

# 1. INTRODUCTION

Social media has become a medium for communication between individuals and several aspects of the business field, including decision-making processes, brand promotion, brand marketing, and personal branding [1]. Many companies and organizations use social media to reach the masses. One of them is Instagram. This social media platform was founded in 2010. Until now, Instagram is the sixth most visited website. Instagram has the fourth most users of all mobile applications, and more than one billion people use the Instagram application every month [2].

Sentiment analysis is a field of study that analyzes people's opinions, sentiments, evaluations, assessments of attitudes, and emotions towards entities, such as products, services, organizations, individuals, events, topics, and other attributes [3]. A significant result in sentiment analysis is identifying the emotions expressed in the text, where the expression's result shows a positive or negative opinion based on the topic in question. The problem with sentiment analysis is the amount of data that needs to be tested for manual analysis. Of course, it takes a lot of time and effort, especially if the opinion is in the form of comments. Manual analysis requires analysts to focus on every sentence they read before making a sentiment decision. Therefore it must be done computerized to reduce the time needed to analyze and determine positive or negative opinions.

A Recurrent Neural Network (RNN) is a type of artificial neural network architecture where the process is called in a loop to process input, usually sequential data. RNN is included in the category of deep learning because the data is processed in many layers. RNN has grown rapidly and revolutionized fields such as natural language processing (NLP), speech recognition, music synthesis, financial data processing, DNA sequence analysis, image, video captioning, word prediction, word translation, image processing, speech recognition, and so on [4].

Another method compared to this research is bidirectional LSTM. Bidirectional LSTM is one of the commonly used LSTM variants. Two types of inputs are entered into the bidirectional LSTM, forward input, and backward input. The outputs of these layers are generally combined into one. The model can learn past and future information for each input sequence with this layer [5].

Several studies related to sentiment analysis were carried out. In this study [6], a method was developed for classifying sentiment analysis and identifying the sentiments of each opinion word contained in the response and hashtag data. The results are that posting photo or picture on Instagram make a positive comment from visitor and the impact is increasing visitor to Rinjani Mountain. In this study [7], sentiment analysis was carried out on the movie review. The data used is the result of a film review where the average number of texts in the review is 233 words. The method used is LSTM. The results of this study are the results of accuracy reaching 88.17%. In this study [8], sentiment analysis was carried out on one of the news portals in Indonesia. The method used is the Long Short-Term Memory (LSTM) method. The result states that the LSTM method can analyze the news context well on the news web portal.

Based on several related studies, this study uses the RNN method with the LSTM model to analyze student satisfaction with the Telkom University Language Center (LaC) Service. The data used in one of the differentiators from several related studies have been described. These two things are the difference between this research and previous research.

The author takes the object of research on the Instagram Language Center (LaC) Telkom University account. Since 2016, the Telkom University language center service has started using Instagram to interact with its followers, with the number of followers increasing daily. In classifying sentiment analysis, the author uses the Recurrent Neural Network (RNN) algorithm to determine and measure responses in implementing student satisfaction with Telkom University language center and also as an accuracy comparison, the author uses the LSTM bidirectional model. services. The dataset used in this paper was obtained through the data crawling of Telkom University's Instagram Language Center (LaC).