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Predicting Customer Churn Rate in Saas

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ABSTRACT

The Software as a Service industry is growing fast. Because of this companies need to find ways to keep their customers from leaving. When customers leave it affects how money the company makes and if they will be profitable in the long run. This study is about using data to predict when customers will stop using a service. We used a dataset from IBM that has information about customers who subscribe to a service.
We wanted to make models that can tell which customers are likely to stop using the service. The dataset has information about the customers, what they do and how they pay for the service. We used Python and machine learning to look at this data. We tried a few methods like Logistic Regression, Decision Tree and Random Forest to see which one works best.
What we found out is that how long a customer has been with the service, what kind of contract they have how much they pay each month and how they use the service can tell us if they will leave. The Random Forest method worked the best. It was really good at predicting which customers would leave. We saw that customers who have not been with the service for long pay a lot each month and have contracts that can be changed easily are more likely to leave. This means that companies should try to connect with their customers on and think about how they charge them for the service.
The Software as a Service industry can use this information to keep their customers. We used the Software as a Service dataset to make our models. The Software as a Service industry is important. We need to keep studying it to make it better. The Software, as a Service companies need to use the information we found to keep their customers from leaving.

INTRODUCTION

The Software as a Service industry has changed the way companies use software. It is a change in the technology field. Software as a Service operates on a cloud-based subscription model. This means companies can use software without having to buy it. They can also. Remove users as needed. This model is good for companies because it is flexible and cheap. Software as a Service is different from software models. Traditional models require a lot of money upfront. They also need equipment to run. Software as a Service is better because it is easy to use and does not cost a lot. This makes it possible for small companies to use software.
However Software as a Service also has some problems. One of the problems is keeping customers. When customers stop using the software it is called customer churn. Customer churn is an issue for Software as a Service companies. It can affect how money they make. In a market keeping customers is just as important as getting new ones. Big companies like IBM need to keep their customers. If they lose

customers they will lose money. So companies need to use data to understand what their customers want. They need to be able to predict when customers will stop using their software.
This study will use machine learning to predict customer churn. It will use data from IBM to do this. The goal is to help companies make decisions and keep their customers. Software as a Service companies need to be able to predict customer churn. This will help them keep their customers and make money. The Software as a Service industry is always changing. Companies need to be able to change with it. They need to use data and machine learning to stay. This will help them keep their customers and be successful. Software, as a Service is a way for companies to use software.. They need to be able to keep their customers.

PROBLEM OF STATEMENT

Customer churn is a problem for companies that sell software online. It affects how money they make how profitable they are and how well they compete with others. With new technology and data analysis tools many companies still have trouble figuring out which customers are likely to stop using their services.

- One reason for this problem is that customer data is complex. It includes things like where customers are from, how they use the service, their billing information and how they interact with the company.
- All these factors are. Change over time.
- This makes it hard to get information from the data using old methods.

Many companies only try to solve the problem after it happens. They do not try to prevent customers from leaving in the place. This approach means they miss chances to keep customers and spend more money finding new ones. There is also a lack of understanding about why customers leave. Things like price, service quality, customer support and competition all play a role. They are not equally important for all customers. For a company like IBM, which operates in a competitive and data-driven field not having a good system to predict customer churn can make it hard to keep customers and grow .This study aims to create a model that can look at customer data find key signs of churn and give useful information to help make decisions.

OBJECTIVE OF STUDY

To understand what makes customers cancel their subscriptions in SaaS businesses. To do this I need to look at how customers behave how they use the product and some basic info about them.

- I plan to create and use some statistical models or machine learning models. These models should help me predict which customers are likely to stop using the product.
- I also want to try out types of models such as logistic regression, decision trees, random forests or neural networks.
- I will compare how well each model works in predicting which customers are, at risk of churning, looking at accuracy, precision and recall.

SCOPE OF STUDY

The focus of this study is on customer churn in a business that uses a SaaS system. We are looking at a dataset from IBM that has a lot of information about customers. This information includes things like who the customers are what they subscribe to how they use the services and how much they pay. We want to use this information to put customers into two groups: those who stop using the service and those who do not.

We will look at all the steps involved in analysing the data including getting the data ready looking at what's in the data creating a model to predict customer churn and testing the model. This study can be used by businesses that sell to businesses and by businesses that sell directly to consumers, especially those that offer big services to large companies.

We are only using the data we have. We are not collecting new data or looking at data in real time. We can only use the information that's in the dataset so there are some limitations. We are not looking at things like what's happening in the economy what competitors are doing or how customers feel about the service. With these limitations this study provides a complete plan for understanding and predicting customer churn when we have a lot of data. Customer churn is a problem for SaaS businesses and this study is all about customer churn. By looking at customer churn we can learn more, about what causes it and how to prevent it.

RESEARCH METHODOLOGY

This study is about finding out why customers stop using a service. To do this we use information that's already available and special computer programs to make a model that can predict when a customer will stop using the service. We have a lot of information about customers who use a kind of software. The first thing we do is get the information ready to use. This means we fix any mistakes change some of the information into numbers and make sure everything is consistent. We need to do this so that we can use the information to make our model.

After we get the information ready we look at it to see if we can find any patterns. We make pictures like bar charts and histograms to help us understand what the customers are doing. Then we use computer programs to make models that can predict when a customer will stop using the service. We try out a few models, like Logistic Regression, Decision Tree and Random Forest. We use some of the information to train the models and some to test them.

We use measurements, like accuracy and precision to see how well the models are working. We pick the model that works the best. We use a computer program called Python to help us with all of this. It makes it easier to work with the information and make the models. Customer churn is a problem and we are trying to make a model that can predict when it will happen. We use customer churn models to find out why customers stop using the service.

FINDINGS

The study found out that customer churn is affected by a lot of things like how long a customer has been with the company, what kind of contract they have how much they pay every month and how they use the service. Customers who have just started with the company are more likely to leave so the beginning of the customer relationship is really important for keeping them. Customers who can cancel their contract every month are more likely to leave than customers who have contracts for a time, which shows that having a stable contract is important. If customers have to pay a lot every month they are also more likely to leave which means that the price of the service is a part of the customers decision.

If the company does not offer services like technical support and online security customers are more likely to leave too. The study tried out a few models to predict customer churn and the Random Forest algorithm was the best one. This means that it is really good at predicting which customers will leave.

These findings are really useful for understanding how customers behave. They show how important it is to use data to make decisions about customer relationships. Customer churn is a deal and companies need

to think about things, like tenure and contract type and monthly charges and service usage patterns to keep their customers.

SUGGESTIONS

To keep customers SaaS organizations can do a things. First they need to make sure customers are happy when they first sign up. This is the time when customersre most likely to stop using the service. SaaS organizations should help customers get started and talk to them in a way that feels personal. They should also give customers some incentives to keep them interested.

SaaS organizations should also try to get customers to sign up for periods of time. They can do this by offering discounts or extra benefits. This will make it less likely that customers will stop using the service. The price of the service is also important. SaaS organizations need to make sure they are charging a price for what they offer. Customers should feel like they are getting a deal.

SaaS organizations should also try to make their customer support better. They should help customers when they have problems and offer features that make the service more useful. This will make customers happier and more loyal to the SaaS organization. SaaS organizations should use systems to predict when customers are, at risk of stopping the service. These systems use machine learning models to identify customers who might be unhappy. This way the SaaS organization can do something to help these customers before they stop using the service.

CONCLUSION

This study shows that machine learning can help predict when customers stop using a SaaS product. It uses a set of data and special analysis methods to understand why customers leave. The results show that how long a customer has been using the product their contract and the price they pay are important in understanding their behaviour. these factors can help companies know when customers might leave companies can then do something about it the study also says that using data to predict what customers will do can help companies be more proactive.

They can fix problems before customers leave. one limitation of the study is that it uses data that was not collected for this purpose. Also there were variables available still the study provides information for businesses it shows how data can help companies keep their customers future research can improve on this study by using more data, better analysis methods and integrating predictive models into business operations.

The study helps both researchers and businesses by showing how data can solve a problem in the SaaS industry machine learning and data analysis are key to predicting customer churn companies can use these techniques to keep their customers. Customer churn is a challenge, in the SaaS industry predicting it can help businesses succeed.

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