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Leveraging Business Strategy Based on Customer Sentiment Embedded in Big Data of Social Media in Saudi Arabia

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Abstract

Purpose: This study aims to develop a business strategy by comparing consumers' sentiments on social media such as Facebook and Twitter towards financial and non-financial companies in Saudi Arabia, one of the West Asia countries (normally known also as the Middle East region). **Research design, data, and methodology:** It uses it to leverage consumer communication in business, then predicts future preferences and the potential sustainability of leading firms to develop a corporate strategy and create competitiveness in this region. This study adopts a data-driven approach using social media data from four companies in the financial and non-financial sectors in Saudi Arabia until October 2020 through sentiment analysis. **Results:** This study discovers meaningful implications for how consumers' feelings and social media usage behavior in the financial industry differ from the non-financial sector in this region. **Conclusions:** This research provides an extraordinary power to help companies in emerging markets be innovative and proactive in creating competitiveness by acquiring data on customer sentiment or emotions, finally leveraging business communication, and setting up future strategies based on trend-based insights in West Asia.

Keywords: Business Strategy, Customer Sentiment, Big Data, Social Media, Saudi Arabia

JEL Classification Code: L1, M31, N25, N75

1. Introduction

Modern companies worldwide have been starting to focus on two-way communication with customers to ensure sustainable survival in a competitive business environment. The best example of interactive communication is using social media such as Facebook, Twitter, Instagram, etc. In particular, in the financial field, where traditional and classic colors are intense with a hard image, strategy development using customers' reactions to social media is becoming more prominent (Park & Javed, 2020; Chen et al., 2014; Jiang et al., 2018).

In other words, social media has become more than a means to broaden and maintain personal relationships; it has become a strategic tool for the sustainable survival of a company (Ellison & Boyd, 2013; Park et al., 2017). Individual consumers have acted as significant big data providers through the comments and postings of the social media they participate in (Park et al., 2017). Moreover, companies are taking advantage of the massive amount of big data consumers have produced in their future strategies, especially marketing strategies (Amigibulls, 2015; Azam, 2015; Park & Alenezi, 2018). With a participatory nature, social media is now changing the pattern of communication (Baptista et al., 2017; Huang et al., 2015). Furthermore, it has played an essential role in the production, management, and reuse of knowledge, even the issue of distribution leadership by facilitating interaction and internal

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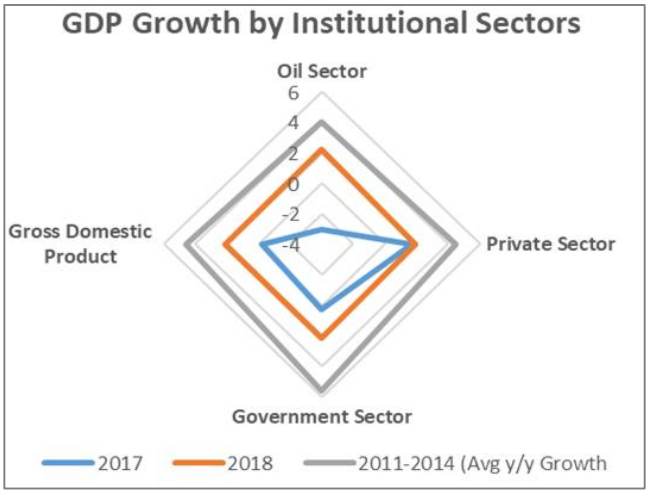
collaboration as well (Majchrzak et al., 2013; Razmerita et al, 2014; Sutanto et al., 2011; Von Krogh, 2012).

Despite the importance of social media as a source of big data generated from customers and its utilization (Choi et al., 2019), few studies use it for corporate strategies and decision-making in a specific region. In particular, in the financial sectors such as banking, insurance, regulatory authorities, etc., corporate decision-makers and the underlying economic data in emerging markets have been more critical traditionally than the strategy of listening to the voice of consumers. However, the financial sector is also a kind of service industry (International Labour Organization, 2020). It is no longer possible to survive with a passive attitude of sitting and waiting for consumers. In the United States, the center of the world economy, the global financial crisis occurred due to a series of international financial firms' bankruptcies in 2008. This phenomenon questioned the old saying, "Banks never fail." (Roberto et al., 2016; Park & Alenezi, 2018). As a result, the financial sector realized that it was necessary to wait for the turmoil to pass and more actively engage with customers or investors to attract them and resurrect them. Therefore, listening to customers' voices and reflecting on them in its future strategy has become a crucial issue. Accordingly, this study aims to focus on the customers' side and compare the customers' reactions to social media in the financial and non-financial sectors in Saudi Arabia so as to examine how to use them for corporate strategic decision-making in this region. The topic of this study is also linked to corporate sustainability. The issue of corporate sustainability has been addressed as the main topic of the business world for decades (Dess et al., 2014; Park & Javed, 2020). Then, Triple Bottom Line was developed and used to measure this sustainability as an augmentation of the traditional business reporting framework by measuring social and environmental achievements besides economic performance (Dess et al., 2014). However, although this method has been officially applied to companies and used as an indicator to measure companies' sustainability, companies are now taking a further step and developing their own sustainability and competitiveness model to find best practices on this matter. Therefore, as a critical tool to measure a firm's value and sustainability, the point of view of this study can fill an area that the triple bottom line cannot cover by reflecting customers' perspectives and concerns in this region.

2. Literature Review

2.1. Financial and Non-Financial Sectors in Saudi Arabia

Saudi Arabia plays a vital role in the Middle East politically and economically. It happens the following reason that the GDP of Saudi Arabia accounts for 38% of the Middle East and North Africa; in other words, MENA (hereafter, MENA) and its influence in this region are immense (Bassam, 2015; Kavoossi, 2000; Park et al., 2017; Park, 2018). According to the World Bank (2019), Saudi Arabia drastically reduced oil production as part of the 2019 OPEC + contract, eased GDP growth from 2.4% in 2018 to 1.7% year over year in the first fourth of 2019. However, with the uncertainty of the global economy increasing in 2018, both the developed and emerging G20 countries have seen slow economic growth, while the Saudi economy remains resilient, and the development of the non-oil sector has also increased. In addition, high levels of foreign reserves and low levels of public debt indicate that Saudi Arabia has sufficient financial capacity to respond to the economic downturn. According to the Saudi Arabian Monetary Authority (hereafter, SAMA), in 2019, the private sector, the financial and insurance sectors, and the manufacturing industry showed strong growth, while the construction sector continued to shrink due to demand and supply factors with doubts about growth potential (SAMA, 2019).

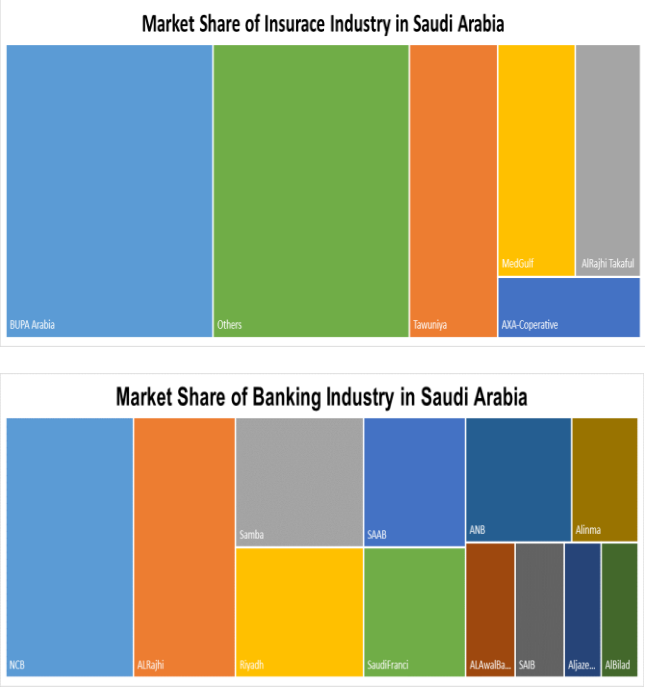


Source: Saudi Arabian Monetary Authority (2019), Park & Javed (2019)

Figure 1: GDP Growth in Saudi Arabia

Due to the importance of Saudi Arabia's role and influence in the MENA region, it would behoove Saudi Arabia's major companies, such as Aramco, SABIC, and others in financial and non-financial sectors, to play a more active pivotal role in the nation. Particularly in alignment with the country's long-term vision, 'Saudi Vision 2030', the functions of these companies are growing (Park et al., 2017). According to Aljazira Capital (2018), the Saudi banking sector's balance sheet improved by 2.1% p. The banking sector in Saudi Arabia has 12 listed and other non-listed banks. According to the balance sheet size, National

Commercial Bank (hereafter, NCB) was recorded as the largest bank in Saudi Arabia with more than SAR 459.1bn. It almost marked 20.4% of the total market, followed by Al Rajhi Bank based on assets of SAR 356.4bn with a 15.9% market share. After that, Samba with total assets of SAR 228.3bn, and Riyad Bank with an asset base of SAR 225.9bn followed. It represents 10.2% and 10.1% respectively of total banking assets. In the meantime, BUPA was recorded as the most prominent player with a 32.7% portion of the market share in Gross. It also reports that BUPA paid the highest claims of SAR 1.83bn. Then, it was followed by Tawuniya at 13.9%, MEDGULF at around 9.7%, and Al Rajhi Takaful at nearly 8.1%, AXA-Cooperative reaches at 4.7%, and others at 30.9%. AlJazira Capital reported it in 2019 in Figure 2

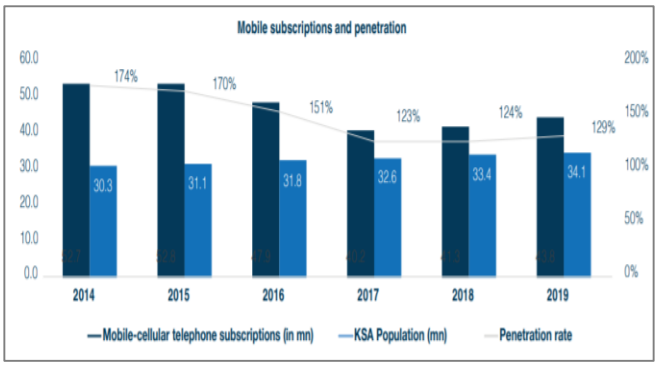


Source: Aljazira Capital (2019)

Figure 2: Market Share of Total Insurance and Banking Sectors in Saudi Arabia in 2018

The year 2018 recognized complementary developments in the asset composition of the banking sector. Accordingly, the role of the Saudi Government became more crucial for the government incentives of the international players in achieving balanced socio-economic growth, diversity, and even sustainability. As a result, many researchers have looked at the Saudi economy or leading companies in the financial sector; however, there is still not much research on this. Most studies remain qualitative analyses using case studies, not empirical studies quantitatively using numeric data. Moreover, there is little business research overall on Saudi companies. Most of these big financial companies have not made the proper transition to use and manage data derived from big data to develop a marketing strategy for customers. With those limitations in research, this study began to fill an empty area.

On the other hand, this study intends to look at mobile operators as a non-financial sector that provides the most customer-oriented services. Saudi Arabia is the most heavily populated country in the GCC (Gulf Cooperation Council) region, with more citizens comprising the youth. Accordingly, Saudi Arabia has a high mobile penetration rate in the Middle East with a mobile subscriber base of 43.8mn (+6% year-on-year) in 2019, and is one of the most advanced telecommunications services markets due to a large number of mobile broadband users. It also has an excellent place to take advantage of the potential opportunities that 5G will offer in the future generally. With the increasing use of advanced technology, there is a growing demand for information communication technology (ICT) services. In particular, with the advent of the COVID-19 pandemic, more students, workers, and citizens are based in their homes and work online in a virtual setting, making mobile operators more competitive in the post-corona era. In Saudi Arabia, the Saudi Telecom Company (hereafter STC), Mobily and Zain KSA, and MVNOs are significant players in the telecommunications market, all seeking ways to monetize with thousands of mobile towers spread across Saudi Arabia (Wansink, 2020). The competition in the Saudi telecommunication sector is highly intense. STC is one of the companies competing in this specific sector with a high market share of 52%-56%, while Mobily, Zain KSA, and MVNOs are servicing the rest (Aljazira Capital, 2020).



Source: Aljazira Capital (2020)

Figure 3: Mobile subscriptions and penetration levels in Saudi Arabia (KSA) in 2014~2019

The latest trends in this sector disclose an opportunity to expand Average Revenue Per User (ARPU) in the long term for the big three telecom operators: STC, Mobily, and Zain

KSA. Subscriptions continued to grow for the second consecutive year after declining for two years in 2016 and 2017, caused by the implementation of the SIM authentication policy. Penetration level also reached 129% of the total population from 124% in 2018. Moreover, improved accessibility to the Internet, demographical environment changes, and a raise in the demand for high-value services are certainly boosting the top three lines of telecom operators.

2.2. Predictive Data Mining and Big Data from Social Media

Forecasting refers to the technique that uses historical data to make predictions for sketching the future by analyzing patterns or trends. With the development of technology, various data mining prediction techniques have been developed to increase prediction accuracy while reducing the range of errors. Data mining is the process of extracting and transforming meaningful patterns from a vast amount of big data. We can grasp helpful information and obtain data-driven insights (Park & Alenezi, 2018; Park, 2020; Razmerita et al., 2014; Shweta, 2012). Consequently, research using data mining is increasing in several areas, for instance, computer science, medicine, business, and politics (Abramowitz, 1988; Amigobulls, 2015; Becker & Lee, 2019; Fishbein et al., 1980; Nadeau et al., 2009; Lewis-Beck & Rice, 1984; Park et al., 2017; Whiteley, 2005; Whiteley et al., 2011).

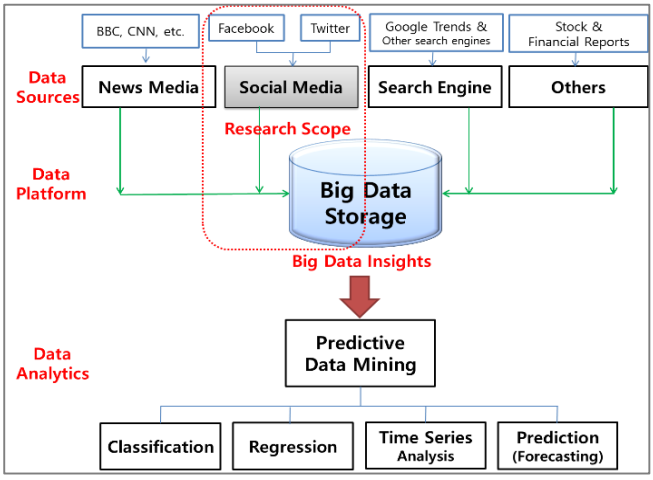
This big enhancement in data mining techniques sheds light on the synergizing with the utilization of big data such as social media data. Since social media users as customers of general goods and services produce lots of data by uploading posts or comments, social media has become a great tool to create big high-quality data beyond the means of exchanging opinions and expanding relationships (Azam, 2015; Nguyen, 2018; Park et al., 2017; Park 2019; 2020). In the early days of research, prediction techniques have been beneficial in predicting cancer patients' survival rates in the medical field. In addition, health forecasting became a reliable tool for predicting future health events in general or situations such as requests for healthcare needs and complete health services (Majer, 2011; Soyiri & Reidpath, 2013; Javed et al. 2015). One of the major issues is to predict population health consequences concerning the number of events occurring in the space of time, for instance, the forecasting of life expectancy or health expectancies (Majer, 2011). As part of that effort, it accelerates preventive medicine and intervention strategies for health care by pre-indicating health service providers to promptly take appropriate actions to minimize risks and manage demands.

On the other hand, various prediction methods such as pool data for predicting election results have been used in the political field for a long time. However, in recent years, many countries and leading countries such as the U.S. and the U. K. have begun using social media data as a tool for predicting election results. The traditional poll data technique has contributed significantly to improving the prediction rate and accuracy of the election results in advance (Franch, 2013). Accordingly, research on election prediction through data mining techniques is actively underway in the field of political science (Abdulaziz, 2013; Abramowitz, 1988; Campbell & Garand, 2000; Fishbein et al. 1980; Nadeau et al. 2009; Lewis-Beck & Rice, 1984; Whiteley, 2005; Whiteley et al., 2011). Predicting the future, especially in business, is essential in establishing a leading and proactive strategy (Dess et al., 2014).

Consequently, a well-predicted company allows a firm to gain competitive advantages under competitive and uncertain business environments. With this tremendous importance of forecasting, the boom in the number of social media such as Twitter and Instagram users, and the data they created makes it easier to use many predictive techniques through data mining. Through social media data, predictive analytics has been more powerful and beneficial in predicting various situations; for example, Arthur (2015) found a positive relationship significantly between Facebook popularity measured in Facebook 'like' and stock prices of a consumer brand. Also, Amigobulls (2015) also predicted the frequency of stock trading and its price for the next day depending on social media data such as Facebook and Twitter. The impact of Hallyu (Korean products boom) and social media was also discovered in purchase decisions in Vietnam (Nguyen, 2018). In addition, Park et al. (2017) predicted Arab consumers' preferences for Korean Content using Facebook data in the MENA region. Recently, Park & Alenezi (2018) have discovered data-driven insights by studying the popularity of Saudi multinational corporates with Facebook and Twitter data through sentiment analysis.

2.3. Research Framework

This study deals with customers' sentiments by applying data mining techniques. Using this method, it aims to connect business with social media proof to test the potential relationship between social media and its actual impact on companies' preferences. For this, it adopts a data-driven approach by extracting big data from the source of social media, then analyzing it to predict the future preferences of companies primarily in the context of emerging markets. There are several types of big data sources. In this study, Facebook and Twitter data among the source of social media were used. Due to the data-driven approach, there is no theoretical framework with hypotheses in this study.



Source: Park (2019), Park & Javed (2019), Park (2020).

Figure 4: Research Framework of Data-Driven Approach using Big Data

3. Research Methodology

This study aims to examine and compare customers' sentiment between financial and non-financial companies that are located and mainly operating in Saudi Arabia. It uses sentiment analysis, one of the data mining techniques that are trendy tools in knowledge discovery and expansion in big data. In selecting companies from financial and non-financial sectors, the following considerations were taken into account. As a company ranked 1st and 2nd in each field, it should be a company contributing to the use of social media and the National Transformation Plan-2020 (NTP-2020) in Saudi Arabia. Accordingly, NCB and Al Rajhi from the banking sector were selected for the financial industry. STC and Mobily were chosen in the telecommunication sector to provide customer-oriented services in the non-financial sector. The list of companies chosen is below with criteria fulfillment in Table 1.

The data was collected from the beginning till October 2020 using a tool created in PHP applications and JavaScript that used the Application Programming Interface (API) provided by Twitter and Facebook to obtain the data from each company individually (Park & Alenezi, 2018; Park & Javed, 2019). Using this tool, sentiment analysis was used for this study. The sentiment analysis deals with the prediction of the genuine sentiment of people from their posts or comments. It helps in identifying the overall opinion as well as the perception of people about the company to predict future preferences or popularity. Social media data is open source in public for any usages and as it is collected from the pages of each company so the post is made from each company while the audience can be any. However, it is observed that our results in terms of market penetration are not more than a gulf area.

Table 1: The companies' list selected along with the selection criteria

No	Company Name	Model Type	Regional Presence	Social Media Presence	Top 10 Ranked in each sector	Contri-buting to NTP 2020
1	National Commercial Bank (NCB)	Banking sector	KSA, International	✓	✓	✓
2	Al Rajhi bank	Banking sector	KSA, International	✓	✓	✓
3	Saudi Telecom Company (STC)	Telecom sector	KSA, Regional	✓	✓	✓
4	Mobily	Telecom sector	KSA, Regional	✓	✓	✓

4. Results and Discussion

Sentiment analysis basically determines which opinion a document has among positive, negative, or neutral comments. Therefore, sentiment analysis is performed using a sentiment dictionary, and analysis is performed based on the Sentiment Polarity of vocabulary, which is the minimum unit of each document. In this study, sentiment analysis was conducted on sentences by topic using the R program. After sentiment analysis, there is a difference in the sentiment classification of documents according to the sentiment value. For example, in sentiment analysis, a value of 0 is classified as neutral, a value greater than 0 is classified as positive, and a value smaller than 0 is classified as negative (Bravo-Marquez et al., 2014; Hong. et al., 2018; Hu & Liu, 2004; Keshavarz & Abadeh, 2017). In the case of Bravo-Marquez et al. (2014), when analyzing using each dictionary, a value of 0 was designated as neutral emotion, and similarly, in this study, emotion value 0 is neutral, and the customer's positive (sentiment value > 0) and negative (sensitivity value < 0) are analyzed. The sentiment analysis process for each topic is shown in Table 2 below.

Table2: Algorithm for Sentiment Analysis

Sentiment (comment D, lexicon B)
For each comment d_i in D
score = 0
For each w_j in d_i
score = score + $v_B(w_j)$ //
the score of w_j in lexicon B
end for
if *(score> 0) sentiment* = positive
if *(score=0) sentiment* = neutral
else if *(score e<0) sentiment* = negative
Return *sentiment*

In Table 2, lexicon B is an emotional dictionary, and customers' comments are marked with D. W_j is the emotional vocabulary of customers included in SNS. Each score is classified as positive if it is greater than 0, negative if it is less than 0, and neutral if it is equal to 0. In the emotional dictionary, emotional values are pre-determined. Negative words are set to negative numbers, and positive words are set to positive numbers.

This research shows the following result of sentiment analysis quantitatively on Facebook and Twitter content. Table 3 shows selected four companies (NCB, Al Rajhi, STC, and Mobily) on Facebook and Twitter from the beginning to October 2020. It is observed that there are different likes and followers across the group (i.e., between financial and non-financial sectors); however, similar results within the group (i.e., between NCB and Al Rajhi, between STC and Mobily). Compared to the financial industry with absolute numbers only, non-financial companies have enormous penetration caused by the daily service they cater. It can be found from Table 2 that the number of followers in terms of Facebook and Twitter in the non-financial sectors surpasses all. It can be interpreted as follows. Mobile carriers provide more customer-oriented services to respond to the mobile service, which is a necessity for people in their daily lives, and it has resulted in more followers with more considerable penetration. In terms of followers, STC and Mobily have above 3 million people which means a single post will reach at least 3 million users on Twitter. Some followers represent the people who like to get particular company announcements and news. In the financial sector, these followers may be mostly public customers, including all types of stakeholders such as competitors, investors, stockholders, or even job seekers as well. However, in the non-financial sector, most followers are likely to be personal customers to solve their own personal issues individually.

Table 3: The presence of companies selected on Facebook and Twitter

Unit: K – thousands, M- Million

NCB		Al Rajhi		STC		Mobily	
Facebook							
Likes	369,155	Likes	593,653	Likes	2,374,630	Likes	2,134,270
Follow	370,757	Follow	590,078	Follow	2,358,059	Follow	2,121,632
Twitter							
Tweets	202K	Tweets	43.8K	Tweets	166K	Tweets	637K
Following	3	Following	8	Following	7	Following	6
Followers	847K	Followers	1.14M	Followers	3.91M	Followers	3.52M
Moments	13	Moments	12	Moments	8	Moments	9
Likes	131	Likes	90	Likes	985	Likes	281
Videos and Photos	4916	Videos and Photos	5185	Videos and Photos	23K	Videos and Photos	5001

As shown in Figure 3, comparing followers over tweets and likes relatively shows different results. The comparison of followers on Twitter in Al Rajhi and STC is above 2000% with a regional impact significantly, while the number of Facebook posts in all companies is similar to each other with a small number. It is noteworthy that the use of Twitter for all four companies shows a significant difference compared to using Facebook. In other words, it can be seen that Twitter is the best social media channel in this region, with the highest penetration compared to Facebook. It contributes to a greater reach in the market overall.

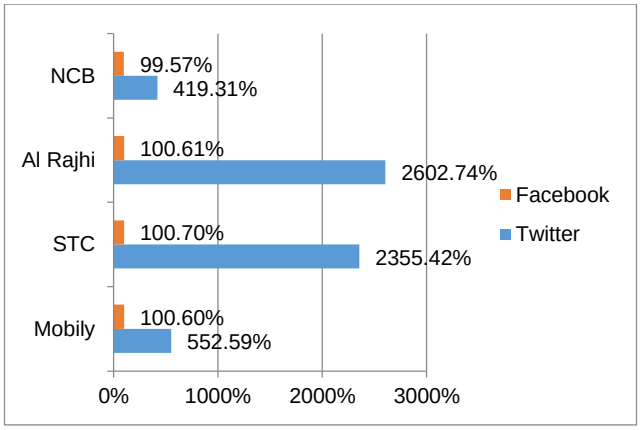


Figure 5: The comparison of Followers over likes and tweets

Sentiment analysis uncovers people's real emotions or perceptions about the company, and in this study, the result of its posts can be seen in Table 4. It is seen that no negative sentiment for Al Rajhi was detected in English posts, whilst it can be seen that Mobily has a higher rate for positive sentiment than other companies. One of the surprising findings from sentiment analysis is that many consumers take a neutral attitude toward the company rather than positive or negative emotions in the sentiment analysis. It means that there are potentially good opportunities to positively change the mindset of a neutral customer through a company's interactive communication strategy actively through social media.

Moreover, the interesting point is that internet penetration in both sectors is the same rather than different results between financial and non-financial companies that are mentioned in a few minutes. In terms of content, posts on the internet show customer engagement. It means that the content does matter regarding the posts, and it is likely that NCB is expected to penetrate local customers in comparison with other companies. Also, STC seems to be better in that it shows their greater number of followers overall.

Table 4: Sentiment analysis of each post

	NCB	Al Rajhi	STC	Mobily
Sentiment (+ive : -ive)	4:1	3:0	3:1	6:1
Positive	7	3	11	11
Neutral	114	54	106	29
Negative	2	0	4	2
Time per mention	1 min	2 min	2 min	1 min
Reach	58%	21%	53%	25%
Retweets	0	12	19	0

5. Conclusions

This study investigates customers' sentiment with social media data by comparing financial and non-financial companies to discover data-driven, psychological insights as a predictor of future preferences and potential sustainability of leading firms in the Kingdom of Saudi Arabia. In particular, this study suggests that companies in the financial industry must listen to customers' voices through big data such as social media and financial data inside the company to improve their customer service and reflect them incorporate strategies and decisions. Moreover, the crucial point is that this study exhibits intensive corporate research quantitatively with big data in the kingdom, which was challenging to access caused of a conservative business environment. It makes this study more invaluable and irreplaceable. Many studies conducted on Saudi companies have only been case studies or qualitative studies having limited internal corporate data in the specific context. Accordingly, the meaningful implications can be found in this paper as follows.

First, the bottom line is that sentiment analysis results between the traditional financial and non-financial sectors that prioritize customer-oriented services differ significantly. The sentiment or emotions of customers revealed through social media can serve as a good indicator of preference and popularity for the future of companies. This study suggests that companies in financial sectors should consider how to use this indicator to develop a two-way communication strategy with customers, which will eventually lead to the long-term sustainability of companies. The actual fact of the matter is that a quick, sudden change in customer sentiment is a pretty clear indication of trouble as a customer churn. In other words, companies need to grasp the meaning of big data in social media, understand customers' emotions before customers leave, and take measures to supplement them. To sum up, evidence indicates that we are on the brink of a significant breakthrough in two-way communication through the social network between companies and customers. And companies need to heed the voice of the great majority of customers through open sources.

Second, this study presents that it is possible to determine which channel is best for financial and non-financial companies. Firms must change their approach to a social network. The social media channels preferred by customers are changing depending on the region in which they do business and the nature of the business. As found in this study, when it is compared the number of Facebook and Twitter followers of all the companies, it observes that Twitter's number is overwhelming. It shows that Twitter's influence is more substantial for those companies based in Saudi and Middle East. Accordingly, they should double their efforts to engage in the preferred channels actively and proactively fight to bring customers' hearts to them. Furthermore, it is paramount that firms work together with customers; learn from customers, and commit together to gaining sustainability in business since social media data plays a crucial role as a firm's decision-making tool. By following up on the changing and latest trends of consumers' preferences, especially on traditional banks or any other financial companies can try to transform their hard images.

Finally, this data-driven research using big data leads to profound insights by discovering meaningful implications behind the data. In the meantime, research using data mining has been dramatically developed in the fields of medicine and politics with a focus on computer science. However, in recent years, research in business has become very active, and the utilization of data mining is becoming very important in developing corporate strategy and decision-making. In line with this trend, this study shows that this methodology can play a prominent role in predicting and preparing the future proactively of an uncertain company by showing meaningful results using data mining with big data.

Despite these achievements academically and managerially with meaningful conclusions, this study has the following limitations. It will address in a future study.

First, this study was conducted on behalf of West Asia (normally known as the Middle East region) and Saudi Arabia’s companies in this region among the various emerging markets. Therefore, research results for companies according to regional selection may appear differently. It can be considered that there may be variations in research if companies that can cover a wide range of other West Asia regions or other emerging markets are selected and conducted the same analysis. Second, this study aims to gain insight by comparing social media data of financial and non-financial companies. Therefore, as initial research attempted for this aim, the scope of the study was generally limited to several companies in the industry. In the future, it can be a significant study if it broadens the scope of research subjects and compare many companies in financial and non-financial sectors together. Lastly, this study was analyzed using sentiment analysis among several techniques of data mining. While this analysis is one of the most popular and

valuable methodologies, it is also possible to develop a variety of future prediction models using different types of data mining techniques such as predictive modeling. Therefore, for a more comprehensive and holistic approach, research can be used various mining techniques in a future study to compare and analyze them together to derive integrated results.

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