 18. CRM workflow

Fig 18 shows a diagram of the architecture. Monday.com was the one who came up with the initial notion. We looked into various well-known CRM software's like as salesforce and dynamics365, but as our solution is primarily focused on start-ups, we chose Monday.com as our CRM tool because it offers a simple user interface, automation, mobile CRM, appealing dashboards, scalability, and other software integrations, At a cheap cost.

9.1.Sales

9.1.1. Step1:Contacts and leads:

Contact is any person connected to the account. A lead is someone or something that might be interested in our products. but cannot be called as customers.

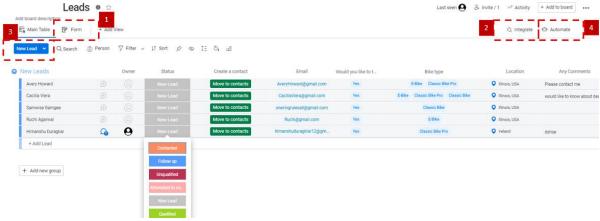


Fig. 19. Leads Dashboard.

Fig 19 represents the contacts and leads detail from the flow diagram () There are four methods for obtaining leads: social media, shared links, import, and manually adding, following are the explanation of the same



To generate leads, first raise product knowledge among the general public through a marketing effort, this is accomplished by posting the advertisement link (2. forms) on social media and obtaining the information of liked customers via a specific integration given by Monday.com, which allows us to connect Facebook and other social media platforms.

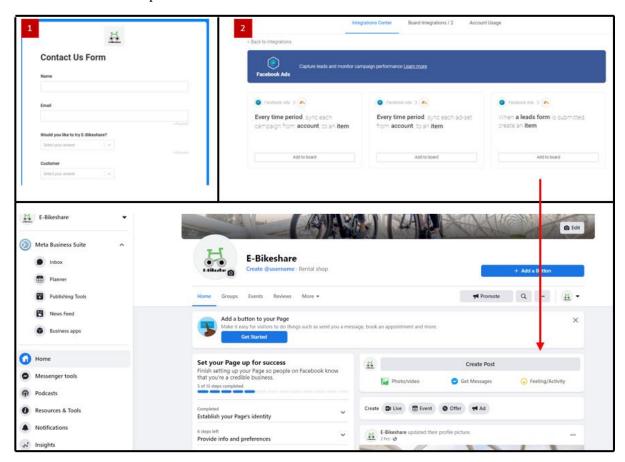


Fig. 20. FIG 19 extensiion: link of the same can be clicked(Link) 1. Form, 2. facebook integration 3. Facebook page.

In the CRM, we can also manually fill in the details by clicking new lead and importing legacy data saved in the database or in the form of Microsoft sheets, as shown in the figure.

Additionally, automation can be used to change status, shift one group to another, and perform a variety of other tasks

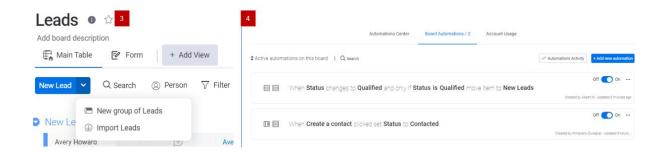


Fig. 21. FIG 19 extenstion 3.import option and 4.automation dashboard



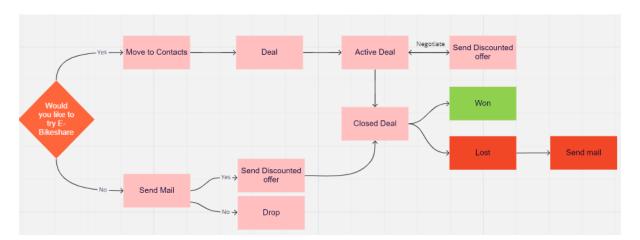


Fig. 22. CRM workflow extension

9.1.2. Step2:Cases and solution:

A case is a detailed explanation of a customer's request, while a solution is a summary of a customer issue and how it was resolved. The form (Hyperlink) that has been posted and sent across the social media has the question would you like to try E-Bike share if the customer says **yes** those persons will be sent to contact details if persons reply **no** then the automatic generated mail will be sent to him to ask for feedback along with exciting offer Fig , if accepts then the person will turn to customer and opportunity.

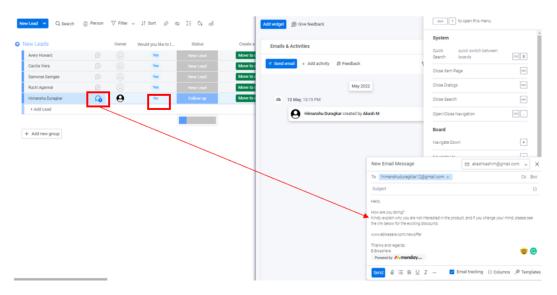


Fig. 23. Contact dashboard



If a person says yes (reply from the shared form), their contact information is added to the deals dash board illustrated in FIG. Each member is contacted with four offers through SMS, mail, phone by team member, or link (which can be automated). 15% off for a year, 10% off for six months, 5% off for a week, and no offer for one day plan. To generate revenue, promote getting annual memberships.

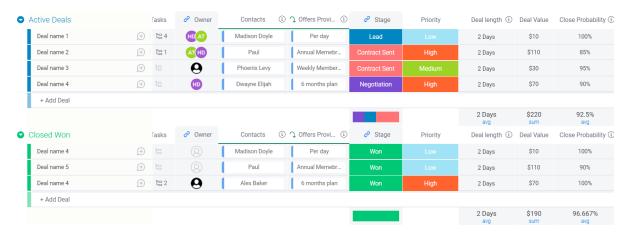


Fig. 24. Deals dashboard

9.1.3. Step 3:Opportunity:

Any possible revenue-generating event is referred to as an opportunity, If the individual purchases the offer, he will become a customer and will have won an opportunity. If the person does not agree, a mail will be issued with a gift card offering a one-day free ride.

The below dashboard generated automatically by the Monday.com CRM; a hypothetical example created by us can be seen on the dashboard; it also allows users to plot and eliminate different graphs. The dash board primarily highlights sales, profit, and actual deal won or lost proportion, as well as team member productivity information. with this for a new business Monday.com focuses not only on CRM, but also on customer service, marketing campaigns, and other features that are deemed to be innovative, user-friendly, low-cost, and best-in-class, indicating that this is the ideal decision for the firm.

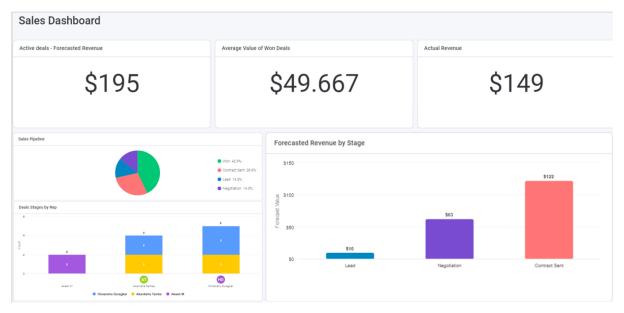


Fig. 25. Sales dashboard



9.2. Customer Service Request:

Customer service consists of various business activities, including making product recommendations, resolving problems and complaints, and providing answers to broad categories of queries. Every connection with a customer service representative is a chance to expand your company. A competitive distinction that increases consumer loyalty and awareness of a brand is providing excellent customer service.

We have implemented the customer service in this project to solve all the technical and bike related problems

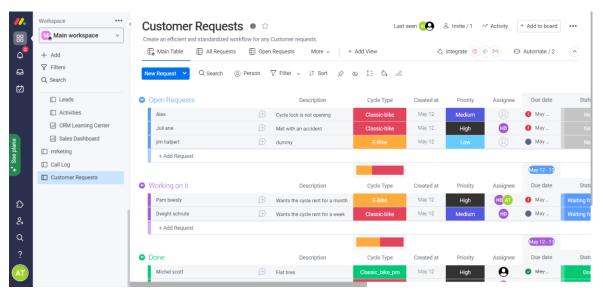


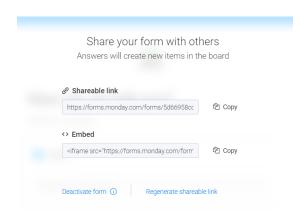
Fig. 26. Customer service dashboard

When a customer faces any kind of issue it connects to the customer service to get there problem resolved. It is the work of the customer service members to solve the query as soon as possible for the customer satisfaction.

The customer can lodge its complaint by sending an email to the customer service or directly call the customer service assistance or can fill the form below publised on app

We can see the link and the complaint form below:

https://forms.monday.com/forms/5d66958cc4d35fd1d355a5340cd92590?r=use1





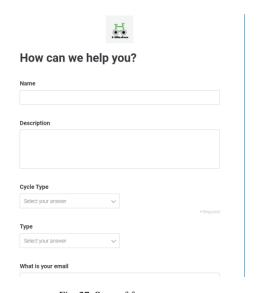


Fig. 27. Snap of form

9.2.1. Step 1:New Case:

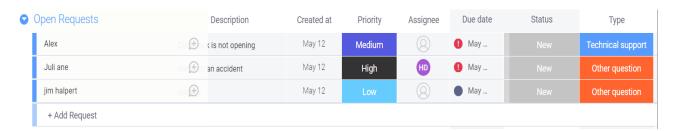


Fig. 28. Customer service dashboard

These cases are generated when any customer faces any kind of issue with the bikes or the app. As shown is the figure we need the name, Description of the problem, when it was created, Its Priority so the highest priority query will be solved first as the customer should not face more issue and would be satisfied with the service. And also, the cases are assigned to the particular members.

9.2.2. Step 2: Working on the case:

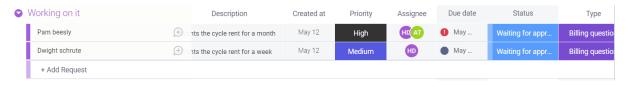


Fig. 29. Customer service dashboard

After creating a case now, it is important to work on the case so, As show in the figure we can see that there are 2 people mentioned Pam and Dwight both had created the case on the same date 12th may but the priority given to both the cases are different and also as we can see 2 members are assigned to solve the pam case on priority.



9.2.3. Step 3 Resolving and Closing the Case:

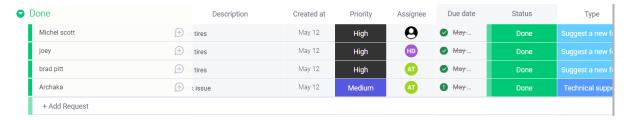


Fig. 30. Customer service dashboard

After the case is successfully resolved we can hover to dashboard to see the effective utilization of the employess, case solved details and feedback request counts.

10. Conclusion and Solutions.

We implemented several dashboards using Tableau and built the Customer Relationship Management (CRM) using Monday.com in this project while working for an E-bike Sharing startup in Chicago. The following are some of the conclusions we may draw from the dashboards we've created:

- 1. Because the stations where the majority of the rides begin are deemed hotspots, extra assets (cycles) must be provided to ensure that rides are not scarce.
- 2. We need to supply more services centers for end stations, such as battery and tyre repair alternatives.
- 3. More promotion is required to entice female shoppers, Crm can help in sorting female leads.
- 4. To attract more customers, we must introduce offers and solicit comments in order to fully get the customer's viewpoint. Again CRM can be used here too.
- 5.Classic bike Pro, in comparison to the other two, requires more advertising because its sales are declining. This can be solved by getting feedback from the customers.
- 6. Converting casual customers into number customers who become subscribers. CRM plays a major role here.
- 7. The service is highly effective in the central part of Chicago, but as we move north, the service becomes less effective, thus we need to attract more clients in the northern section of the city.

Business process: Implementing CRM may be used to manage marketing campaigns by putting advertisements on social media and receiving leads, sales can help gain more annual subscribers, and customer service can assist with technical issues and comments for improvement.

Finance: Although we just have quarter data, the sales dashboard clearly illustrates the start-remarkable up's growth, which is enough to entice investors.

Thus, the analytical tool assisted in the creation of an investor-friendly dashboard and also provided insights into the aforementioned concerns to notify the startup firm to streamline the process and take immediate actions, as well as the potential for cost-effectiveness. CRM aids not only in sales and customer support, but also in the management of in-house employees. In order to compete in the current increasing bicycle industry, it is vital to invest in a business intelligence tool.



11. References

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12. Video Presentation

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