

# دمج تقنية تحليل المشاعر على وسائل التواصل الاجتماعي والاستطلاعات التقليدية - نهج متكامل لفهم الرأي العام في الكويت

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## الملخص

يستعرض هذا البحث الجدول القائم حول إمكانية توظيف محللات المشاعر والآراء الآلية على وسائل التواصل الاجتماعي لتحل محل الاستطلاعات التقليدية، ويدعو إلى الاستخدام المدمج لكلا الأسلوبين للوصول إلى فهم أفضل للرأي العام، ينحصر المجال اللغوي لهذه الدراسة على النصوص المكتوبة باللغة العربية، وتحديدًا اللهجة الكويتية التي تتمتع بسمات وخصائص تجعلها متميزة عن العربية التقليدية وعن بقية اللهجات العربية. يدرس البحث الرأي العام الكويتي حول قرار وزارة التعليم العالي في 9 يونيو 2023 بوقف البعثات الدراسية للتخصصات الطبية في جامعات الأردن ومصر؛ وذلك بهدف تقييم كيفية استفادة الحكومة من بيانات وسائل التواصل الاجتماعي والاستطلاعات التقليدية في فهم الرأي العام تجاه السياسات المختلفة.

تتمثل إحدى الإسهامات المهمة لهذا البحث في تطوير أول أداة لتصنيف المشاعر والآراء مصممة خصيصًا للهجة الكويتية، والبحث في قدرة هذه الأداة على تفسير تعقيدات اللهجة الكويتية المكتوبة وتحليلها. قدم البحث رؤية قيمة للسياسات والمشاعر التي تعبر عنها تلك النصوص؛ مما أسهم بوضع معيار جديد يراعي الخصوصية الثقافية واللغوية في تصميم أدوات تصنيف المشاعر.

تشير النتائج إلى أنه بينما قد لا تعكس وسائل التواصل الاجتماعي وحدها الرأي العام تمامًا في القضايا السياسية، فإن إضافة بيانات الاستطلاعات توفر منظورًا أكثر ثراءً وتعددًا للأبعاد. يُبرز هذا النهج أهمية دمج كلا المنهجين لإثراء عملية صنع السياسات، كما يسלט البحث الضوء على الدور الحاسم للرأي العام في تشكيل السياسات الحكومية، ويرى أن استخدام كلا الأسلوبين يمكن أن يؤدي إلى قرارات أكثر وعيًا؛ ما يعزز الثقة العامة ويقلل من احتمالية الاضطرابات السياسية.

الكلمات المفتاحية: التحليل الآلي للمشاعر، الاستطلاعات التقليدية، الرأي العام، اللهجة الكويتية، أداة تصنيف المشاعر، المعالجة الآلية للغة، صنع السياسات.

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# Integrating Social Media Sentiment Analysis and Traditional Polling: A Comprehensive Approach to Public Opinion in Kuwait

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## Abstract

This research explores the ongoing debate on whether social media sentiment analysis can replace traditional polling and advocates for the combined use of both methods to capture nuanced public perceptions expanding the geographic and linguistic scope of public opinion literature, this study focuses on Kuwait and the Arabic language. It examines public reactions to the Ministry of Higher Education's decision on June 9, 2023, to suspend scholarships for medical students at universities in Jordan and Egypt. The goal was to assess how data from both social media and traditional surveys can aid the government in understanding public opinion towards various policies. A significant contribution of this study is the development of the first multi-label emotion-classification tool specifically designed for Kuwaiti Arabic. This tool's unique capability to interpret and analyze the intricacies of the Kuwaiti dialect provided invaluable insights into local contexts and sentiments, setting a new benchmark for cultural and linguistic specificity in emotion-classification tools.

The findings indicate that, while social media alone may not fully convey actual public opinion on political issues, adding survey data yields a richer, multi-dimensional perspective. This approach emphasizes the importance of integrating both methodologies to inform policy-making. The study further highlights the critical role of public opinion in shaping government policies and suggests that using both methods could lead to more informed decisions, enhance public trust, and reduce the likelihood of electoral sanctions.

**Keywords:** sentiment analysis, traditional polling, public opinion, Kuwaiti Arabic, emotion-classification tool, natural language processing, policy-making.

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## Introduction

The relationship between public opinion and public policy is a fundamental aspect of normative democratic theory (Page and Shapiro 175; Hobolt and Klemmensen ;/9). In democratic systems, the government's policies must reflect the preferences of citizens to ensure its legitimacy. Hobolt and Klemmensen (379) emphasize the role of "electoral sanctions" in ensuring that governments align their policies with public opinion. Under this concept, government officials failing to adhere to public preferences risk being voted out of office in subsequent elections.

While the role of public opinion is well-acknowledged in democracies, its impact on non-democratic systems, especially in the Middle East, is less explored. Chen and Xu state that, unlike democracies where freedom of speech is protected by law, in less democratic countries, the possibility for citizens to speak freely depends on the strategic choice of the government (793). They suggest that less-democratic states may strengthen their rule by being responsive to public needs. If public opinion reveals discontent toward the government, policy improvements can suppress dissent. Separately, if public opinion toward specific policies is split, allowing discourse to continue disorganizes citizens, further strengthening the government's position as a mediator. Overall, to maintain social stability and stay in power, governments need information from citizens.

A critical question remains: how to best measure public opinion? Social media has become a significant outlet for expressing political views. Sentiment analysis of this data could potentially replace traditional opinion polls, which are costly, time-consuming, and suffer from low response rates (Manza and Brooks 89; Perrin and McFarland 87). Yet, the challenges of obtaining a representative sample and the technical complexities of sentiment analysis make it difficult to favor one method conclusively. This study navigates the complexities and limitations of both social media sentiment analysis and traditional opinion polls. Amidst the scholarly debate on whether sentiment analysis can replace opinion polls, some researchers advocate for using both approaches simultaneously (Buntain et al. 31, Callegro and Yang 218; Chary et al. 278; Moy and Murphy 31; Murphy et al. 24; Schober et al. 180; Smith 218; Callegro).

This study expands existing research by examining the relationship between public opinion polls and sentiment analysis within the Middle Eastern context, specifically Kuwait. This approach is relatively novel, as much of the prior research has focused on Western, fully democratic nations. The investigation centers on the Ministry of Higher Education's (MOHE) decision in June 2023 to suspend scholarships for medical specialties at universities in Jordan and Egypt, a move that ignited significant debate among Kuwaitis both online and offline. The study conducts separate quantitative analyses of social media and survey data concerning this issue, followed by a qualitative synthesis of these findings.

The authors anticipate that their findings will prompt the Kuwaiti government to recognize the importance of public opinion in shaping policy and to implement the methodologies showcased in this study. This could lead to more informed governmental decisions and decrease the likelihood of electoral sanctions, such as calls for government change or the replacement of specific ministers.

Moreover, a key aspect of this research is developing an emotion-classification tool tailored for tweets in Kuwaiti Arabic, a notable advancement given that most sentiment analysis research focuses on the English language. Few studies have targeted Arabic, and those that do primarily focus on Modern Standard Arabic (MSA), which doesn't capture the nuances of dialectical variations such as Kuwaiti Arabic. This research goes beyond the typical analysis of basic sentiment polarities—positive, negative, and neutral—by identifying specific emotions like happiness, anger, optimism, and pessimism. This capability enhances the understanding of public sentiment in the region by providing a detailed view of emotions in Kuwaiti Arabic tweets, enriching sentiment analysis in linguistically diverse contexts.

## Literature Review

### Public Opinion: Surveys

Democratic systems have always pursued the tracking of citizens' political opinions. Historically, politicians and governments have employed various methods to gauge public sentiment, ranging from observing and counting participants in mass protests and public speeches to analyzing letters to newspaper editors and direct communications sent to politicians and government officials (Berinsky 309; Smith 218). Then, in the mid-1930s, a significant shift occurred with the advent of public opinion polling through surveys; this methodology represented a substantial advancement in the measurement of public opinion and continues to be a primary tool in political, corporate, and academic circles (Berinsky 309; Smith 218).

Berinsky (309) observed that surveys offer a more detailed understanding of individual political cognitions compared to earlier methods. Even against more modern techniques of measuring public opinion, survey data stand out for their depth and specificity and enable researchers to tailor their approach to directly address and explore the concept under study. Callegro and Yang further emphasize the unique capabilities of surveys, noting they “have the advantage of being designed for the researchers to answer the question at hand. They also collect attitudes and opinion data which cannot be readily covered by Big Data” (183). This highlights the enduring relevance and superiority of survey methods in capturing complex opinions and attitudes that may be beyond the scope of large-scale data analytics.

When researchers conduct surveys, however, they face several fundamental decisions: selecting the participants to interview, encouraging them to be interviewed, and determining the right questions to ask them. While these choices might appear straightforward, they are anything but. The strategies employed in these decisions significantly influence the responses obtained, thus shaping the representation of public opinion in the poll results (Berinsky 309).

One of the main challenges in conducting surveys is gathering public opinion from a representative sample. Traditionally, face-to-face interactions and landline telephone interviews were relied upon, but these methods are expensive and time-consuming. The increasing prevalence of cell phones since the 1990s complicated these traditional approaches further—with fewer people using landlines and cell phone numbers often being private and costlier to access, obtaining a representative sample became increasingly challenging. Consequently, online surveys have become a popular alternative due to their convenience (Moy and Murphy 16). Nonetheless, debates persist regarding the effectiveness of online surveys in securing truly representative samples.

Persuading individuals to participate is also more difficult than ever (Berinsky 309). Concerns about privacy and confidentiality, coupled with a growing mistrust of pollsters, are significant contributors to this reduction (Kim et al. 165). To combat these challenges, some pollsters have turned to offering monetary incentives (Tourangeau et al. 775), but these tactics have not fully addressed the issue.

Deciding on the questions to include in a survey is another complex aspect of poll design. After determining the target respondents, the next crucial step is crafting the questions they will be asked. This phase involves careful consideration, as the way questions are worded and ordered can significantly influence survey outcomes (Moy and Murphy 21; Tourangeau et al. 775). “Researchers need to ensure clarity of meaning, avoid possible misinterpretations, and determine whether the items elicit sufficient variance in response” (Moy and Murphy 21).

Addressing these elements can be vital for ensuring the survey’s internal validity, i.e., that it accurately measures what it is intended to measure. Researchers must consider potential extraneous variables that could skew results, thereby affecting the survey’s reliability and validity: these include specification errors, when the implied concept of survey questions are different than the variables of interest; response bias, where individuals tend to use questionnaires to portray themselves in a positive manner; non-response bias due to respondents choosing not to complete all or parts of the survey; and measurement errors when either the survey respondent or administrator do not interpret the questions correctly or take them seriously (Moy and Murphy 16; Beimer and Lyberg).

Traditional opinion polls, historically central to measuring public sentiment, are facing challenges with low response rates, a lack of respondent commitment, and

questions around internal validity (Manza and Brooks 89; Perrin and McFarland 87). They are also becoming increasingly expensive and time-consuming to complete. With the rise of social media, an alternative avenue for gauging public opinion has emerged.

## Public Opinion: Sentiment Analysis

Social media platforms offer a space where individuals can freely share their thoughts and opinions, creating a vast pool of user-generated content. This has turned social media into a valuable data source for public opinion, especially on subjects like politics and economics, traditionally covered by polls. Moreover, the broadening demographic of social media users enhances the prospects of leveraging these platforms to understand citizens' political preferences (Ceron et al. 340). Political entities are now increasingly employing social media data to explore individual preferences (Ceron et al. 340; Tumasjan et al. 178). Some have used simple techniques like tabulating the volume of data related to specific topics, such as the number of mentions or number of followers of a political candidate or party (Tumasjan et al. 178). Others have used more sophisticated technologies to sort, analyze, and effectively harness these data (Ceron et al. 340).

Sentiment analysis has become a prominent tool in this endeavor. It incorporates the computational assessment of opinions, evaluations, and sentiments within text data (Liu 627; Zhang and He 815). Microblogging platforms like X, formerly known as Twitter, where information is shared instantly, have become valuable for sentiment analysis studies. They provide real-time data as users share their feelings, opinions, and thoughts, making them accessible to any interested party.

Sentiment analysis involves computationally gathering and identifying opinions and emotions expressed in text, with the aim of discerning whether the sentiment conveyed is positive, negative, or neutral (Wankhade et al. 5731). This analytical process can delve deeper into the realm of human emotions through emotion classification. While sentiment analysis conventionally categorizes text into these three sentiment categories, emotion classification takes it a step further by recognizing and labeling specific emotions like joy, anger, sadness, fear, and surprise (Tanna et al. 911). This expansion broadens the scope of sentiment analysis, offering a more nuanced comprehension of the emotional content embedded within textual data. Leveraging techniques from natural language processing (NLP) and machine learning, emotion-classification algorithms scrutinize textual data to discern subtle linguistic cues, contextual hints, and patterns indicative of various emotional states. Consequently, while sentiment analysis provides a general overview of sentiment polarity, emotion classification enriches the analysis by providing deeper insight into emotional intricacies within the text, thereby enhancing the depth and accuracy of sentiment-analysis endeavors.

Using social media data for opinion analysis carries several benefits over traditional methods: it is notably more cost-effective at scale and provides the ability to monitor public sentiment continuously and in real time (Ceron et al. 340). However, while these new methods have been effective in understanding public opinion, they have not been conclusively proven to be superior to traditional survey research, either scientifically or in practice (Smith 218).

## Surveys vs. Sentiment Analysis

Numerous scholars have explored whether sentiment analysis of social media can replace public opinion polls, especially in political and economic contexts. Early studies, such as O'Connor et al. (122) and Sang and Bos (53), indicated promising congruence. O'Connor et al. (122) found a correlation between daily social media sentiments about Obama and job-related issues with Gallup's presidential daily tracker and the Economic Index polls from 2008–2009. Similarly, Sang and Bos (53) reported that tweet sentiments mirrored election polls in the 2011 Dutch senate elections. Franch (57) discovered that social media data from platforms like Google, Facebook, Twitter, and YouTube surpassed traditional surveys in forecasting the 2010 U.K. election outcomes. Ceron et al. (340) found significant correlations between online sentiments towards political leaders in Italy and France and voting intentions data from mass surveys.

Beyond political and economic contexts, Chary et al. (278), for example, demonstrated that geographically-filtered X mentions of prescription opioid misuse strongly correlate with state-by-state national survey estimates. Buntain et al. (34) found that following the 2013 Boston Marathon bombing, increased willingness to report suspicious behavior and support of police in surveys matched a surge in social media engagement with law enforcement, reflecting a positive shift in public sentiment towards the police. Huai et al. confirmed a significant correlation between social media activities and survey data on park visitation and satisfaction, with the more popular parks on surveys also receiving positive attention on social media.

Further research has incorporated personal social media data into surveys. For instance, Murphy et al. observed that users with more X friends who are e-cigarette marketers tend to tweet positively about e-cigarettes. Liu et al. combined survey responses with actual Twitter activity to explore online behaviors driven by distinct motivations, revealing that individuals motivated by self-expression tweet more frequently, those with business motivations post biographical information, and those with networking motivations follow more accounts.

As earlier studies, specifically pertaining to politics and the economy, displayed optimism Later studies, however, revealed less definitive outcomes. Conrad et al. (489) revisited O'Connor et al.'s (122) work on job-related sentiment analysis and noted a

diminishing correlation over time. Antenucci et al. (2010) initially predicted unemployment rates accurately using social media data, but their predictions started diverging in 2014. Oliveira et al. (34), trying to correlate sentiment analysis with Brazilian election polls in 2014, found that sentiment analysis may indicate voter preferences at an accuracy rate of only 1%–8%, while traditional polls have an average accuracy of 81.05%.

While early research in this field was optimistic, subsequent studies have raised questions about the reliability of these correlations. Conrad et al. highlighted this shift in perspective, suggesting that the initially perceived robust relationship between Twitter sentiments and survey responses in Twitter's early years might have been "spurious" (503).

One significant challenge in using social media data for gauging public opinion is its representativeness. Although social media is widely used, only certain users express opinions, especially on political matters. This discrepancy makes it difficult to obtain a representative sample of a specific population (Smith 218). Social media content also tends to be disproportionately created by a minority of active users; for example, a small fraction of users contributed most content during the 2009 German election (Tumasjan et al. 178). Larsson and Moe attributed spikes of activity during the 2010 Swedish elections mostly to "high-end" users who were already part of an "elite [class], or at least affiliated with prominent positions in mainstream media or political life in general" (741). Mellon and Prosser further added that Twitter users during British elections are substantially different from the general population in terms of many politically related criteria, which include gender, age, education, and political affiliations. Such results imply that political tweeters are likely those who are interested in politics, and that platforms like Twitter "encourage 'clustering of like-minded individuals'" (Bekafigo and McBride 628).

Beyond representation issues, Callegro and Yang (175) point out that "Big Data often comes with Big Noise" (178), suggesting that big data analysis requires more advanced technical skills than those typically associated with survey research. Additionally, many Internet data-mining techniques are not fully refined and continue to evolve, casting doubt on the validity and reliability of longitudinal studies using consistent methodologies. Moreover, access to Big Data remains a formidable challenge. Social media data, owned by private companies, is subject to varying levels of accessibility: before Elon Musk's 2022 takeover, for example, Twitter offered free access to its Academic Application Programming Interface (API) for researchers, but this privilege no longer exists. Now, researchers face high costs and numerous restrictions in accessing and using this data, presenting significant hurdles to data-driven research.

## Research Objectives

This study navigates the complexities and limitations inherent in both social media sentiment analysis and traditional opinion polls. It recognizes that, while sentiment analysis offers new perspectives on public sentiment, its reliability and adequacy as a standalone method are questionable compared to traditional polls.

Amidst the scholarly debate on the potential of sentiment analysis to replace opinion polls, some researchers advocate for both approaches to be used simultaneously (Buntain et al. 31, Callegro and Yang 218; Chary et al. 278; Moy and Murphy 31; Murphy et al. 24; Schober et al. 180; Smith 218; Callegro). Buntain et al. (34) state "while social media data's abundance and versatility has caused some to declare an end of life for traditional survey instruments, some in the social sciences have objected to social media's scientific value on the grounds of representativeness and validity. We suggest the truth lies between these two extremes, that social media and traditional survey work can instead complement each other to create a richer depiction of society more rapidly than we could before".

Murphy et al. (24–34) argue that social media serves as a versatile and innovative tool for enhancing survey research across its lifecycle (Murphy et al. 24–34). During the design phase, exploring social media trends and hashtags provides researchers with valuable insights into relevant topics to study or survey. In the testing and preparation phase, the rich, current data available from social media helps researchers pinpoint the specific language and terminology used by the target demographic, enabling the formulation of more precise and relevant survey questions.

Furthermore, Murphy et al. emphasize that data sourced from social media can complement traditional survey data by providing "natural behavioral and linguistic data that are untarnished by the observer paradox" where individuals might alter their behavior because they are aware of being observed (p. 34). Such data, collected without direct researcher intervention, is particularly valuable for studies aiming to authentically capture opinions and characteristics of specific populations, providing a richer and more reliable understanding of the subjects under investigation.

Callegro and Yang concur, stating: "looking ahead, the ideal case is to build on the strengths of both data-collection methods. Big Data can measure behaviors and tell us the 'what,' while surveys can measure attitudes and opinions and tell us the 'why'" (182).

Embracing this perspective, this study conducts separate quantitative analyses of social media and survey data on a political issue, followed by a qualitative synthesis of these findings, to offer a more nuanced understanding of public opinion on the issue. The methodology aligns with the views of Wimmer and Dominick, who champion a mixed-methods approach that draws from both qualitative and quantitative techniques. As they state:

"The mixed methods approach draws from strengths of both qualitative and quantitative techniques. Researchers who advocate this approach are less interested in debating whether quantitative philosophy is compatible with qualitative philosophy and are more interested in using the approach, or a combination of approaches, that works best in examining the research question" (121).

They further elaborate that integrating these techniques can yield stronger conclusions through the convergence of findings and provide insights that might be missed when relying solely on one method. Hurmerinta-Peltomaki and Nummela (439) state that mixed methodologies gain a deeper and broader understanding of the research topic at hand, further enhancing the validity of the findings. Additionally, McKim argues that increased use of mixed-methods approaches in recent years "justifies the question of determining the perceived value of mixed methods research compared with a purely quantitative or qualitative study" (202).

In addition to employing an integrative methodological approach to assess public opinion, this study further expands the scope of existing literature by analyzing public opinion from regions beyond the Western world and by incorporating languages other than English in its sentiment analysis.

This study explores the interplay between public opinion polls and sentiment analysis in the Middle Eastern context, with a particular emphasis on Kuwait. In doing so, it offers new insights into how public sentiment is gauged in non-Western contexts and languages other than English. Kuwait's unique political and media landscape makes it an intriguing case study for this comparison, especially considering the sensitive nature of political freedoms and freedom of speech in the Middle East. The country's constitution, under Article 36, guarantees freedom of speech, although it sets boundaries against criticizing the Emir and Islam. Notably, Kuwait's media environment is among the least censored in the Arab world (Freedom House). This relative openness, combined with high Internet penetration—99% as of 2020 (Data Reportal)—has not deterred Kuwaitis from actively discussing political issues online.

Moreover, by examining online public opinion in Kuwait, the study further extends sentiment analysis literature—which has previously mostly focused on widely spoken languages like English—by being the first to develop and apply an emotion-classification tool for Kuwaiti Arabic.

## Arabic Natural Language Processing

Much of the sentiment analysis research has primarily centered on widely spoken languages, especially English. However, with the exponential growth of Arabic-speaking users on X, there has been growing interest in developing tools and methods for analyzing emotions expressed in Arabic tweets. Understanding the emotional content of Arabic tweets has various benefits and uses pertaining to education, marketing, politics, sociology and psychology. Yet, the development of NLP tools and resources for Arabic is still in early stages (Ghallab et al.) Arabic's complexity of structure, historical context, and diverse dialectal variations pose significant challenges for NLP development (Abdullah and Hadzikadic 9).

MSA is a standard version of Arabic that is well-understood throughout the Arab world. Alongside this, there is dialectal Arabic (DA), which is spoken as a native language in people's informal daily communication and written on social media platforms. The challenges associated with using DA go way beyond those with MSA, primarily because of the lack of standardization of DA and the scarcity of resources and tools for processing DA (Harrat et al.262), which hinders the advancement of sentiment analysis and other NLP applications for DA. Consequently, there is a pressing need for further research and investment in NLP for Arabic to overcome these challenges and create effective sentiment analysis tools tailored for Arabic. While this study is one of the first to develop and use an NLP tool for Kuwaiti Arabic, its approach was guided by previous efforts and methodologies employed in developing EA tools specifically tailored for Arabic tweets.

Rabie and Sturm developed an emotion analysis (EA) tool for Arabic tweets using Ekman's basic emotions. Their study collected and annotated 1776 tweets annotated by around 15 human annotators. They compared classifiers like Support Vector Machine and Naive Bayes and explored various preprocessing techniques. Abd Al-Aziz et al. proposed an EA method for Arabic tweets by combining lexicon-based and multi-criteria decision-making approaches. They considered Ekman's basic emotions, excluding the surprise emotion. They constructed emotion lexicons from an augmented dataset and used Co-Plot, a form of multi-criteria decision-making particularly capable of dealing with mixed emotions in tweets, to classify tweets. Al-Khatib and El-Beltagy presented a dataset for EA of 10,065 Arabic tweets balanced across various emotions and a "no emotion" class. They experimented with different data preprocessing and feature-extraction techniques and classifiers. Another work focusing on Arabic tweets mixed emotions, acknowledging the multi-label nature of the problem (Badarneh et al.); this study focused on Arabic tweets with mixed emotions and included a dataset of 11,503 tweets with detailed manual annotations according to Ekman's basic emotions. Following the methodologies and approaches used by these studies, the present research similarly adapted emotion classification techniques to specifically explore Kuwaiti Arabic—a dialect previously understudied in this field.

Much of the work in the Arabic language has concentrated on creating annotated corpora for sentiment analysis, experimenting with various computational techniques in developing sentiment analysis tools, and building tools tailored to different Arabic dialects. However, there has been limited research applying sentiment analysis to understand public opinion and emotions toward specific topics. For example, one study has utilized sentiment analysis and network analysis on tweets to evaluate public perceptions of Saudi Health apps during the COVID-19 pandemic, achieving 85% accuracy with a Support Vector Machine classifier using AraVec embeddings (Binkheder et al. 13388). Other research introduced Arabic datasets focusing on opinions about

health services, employing machine learning and deep learning models to address the challenges of processing unstructured Arabic text (Alayba et al. 114). Additionally, sentiment analysis models have been developed to predict individuals' awareness of COVID-19 precautionary procedures across different regions, providing insights into regional attitudes and supporting decision-makers with actionable data (Aljameel et al. 218). These studies demonstrate the potential of sentiment analysis to delve into public opinion and emotional responses, bridging the gap between computational tools and meaningful social insights.

## Study Topic

With Kuwait's relatively open political and media landscapes, where citizens enjoy the right to engage in online political discourse within the boundaries of the law, measuring online public sentiment—especially concerning potential or enacted policies—becomes increasingly important. Analyzing social media sentiment alongside traditional public opinion polls could provide a more comprehensive understanding of the Kuwaiti population's perspectives. This integration of methods offers a richer, more representative picture of public opinion that is especially useful in contexts where the government and public figures are open to media scrutiny and public discourse.

To test this integrative approach, the authors selected a topic that became salient on social media. On June 9, 2023, the Ministry of Higher Education (MOHE), announced a significant decision to suspend scholarships provided by the ministry for medical specialties—Medicine, Dentistry, Doctor of Pharmacy, and Pharmacy—at universities in Jordan and Egypt. This suspension also applied to scholarships for children of diplomats and students who were self-funded but wanted to transfer to a scholarship from the ministry. The ministry stated that this move was informed by a series of visits from specialized delegations to medical universities in both Egypt and Jordan.

This decision sparked widespread reaction as the topic quickly became a trending issue on social media, with people expressing diverse opinions. Particularly affected were students currently self-funding their medical education with hopes of transitioning to a scholarship program. This decision also caused dismay among medical students presently studying in Egypt and Jordan and working doctors with medical degrees from both countries, who feared that this move might cast doubts on the legitimacy of their qualifications. The public reaction, as witnessed on social media, revealed a mix of confusion and frustration. Many questioned how this decision aligns with the fact that a significant number of doctors in Kuwait are of Egyptian origin. One person tweeted, for example, "We demand an interrogation of the #Minister\_of\_Education, not because he stopped scholarships for some specializations in #Egypt or #Jordan, but to ask a single question... If the decision was made out of concern for the quality of educational outcomes from those countries, then why does recruitment occur from the same countries and for the same specializations?" (@bdwemarkh).

While the decision led to anger and confusion in some, others showed support, arguing that it will lead to an improvement in the quality of future doctors. Dr. Isra Aleisa of Kuwait University stated, "halting medical scholarships to 'weak' universities is a way stop to the waste of one of the state's most important investments: educational quality" (@Awwalkwt).

The debate also spilled over into the National Assembly, where elected officials actively participated in the discourse. Some members commended the decision for its potential to enhance medical education quality, while others were critical, urging the Minister to reconsider the decision in light of its broader implications. Former National Assembly member, Dr. Jenan Bushehry, tweeted in favor of the decision:

"The expert opinions supporting the decision of the Ministry of Higher Education to halt medical scholarships to certain countries... deserve to shape our convictions and stances in support of the ministerial decision, while we also understand the opposing views" (@Jenan\_bushehri).

Former member, Bader Nashmi, on the other hand, tweeted against the decision:

"If the news about the decision of the Minister of Education is correct, then issuing such unconsidered decisions without providing alternatives by a minister whose current role is limited to managing urgent matters must stop. The scholarship plan must align with the labor market needs. Furthermore, the recent pandemic has proven the necessity to increase the seats for medical specializations, rather than decreasing them. The health system in Kuwait can only advance with the efforts of its own sons and daughters first and foremost" (@badernashmi).

## Research Questions

As a highly debated issue amongst Kuwaitis in both online and offline forums, this study's objective was to observe Kuwaiti public opinion regarding MOHE's decision to halt medical scholarships at universities from Egypt and Jordan. This was accomplished by conducting a sentiment analysis of tweets about MOHE's decision, and, subsequently, through a survey designed to collect direct feedback on the issue. This study analyzes the data from both methods qualitatively to determine whether such a mixed approach provides a more detailed understanding of public opinion. More importantly, we intend for the empirical findings to influence the Kuwaiti government to recognize the value of assessing public opinion in shaping future policies and to consider implementing the public opinion techniques highlighted in this study. The practical application of these techniques could prompt the government to either proceed with or reconsider future policy decisions. More significantly, it could reduce the likelihood of electoral sanctions, such as public calls for governmental change or the replacement of specific ministers.

To achieve its objective, the study aims to answer the following four research questions:

RQ1: How did Kuwaiti social media users view MOHE's policy?

RQ2: How did survey respondents view MOHE's policy?

RQ3: To what extent do the sentiment analysis results align with or diverge from the survey findings?

RQ4: Can a qualitative approach to comparing and contrasting data from sentiment analysis and surveys enhance our comprehension of public opinion?

## Methodology

### Sentiment Analysis

In addressing the sentiment analysis aspect of this study, the methodology includes two major steps: developing an emotion-classification tool of Kuwaiti Arabic and applying this tool for tweets about MOHE's decision.

### Emotion Classification for Kuwaiti Arabic

Emotion classification poses a unique challenge due to the nuanced nature of human expression. While humans can adeptly recognize different emotions, implementing an effective EA system presents considerable difficulties. Tweets in Kuwaiti Arabic are typically written in a slangy and dialectal form, further complicating preprocessing and noise filtering. Kuwaiti Arabic also lacks standardization, making it challenging to use existing lemmatization and stemming tools, which are predominantly built on MSA. These factors collectively contribute to the complexity of developing an accurate and reliable emotion-classification tool for Kuwaiti Arabic tweets.

Here, the study highlights the primary features and overarching methodology pertaining to the development of an emotion-classification tool designed for Kuwaiti Arabic. The aim is to provide a clear and concise overview of the essential steps involved in the creation of the model and contribute to the functionality and effectiveness of the tool.

The research used the Twitter search API to collect a corpus of tweets from Kuwait, spanning various topics like social issues, sports, politics, health, humor, poetry, prayers, and individual opinions. The dataset included 40,000 tweets randomly collected between January 2021 and April 2021. Data cleaning, including the removal of duplicate tweets, irrelevant content such as user mentions and URLs, and empty or non-Arabic tweets, was conducted to ensure data quality. Emojis were retained during data cleaning due to their importance in understanding the authors' emotions.

Each tweet was annotated by three native Kuwaiti Arabic annotators. Regarding emotion classification, the study adopted Plutchik's emotional model (Plutchik), incorporating five primary emotions ("anger," "fear," "joy," "trust," "disgust") and two dyads from adjacent pairs ("love," "optimism"). "Pessimism" and "dissatisfaction" were also included as opposites to "optimism" and "trust," respectively. Annotators were allowed to assign multiple labels (or none) to a tweet to accommodate expressions of multiple emotions or neutrality. Arabic terms were chosen for labeling emotions, such as "غضب" for "anger" and "سعادة" for "joy," aligning with the Arabic-speaking annotators and texts. Table 1 shows the distribution of emotion labels across the dataset. More details about the creation of the corpus can be found in Alsharan et al. (under publication).

**Table 1**

Distribution of Emotion Labels Across the Dataset

Anger	Disgust	Dissatisfaction	Fear	Joy	Love	Optimism	Pessimism	Trust
9460	5857	25401	6061	21834	34040	21913	7807	17735

## Emotion Classification Model Design

The design of the emotion-classification model involves several key steps to ensure accurate and robust performance.

- 1 - Data Cleaning: Data was cleaned to remove noise and irrelevant information to focus solely on the textual content relevant to emotion classification. The process included removing numbers, links, mentions, non-Arabic characters, and other non-textual elements.
- 2 - Text Normalization: An essential preprocessing step in NLP tasks to standardize the textual data format. It includes:
  - Hamza Normalization: In Arabic text, the letter "hamza" (ء) can take different forms depending on its position within a word and the adjacent vowels. Text normalization involves standardizing the representation of hamza to ensure uniformity across the dataset.
  - Repeated Letters: Tweets often contain repeated letters for emphasis or stylistic purposes. Text normalization included identifying and reducing these repetitions.
  - Spelling Variations: Arabic text may exhibit variations in spelling, especially in informal or dialectal forms. Standardizing spelling variations involves identifying common variants and mapping them to a single canonical form. An example of this step is dealing with taa Marbuta (ة), which is often confused with haa (ه) by many users.
- 3 - Text Tokenization: This is a fundamental preprocessing step in NLP tasks that involves breaking down the textual data into smaller units called tokens, making it easier to process and analyze the text more effectively.
- 4 - Word Embedding: Word-embedding techniques were applied to transform words into numerical representations and represent words in a continuous vector space. These embeddings are designed to capture semantic and syntactic relationships between words, enabling the model to understand the contextual meaning of words within the text.
- 5 - Training the Model using Long Short-Term Memory (LSTM): LSTM is a type of neural network designed to work well with sequences of data, like text. It is especially good at understanding and remembering long-term patterns, making it ideal for analyzing text-based information.

## Application of the Tool to MOHE Policy

The study used the developed emotion-classification tool described above to measure public opinion on the decision of MOHE to suspend medicine scholarships to Jordan and Egypt. This tool leverages the rich and unstructured data available from social media to provide real-time insights into public emotions.

The dataset used in this research included 2079 tweets, meticulously extracted using the Twitter API for academics. The selection process followed a rigorous methodological approach to ensure that the analyzed content accurately represented Kuwaiti public opinion regarding the issue under investigation. This involved targeted keyword searches designed to capture tweets specifically relevant to the policy decision. Keywords included terms such as "مصر" (Egypt), "الأردن" (Jordan), "وقف" (scholarship suspension), "وزارة التعليم العالي" (MOHE), "وزير التربية" (Minister of Education), "مجلس الأمة" (National Assembly), "جامعة القاهرة" (Cairo University), "جامعة الأردن" (University of Jordan), and "البعثات الطبية" (medical missions).

To enhance the representativeness of the dataset:

- 1 - **Geographical Filtering:** Only tweets originating from Kuwait were included, ensuring the data reflected local perspectives.
- 2 - **Temporal Relevance:** The tweets were collected over a two-week period starting from June 8, 2023, during the peak of public discourse on the policy.

## Survey

### Sample

Previous studies have utilized sentiment analysis alongside public opinion polls, typically sourcing data from governmental, nonprofit, and private entities. However, in Kuwait, organizations conducting public opinion polls rarely disclose their data and methodologies. Regionally, entities like the Arab Barometer and the Doha Institute's Arab Opinion Index provide regular publications of their findings across the Arab world, though their surveys tend to address broader topics rather than specific national issues. Given the need for detailed public policy analysis, the authors developed and administered their own survey focusing on the Ministry of Higher Education's decision to suspend medical scholarships at universities in Egypt and Jordan. This survey was conducted from June 18 to June 26, 2024, and gathered responses from 604 participants.

There is debate about the representativeness of online surveys compared to traditional telephone or face-to-face surveys. Moy and Murphy highlight concerns about traditional surveys' reliability, citing "single-digit response rates from probability-based samples and recent election forecasting failures in the United States and the United Kingdom" (27). Consequently, non-probability methods, increasingly used in online surveys, have become appealing for researchers working under time and cost constraints. This shift is supported by findings in the literature (Silver; Vavreck and Rivers 355), suggesting that non-probability sampling can produce results that are

"comparable with, or even superior to, probability sampling" (Moy and Murphy 26). Table 2 presents an overview of the sample's demographics.

**Table 2**

Survey Sample Demographics

	N	%
<b>Gender</b>		
Male	256	42%
Female	348	58%
<b>Age (years)</b>		
Under 21	52	8%
21–29	128	21%
30–39	121	20%
40–49	150	25%
50–59	100	17%
≥ 60	53	9%
<b>Education</b>		
High school or less	101	18%
Two-year college diploma	63	11%
Bachelor's degree	250	44%
Graduate degree	149	27%
<b>Governate</b>		
Al Assima	185	31%
Hawally	129	21%
Mubarak Al Kabeer	96	16%
Al Ahmadi	94	15%
Al Jahra	59	10%
Al Farwanya	41	7%

## Independent Variables

Before directly asking about respondents' views toward MOHE's decision, the survey aimed to establish a baseline of their engagement with Kuwait's political landscape. Questions were posed to determine the degree of their political interest, the extent to which they follow political affairs, and their self-assessed political knowledge. Respondents rated these aspects on a 5-point Likert scale.

Next, the survey questioned respondents' awareness of MOHE's recent decision to halt medical scholarships to universities in Egypt and Jordan. Out of the 604

respondents, an overwhelming 93% (N = 563) were informed about the decision. It was decided that subsequent analyses would incorporate only the responses from this informed group.

## Opinion Toward the Policy

In assessing the policy, respondents were first asked to rate their support or opposition to the policy itself on a 5-point Likert scale. To gain a deeper understanding of their views, they were also asked three additional questions regarding their level of optimism or pessimism (To what extent do you feel optimistic or pessimistic about the Ministry Higher Education's decision?), satisfaction or dissatisfaction (To what extent do you feel satisfied or dissatisfied with the Ministry Higher Education's decision?), and confidence in the policy's impact on the future of education (To what extent do you feel confident about the impact of the Ministry Higher Education's decision on the future of education?).

## Results

### Sentiment Analysis

The dataset used in this research includes 2079 tweets originating from Kuwait. These tweets were meticulously extracted to ensure that the analyzed content specifically reflected Kuwaiti public opinion regarding MOHE's decision. Of the 2079 collected tweets, 1248 had hashtags. The most prevalent hashtags were Egypt (#مصر), Jordan (#الأردن), and Kuwait (#الكويت). Additional commonly used hashtags were directly related to the policy in question and included #التخصصات\_الطبية (medical specialties), #وزير\_التربية (Minister of Education), and #التعليم\_العالي (Higher Education). These findings further corroborate the validity of the methods used in extracting a dataset of tweets directed at the topic of study. Table 3 provides further insights regarding tweets extracted and the engagement levels pertaining to the policy in discussion.

**Table 3**

#### General Overview and Engagement Levels of Tweets

Total Tweets Analyzed	2097 Tweets
Total retweets	10,097
Total favorites	14,076
Maximum retweets on a single tweet	1034
Maximum favorites on a single tweet	784
Tweets with at least one retweet	787
Tweets with at least one favorite	1076

## Emotion Analysis (EA)

The emotion-classification tool employed in this study identified a diverse range of emotional responses, with "rejection" emerging as the most predominant emotion, as evidenced by 713 mentions. According to Plutchik's emotion wheel model, which this study follows, "rejection" reflects outright disagreement with the decision, highlighting deep dissatisfaction, possibly due to concerns over educational and career prospects for students affected by the policy change. Closely following "rejection" was "anger," with 669 mentions, which captures frustration and broader displeasure with the implications of the suspension. While these emotions are closely related, they were intentionally classified separately to provide nuanced insights into the public's sentiment. This separation aligns with the multi-label classification approach used in this study, allowing for a deeper analysis of distinct emotional reactions.

Despite the prevalence of negative emotions, a substantial number of tweets (565) expressed a "neutral" stance. These tweets primarily served to report the news without imparting personal sentiment, reflecting a segment of the community that either reserves judgment or views the suspension as a mere informational fact.

"Support" for the decision was also evident, though less frequent, with 431 mentions. This support might stem from a belief in the necessity of policy change or an understanding of the underlying factors that necessitated such a decision. It's important to consider that even controversial policies can have backers who believe in their long-term benefits and support government decisions.

The analysis also identified "fear" as a significant emotion, expressed 172 times, which highlights concerns about the credibility and future of ongoing students and high school graduates planning to study medicine in Jordan and Egypt. This concern is particularly critical given that the decision to suspend scholarships was announced just days before the commencement of scholarship applications, leaving potential applicants uncertain about their educational pathways and questioning the reliability of plans made based on previous expectations. This timing exacerbates worries about the immediate impact on students' careers and educational trajectories in the medical field.

The sentiments of "optimism" and "pessimism," with 113 and 349 mentions, respectively, indicate mixed feelings about the future consequences of the decision. While some are hopeful about positive outcomes or potential policy revisions, a larger group remains skeptical and worried about negative repercussions.

Positive emotions such as "happiness," "love," and "trust" were the least expressed, signaling that they are uncommon responses in the context of this policy decision. This reflects a consensus that the decision is not seen as beneficial by the majority of those discussing it on social media.

Overall, the emotional landscape painted by this analysis underscores a predominantly negative reaction combined with a significant neutral reporting presence

and a smaller optimistic viewpoint. This mixture of responses highlights the complexity of public sentiment surrounding policy decisions and the varied impact such decisions can have on different segments of the population.

## Social Media Engagement Analysis

As shown in Table 3, the average number of retweets per tweet was approximately 4.81, and the average number of favorites was approximately 6.71, indicating a high level of engagement with the topic on X. Tables 4 and 5 display the X accounts responsible for the top 10 most retweeted and favorite tweets. These results support the existing literature suggesting that social media activity related to political issues is often driven by users who are already politically engaged or hold prominent positions in mainstream media or political life.

**Table 4**

Identities of the 10 Most Retweeted Tweets

Username	Description	Followers	Retweets	Emotion(s)
@Watan_alnhhar	Anonymous news account	103.4K	1034	Neutral
@DrAbdulahdiAjmi	Abdulahdi Alajmi, National Assembly member from district 5	51.3K	511	Rejection, Anger
@Bssharmy	Bader Alshammary, National Assembly member from district 4	20.4K	454	Rejection, Anger
@BaderNashmi	Bader Nashmi, National Assembly member from district 2	10K	270	Anger
@Alwashi7i	Mohammad Alwishaihy, media personality (journalist)	671.5K	270	Support
@dahemq	Dahem Al Qahtany, media personality (journalist)	97.3K	167	Rejection, Anger
@AliAAlkandari	Ali Al Kandari, political activist	6,566	152	Support, Trust
@Abdallah_fnhad	Abullah Fahad, National Assembly member from district 4	83.8K	150	Rejection, Anger, Pessimism
@mhamdhaif	Mohammad Haief, National Assembly member from district 4	351.4K	149	Rejection, Fear
@Bssharmy	Bader Alshammary, National Assembly member from district 4	20.4K	148	Anger

**Table 5**  
Identities of the 10 Most Favored Tweeters

Username	Description	Followers	Favorites	Emotion(s)
@DrAbdulhadiAjmi	Abdulhadi Alajmi, National Assembly member from district 5	51.3K	784	Rejection, Anger
@Alwashi7i	Mohammad Alwishaihy, media personality (journalist)	671.5K	573	Support
@Bssharmy	Bader Alshammary, National Assembly member from district 4	20.4K	572	Rejection, Anger
@M__albugaly	Mubarak AlBughaily, political activist	166.8K	441	Support
@dahemq	Dahem Al Qahtany, media personality (journalist)	97.3K	325	Rejection, Anger
@AljaziAlsenafi	Aljazi Alsenafi, columnist	6215	309	Pessimism, Anger
@watan_alnhhar	Anonymous news account	103.4K	291	Neutral
@AliAAikandari	Ali Al Kandari, political activist	6,566	281	Support, Trust
@BaderNashmi	Bader Nashmi, National Assembly member from district 2	10K	261	Anger

## Survey

### Policy

A factor analysis of responses from the four questions directly addressing opinion (support/opposition; optimistic/pessimistic; satisfied/dissatisfied; confident/not confident) toward the policy yielded one component with an alpha-reliability score of 0.933, indicating very strong reliability. Scores from the four questions were added up, and a new policy opinion variable was created. The mean score of all respondents was 14.1 (range, 4–20) points, indicating that the general sentiment of the respondents was in support of the Ministry's policy.

Further analysis was conducted to test discrepancies based on gender, age, education, location, and political engagement.

Regarding gender, an independent-samples t-test revealed that males were ( $M = 15.1$ ,  $SD = 5.1$ ) significantly more supportive of the policy than females ( $M = 13.3$ ,  $SD = 5.1$ ) ( $t(561) = 4.3$ ,  $p \leq .001$ ). In terms of age, a one-way between-subjects analysis of variance showed that respondents who were  $\geq 50$  years old ( $M = 16.2$ ,  $SD = 4.5$ ) were significantly more supportive of the policy than those aged 30–49 years old ( $M = 14.3$ ,  $SD = 5.2$ ) or those aged 18–29 years old ( $M = 11.9$ ,  $SD = 5.0$ ), respectively ( $F(2, 560) = 28.9$ ,  $p < .001$ ). For education, a one-way between-subjects analysis of variance (ANOVA) revealed that the more educated respondents were significantly more supportive of the policy ( $F(3, 559) = 13.8$ ,  $p < .001$ ). As for the location of respondents, the significant results revealed that respondents from Hawally ( $M = 15.8$ ,  $SD = 4.4$ ) were the most supportive of the policy, followed by Al Assima ( $M = 15.0$ ,  $SD = 3.8$ ), Mubarak Al-Kabeer ( $M = 13.2$ ,  $SD = 5.2$ ), Al Farwaniya ( $M = 12.6$ ,  $SD = 5.5$ ), Al Ahmadi ( $M = 12.2$ ,  $SD = 5.3$ ), and Al Jahra ( $M = 12.1$ ,  $SD = 4.9$ ), respectively ( $F(5, 557) = 8.68$ ,  $p < .001$ ).

For political engagement, a factor analysis of questions relating to political interest, political awareness, and political knowledge yielded one component with an alpha-reliability score of 0.86, indicating strong reliability. Scores from the three questions were first added; then, a new political engagement index was created using a mean split. Respondents were grouped into two groups: low political engagement (N = 284, 51%) and high political engagement (N = 279, 49%). An independent-samples t test revealed that respondents with high political engagement (M = 14.8, SD = 5.3) were significantly more supportive of the policy than respondents with low political engagement (M = 13.4, SD = 4.9) ( $t(561) = -3.2, p = .002$ ). Table 6 presents detailed results of the survey responses.

**Table 6**

## Survey Public Opinion Toward MOHE's Policy

	<b>M</b>	<b>SD</b>
<b>Gender**</b>		
Male	15.1	5.1
Female	13.3	5.1
<b>Age** (years)</b>		
18–29	11.9	5.0
30–49	14.3	5.2
≥50	16.2	4.5
<b>Education**</b>		
High school or less	11.8	5.0
2-year college diploma	12.5	5.8
Bachelor's degree	14.5	5.0
Graduate degree	15.8	4.7
<b>Governate**</b>		
Hawally	15.8	4.4
Al Assima	15.0	3.8
Mubarak Al Kabeer	13.2	5.2
Al Farwaniya	12.6	5.5
Al Ahmadi	12.2	5.3
Al Jahra	12.1	4.9
<b>Political engagement*</b>		
Low	13.4	4.9
High	14.8	5.3

\*  $p < .005$ , \*\*  $p < .001$

## Discussion and Conclusion

Considering the initial reactions toward the policy on social media, one might think that the Kuwaiti public was vehemently opposed to MOHE's policy. The EA conducted using the multi-label emotion-classification tool for Kuwaiti Arabic revealed that most tweets were classified as either "rejection" or "anger." As the topic gained traction and more individuals joined the conversation, this widespread opposition on social media implied the possibility of MOHE reconsidering its decision.

In contrast, the survey data presents a different perspective. Most respondents expressed support for the policy, along with backing for the minister and the National Assembly members who advocated for it. These data, derived from a more representative sample than social media, indicate substantial support for the policy with minimal opposition.

Individually, each dataset provides a snapshot of different segments of the population. The survey data represent a broader and more reflective view of the general public, while social media data captured the perspectives of individuals who were more engaged with or directly impacted by the issue at hand. Integrating these datasets through a qualitative analysis can provide deeper insights. This comprehensive approach may offer valuable revelations for the Kuwaiti government, aiding in understanding the divergent opinions, and in developing strategies to address the polarized views more effectively.

Surveys offer an advantage over big data analyses in their depth and specificity, particularly when tailored to explore various factors influencing public opinion. By customizing the survey instrument to examine key variables, we were able to uncover nuanced details regarding the levels of opposition and support for the MOHE policy. The findings revealed significant differences in support and opposition to the policy across various demographic and contextual factors, including gender, age, education level, location, and political engagement.

The policy faced greater opposition from females compared to males. With the increasing number of women entering the medical field globally and in Kuwait specifically (Al Sabah 315; Jawaid 2049)—evident in more females being accepted into Kuwait University's medical school and receiving government scholarships to study medicine abroad—women may be more likely to oppose policies that limit their opportunities to obtain medical degrees. Moreover, cultural and religious factors that suggest it is against religion or tradition for women to travel abroad without a mahram or guardian, make destinations like Jordan and Egypt more attractive to Kuwaiti females. Their geographic proximity makes it easier for family members to visit, and the countries' Islamic cultural context offers a sense of familiarity and comfort.

The results also indicated that individuals over the age of 50 were significantly more supportive of the policy, while younger segments of the sample, particularly those

aged 18–29 and 30–49, showed less support. The younger participants (18–29) may oppose the policy because they perceive it as a restriction on their own or their peers' opportunities to pursue a medical education, which they might view as unfair to their generation. For those aged 30–49, who are likely married and have college-aged or soon-to-be college-aged children, opposition may stem from concerns about the policy limiting their children's chances and potential to become doctors. As parents, they may be less inclined to support a policy that could adversely affect their children's educational and professional prospects.

While the survey and EA presented conflicting findings, the survey results pertaining to the location of participants closely aligned with the EA outcomes. The survey results showed that residents of Mubarak Al-Kabeer, Al Farwaniya, Al Ahmadi, and Al Jahra exhibited greater opposition to the policy compared to residents of Hawally and Al Asimah. Regarding the engagement analysis of tweets, seven out of the 10 most retweeted tweets, and five out of the 10 most favorite tweets opposed the policy. Notably, these tweets mostly originated from National Assembly representatives of districts 4 and 5, encompassing the governorates of Mubarak Al-Kabeer, Al Farwaniya, Al Ahmadi, and Al Jahra. The strong opposition from National Assembly members in these areas, expressed through social media, indicates a significant level of political responsiveness to their constituents, which was consistent with the survey findings.

The governorates of Mubarak Al-Kabeer, Al Farwaniya, Al Ahmadi, and Al Jahra are classified as peripheral or outer city areas, which are experiencing annual growth with new residential areas gradually developing. They are predominantly inhabited by younger families and, according to recent statistics, have higher fertility rates than the inner-city districts of Hawally and Al Asimah (Alghais and Almatar 1). The demographic composition of these areas likely influences their opposition to the policy, as younger families may prioritize ensuring broader educational and professional opportunities for their children.

This geographic discrepancy can also be understood by examining the educational environment and income levels within these areas. In particular, Hawally and Al Asimah governorates, have notably higher income levels, allowing parents to invest more in their children's education. This investment often includes enrolling their children in private schools or hiring private tutors. Additionally, after high school, these parents are more likely to afford private universities, or the costs associated with studying abroad. Research indicates that higher-income areas generally provide better and more efficient educational environments (Owens and Candipan 3178). This advantage positions students from Hawally and Al Asimah more favorably for admission to Kuwait University's medical school or for obtaining government scholarships to study abroad.

In contrast, for students from other governorates who aspire to enter the medical field, pursuing education in countries like Jordan or Egypt may be a more accessible and cost-effective option. This detailed understanding of why opposition is greater in

some areas should encourage the government to closely examine the disparities in educational quality across Kuwait.

While this study confirms that social media does not always accurately reflect overall public opinion on political issues, it also highlights the value of integrating survey data and social media analysis to gain a more comprehensive understanding of public sentiment. These results align with the views of scholars who advocate for a combined approach. By qualitatively analyzing both types of data, this study provided a more nuanced and multi-layered perspective on how Kuwaitis perceived MOHE's decision to suspend scholarships for medical studies at universities in Jordan and Egypt. Social media reflects the voices of highly engaged or directly affected individuals, often emphasizing emotional and localized reactions. In contrast, surveys capture a broader, more representative sample of public opinion, including those less vocal online. Through its comprehensive methodological approach, the study demonstrated that the Kuwaiti government could obtain valuable insights, assisting in the development of strategies that not only effectively manage general public opinion but also explore, analyze, and address polarized views.

The researchers hope that these findings will encourage the Kuwaiti government to recognize the crucial role of public opinion in shaping policy and to consider the methodologies used in this study. Adopting such an approach for future policies could lead to more informed governmental decisions, addressing diverse concerns and fostering greater public trust, ultimately reducing the likelihood of electoral sanctions such as calls for governmental change or the replacement of specific ministers.

More importantly, to assist the Kuwaiti government or any other Kuwaiti institutions interested in gauging Kuwaiti public opinion from social media, the study developed the only existing tool specifically tailored to handle Kuwaiti Arabic. This tool's unique capability to interpret and analyze the nuances of the Kuwaiti dialect makes it an invaluable resource for understanding local contexts and sentiments. By leveraging this tool alongside traditional surveys, policymakers can gain richer, more actionable insights. Additionally, the study contributes to the sentiment analysis literature, addressing a significant gap by focusing on Arabic, a language and cultural context that has been largely underrepresented in previous research.

## Limitations and Future Study

The study developed the first multi-label emotion-classification tool specifically for Kuwaiti Arabic. The objective was to explore how public opinion data, derived from both social media and traditional surveys, could aid the government in comprehending public perceptions of various policies. The goal was to analyze perceptions pertaining to several government policies by collecting tweets and conducting simultaneous public opinion surveys whenever a policy incited significant discussion on social media.

A significant challenge in this research was accessing relevant social media data. The study successfully retrieved tweets related to the MOHE decision to suspend scholarships for medical specialties at universities in Jordan and Egypt using Twitter's free Academic API. However, following Elon Musk's acquisition of Twitter and its subsequent rebranding to X, this free access was revoked. Even with paid memberships, the new platform imposes stricter data-access restrictions compared to the previous Academic API. A significant limitation of this study is that its conclusions are drawn from the analysis of a single policy. Future research should examine additional policies to determine the robustness of the Kuwaiti Arabic multi-label emotion-classification tool and to validate the findings of this study. This future research would further support the argument that using public opinion data from both social media and traditional surveys can provide governments with a more comprehensive understanding of public perceptions toward their policies.

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تعنى بنشر الأبحاث والدراسات في تخصصات الاجتماع والخدمة الاجتماعية والأنثروبولوجيا  
والجغرافيا ودراسات المعلومات والسياسة وعلم النفس والإعلام والاقتصاد



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