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Dashboard for Social Media Marketing Analysis Between B2B Company (Pepsi vs Coca-Cola)

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Abstract : Social media analytics is a method for social network data such as Facebook, Instagram, LinkedIn, and Twitter to be gathered and evaluated. Marketers typically use it to monitor online discussions about goods and businesses. There is a lack of knowledge about social media analysis in society and the amount of unstructured data is increasing, which takes more time to analyze. The goal of this study is to look at the features of these two B2B companies' tweets. The Dashboard for Social Media Marketing Analysis between B2B Companies (Pepsi vs Coca-Cola) was created to analyze the behavior of Twitter users based on the way they tweet about these two B2B companies. The dashboard focused on the behavior of Twitter users based on the time and dates that they tweet by looking at the number of favorites and retweets. Then, using sentiment analysis on user tweets, the dashboard examines the Twitter users' behavior. Finally, we created a prototype of a dashboard for B2B companies' social media marketing analysis. Looking at the sentiment analysis page assists the B2B company in identifying issues that occur on social media, which also assists the B2B company in improving their business performance. Knowledge Discovery in Databases (KDD) and qualitative metric data in conjunction with KNIME software are used for the methodology. The dashboard can provide benefits for greater understanding of how social media analysis is important in the new business era.

Keywords: Social Media Analysis, Twitter Analysis, Sentiment Analysis, Dashboard

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1. Introduction

Scholars utilize social media for a variety of purposes, including research dissemination and cooperation, knowledge exchange and discussion, and data collection and analysis [1]. Sentiment analysis, also known as "opinion mining" or "emotion Artificial Intelligence," refers to the systematic recognition, extraction, evaluation, and examination of emotional states and subjective information using natural language processing (NLP), text mining, computational linguistics, and bio measurements. Sentiment analysis is concerned with the voice in customer materials, such as surveys and reviews on the Internet and social media sites [2]. For over two decades, social media has been a well-known medium for expressing the general public's sentiments all around the world. Sentiment analysis, often known as opinion mining, is a technique for mining the general public's opinions or sentiments [3] When analyzing current and continuously changing events, online communities can be used as a supplement to surveys. Their digital footprints show collective emotional dynamics in near-real time [4].The visual dashboard, which gathers and displays data from a variety of sources, is one of the most often used interface concepts.

There is still a lack of awareness of social media analysis in society, which means that social media analysis is not being used by small or large enterprises to increase their understanding of client demand and so improve their business. Organizations waste a lot of manpower developing unstructured data, wasting time and money, and the data never reaches the appropriate people at the appropriate time [5]. Unstructured data is important for decision making in a company. An example of unstructured data on Twitter is the tweets from twitter users. The objective of this study is to examine the characteristics of tweets by these two B2B companies. Next, they analyze the behavior of Twitter users by doing sentiment analysis on user tweets. Lastly, to develop the prototype of a Dashboard for Social Media Marketing Analysis for B2B companies.

2. Materials and Methods

Data has been collected from official B2B company pages such as Pepsi and Coca-Cola Twitter. The methodology that has been used is Knowledge Discovery in Databases (KDD) and by focusing on social media metrics, which is a qualitative metric. KDD is a multi-step process involving preparation of results, scanning for patterns, assessment of information, and refining with iteration after adjustment.KNIME software is used for this KDD technique. There are 7 steps in KDD [6].

The first step is to clean up the data to remove noise and contradicting information, as well as a strategy for dealing with incomplete data fields. Characters like emoji, @, or whether the missing value has been replaced depending on meaning, and many other approaches are examples. The second step required data integration, which entailed combining data from several sources. For example, combine companies' data from how the tweets characters, number of likes, number of retweets, and how the Twitter user reacts to the tweets. This combination of those elements helps understand how these two B2B companies get engagement from Twitter users. The third step is involved with data selection, where data related to the analytical task is collected from the analysis process. For example, the dataset for this research is derived from the Twitter. The study aims to see what the sponsorship events have been done by these two B2B companies. The fourth step is the transformation of data, in which data is converted and consolidated into ways suitable for mining by summarizing or aggregating operations. The fifth step is Data mining is an important phase in which smart techniques are used to collect data patterns. The second last step is evaluation of patterns to recognize genuinely fascinating patterns reflecting information dependent on measurements of interest. The last step is to present information, where simulation and knowledge representation approaches are used to present users with mined knowledge. **Figure 1** shows the steps in the KDD technique.
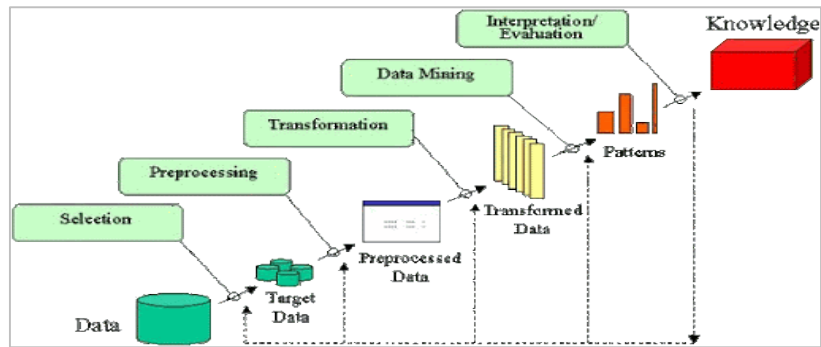
Figure 1: Step in KDD (*Reference*: [6])

3. Results and Discussion

The Dashboard for Social Media Marketing Analysis between B2B Companies (Pepsi vs Coca-Cola) is to analyze the behavior of Twitter users based on the way they tweet about these two B2B companies. The thing that this dashboard focused on is the behavior of Twitter users based on the time and dates that they tweet by looking at the number of favorites and retweets. Next, to look more into the details of the dashboard, it uses sentiment analysis of the tweets to see if they are neutral, negative, or positive. This analysis gives more understanding of how the real behavior of the user is when they tweet and can identify the main problem that they have by looking at the negative sentiment. This might help the company to solve the problem faster.

Figure 2 shows the *Dashboard for Social Media Marketing Analysis between B2B companies (Pepsi vs Coca-Cola)* and it has four pages. The first page is the main page that provides short information about the history of Pepsi and Coca-Cola on Twitter, a description of how to use the dashboard and a basic analysis of the top 5 tweets based on number of favorites and word cloud. The second page is the time analysis page, which is to see what the best time is to gain high favorites and retweets tweets. The third page is the sentiment analysis page. This page is focused on the sentiment of the user toward these two companies. This helps to understand the behavior of the user when they tweet. The last page is the country page, to see which country always tweets about these two companies.

Figure 2: Main Dashboard Page

Table 1: Field testing questionnaires

Demography and Background Information		
Gender	Male	9
	Female	28
Age	16-20	1
	21-25	31
	26-35	4
	Over 45	1
How often do you use the Twitter?	Daily	19
	Weekly	4
	Monthly	2
	Occasionally	6
	Never	6
Have you heard about "social media analysis"?	Yes	31
	No	6
Have you heard about "dashboard social media marketing analysis"?	Yes	14
	No	13
	Not sure	10
Overall Satisfaction Dashboard		
Time taken to complete the task (To be filled by the Timekeeper)	Average of time taken	11.32 minutes
Overall, I am satisfied with the ease of accessing the dashboard with the link given	Natural	7
	Agree	15
	Strongly agree	15
Overall, I am satisfied with the amount of time it took to complete this task.	Agree	21
	Strongly agree	14
Usefulness of Dashboard		
Does the dashboard give you new knowledge about social media marketing analysis?	Natural	1
	Agree	19
	Strongly agree	17
Does the result of the analysis make you more understand the behavior of the twitter user when come to talk about the company?	Natural	5
	Agree	15
	Strongly agree	17
Do you agree that sentiment analysis is important in business?	Natural	2
	Agree	16
	Strongly agree	19
Do you agree that dashboard social media analysis is important in business in new era?	Natural	4
	Agree	16
	Strongly agree	17
Ease of Use of Dashboard		
Does the page button work well for you?	Natural	3
	Agree	15
	Strongly agree	18
Does the font size of the analysis make you feel easy to read?	Disagree	6
	Agree	12
	Strongly agree	15
Does the dashboard analysis make you feel easy to understand the purpose of the dashboard?	Strongly disagree	7
	Agree	13
	Strongly agree	11

Table 1 shows the method of evaluation is a post-task questionnaire, which is to evaluate the usability, usefulness, and ease of use of the dashboard. A total of 37 respondents evaluating the questionnaire are from business backgrounds, such as online and physical businesses. Usefulness evaluation is used to identify the level of knowledge in social media analysis in business. On the other hand, ease of use is satisfied by most of the respondents. However, the font size on the dashboard must be improved in the future. Overall, by creating the dashboard, most of the respondents gave good feedback and mentioned that the dashboard could increase their knowledge of social media analysis.

Due to several concerns that had developed in Coca-Cola, such as a voting issue that occurred in Georgia, the United States of America, where Coca-Cola issued a forceful statement against the voter suppression measure, the analysis found that Pepsi had less unfavourable sentiment than Coca-Cola. Users often express dissatisfaction with the manner Coca-Cola develops marketing videos for its products. Finally, people are dissatisfied with environmental issues relating to soda makers' use of plastic.

4. Conclusion

Big data applications today keep growing and businesses are already moving online or more advanced by using social media analysis in business. This is important in terms of improving the performance of a business. From the field testing, we can see that there is still a lack of knowledge of social media analysis in business, hoping that in the future there will be more research about social media analysis and workshops about social media analysis in business or any organization.

Acknowledgement

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