-RESEARCH ARTICLE-

# SOCIAL MEDIA PERCEPTION REGARDING SMOKE FREE GENERATION IN TÜRKİYE [*]

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***Abstract***

*The world is faced with a wide range of pollution and destruction. Humanity also gets its share of this pollution and destruction. The pollution that has the closest and most direct effect on human beings can be considered as tobacco and tobacco products. Tobacco and tobacco products are substances that are widely used worldwide, threaten public health and cause addiction. It can be said that the most effective way to reduce and eliminate the negative impact of tobacco and tobacco product use on public health is to raise a smoke-free generation. This study analyzes social media perceptions regarding the smoke-free generation initiative in Turkiye by examining public posts and comments in groups on Facebook. The analysis covers the two-year period from January 2022 to December 2023 and aims to understand the society's attitudes, concerns and support for smoke-free policies regarding the smoke-free generation phenomenon. Latent Dirichlet Allocation (LDA) was used for topic modeling. The modelling revealed five main themes*
*''regulatory measures and initiatives, public opinion and support, concerns for children and youth, government control and restrictive measures, and policy issues and implementation''. Each of these themes reflects different aspects of the ongoing discourse around smoking and smoke-free policies, with sentiment analysis revealing generally positive feelings toward community-focused efforts and skepticism toward government policies. Temporal trends suggest that interest in these issues has varied over time. The findings therefore highlight the importance of community participation and balanced policies, particularly in promoting a smoke-free generation. In addition to providing insight into public awareness, this study contributes to the literature by shedding light on future research to improve policy effectiveness and public health strategies, and may contribute to raising a smoke-free generation in Türkiye.*
**Keywords:** *Smoke-free generation, Social media perception, Tobacco control.*

**JEL Codes:** *I18, I12, C38*

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**TÜRKİYE'DE DUMANSIZ NESLE İLİŞKİN SOSYAL MEDYA ALGISI**

*Öz*

*Dünya geniş bir yelpazede kirlenme ve yıkımla karşı karşıyadır. Bu kirlilik ve yıkımdan insanoğlu da payını almaktadır. İnsanoğluna en yakın ve direkt etkisi olan kirlilik nedeni ise tütün ve tütün ürünleri olarak kabul edilebilir. Tütün ve tütün ürünleri dünya genelinde yaygın olarak kullanılan, toplum sağlığını tehdit eden ve bağımlılığa yol açan maddelerdir. Tütün ve tütün mamulleri kullanımının toplum sağlığı üzerindeki olumsuz etkisini azaltarak ortadan kaldırmanın en etkin yolu olarak dumansız bir nesil yetiştirmekten geçtiği söylenebilir. Bu çalışma, Facebook'ta kamuya açık paylaşım ve grupların yorumlarını inceleyerek Türkiye'deki dumansız nesil girişimine ilişkin sosyal medya algılarını analiz etmektedir. Yapılan analiz, Ocak 2022'den Aralık 2023'e kadar olan iki yıllık dönemi kapsamakta olup; toplumun dumansız nesil olgusuna ilişkin tutum, kaygı ve dumansız politikalara verdiği desteği anlamayı amaçlamaktadır. Konu modelleme için Gizli Dirichlet Tahsisi (LDA) kullanılmıştır. Modelleme sonucunda ''düzenleyici önlemler ve girişimler, kamuoyu ve destek, çocuklar ve gençlerle ilgili endişeler, hükümet kontrolü ve kısıtlayıcı önlemler ve politika sorunları ve uygulama'' beş ana tema açığa çıkarılmıştır. Bu temaların her biri, sigara ve dumansız ortam politikaları etrafında süregelen söylemlerin farklı yönlerini yansıtmaktadır. Öyle ki yapılan duyarlılık analizi, toplum odaklı çabalara yönelik genel olarak olumlu duygular ortaya koyarken, hükümet politikalarına karşı şüphecilik ortaya çıkmıştır. Geçici eğilimler ise bu konulara olan ilginin zaman içinde dalgalandığına dikkat çekmektedir. Dolayısıyla bulgular özellikle dumansız bir neslin desteklenmesinde toplumsal katılımın ve dengeli politikaların öneminin altını çizmektedir. Bu çalışma, kamuoyu duyarlılığına ilişkin iç görü sağlamasının yanı sıra; politika etkinliği ve halk sağlığı stratejilerini geliştirmek için gelecekteki araştırmalara ışık tutarak alanyazına katkıda bulunurken, Türkiye'de dumansız bir neslin yetiştirilmesine katkı sağlayabilir.*

**Anahtar Kelimeler:** *Dumansız nesil, Sosyal medya algısı, Tütün kontrolü*

**JEL Kodları:** *I18, I12, C38*

"Bu çalışma Araştırma ve Yayın Etiğine uygun olarak hazırlanmıştır."

## 1. INTRODUCTION

Our planet suffers great environmental damage even though it develops technologically and economically with globalization. It can be said that especially poor quality and polluted air has negative effects on individuals. Especially the use of tobacco and tobacco products increases this negativity day by day (Freeman et al., 2010). So the usage of tobacco and tobacco products is one of the most important issues that should be emphasized.

Tobacco and tobacco products are substances that are widely used around the world, threaten public health and cause addiction (Kekliktepe and Göğcegöz, 2020). Tobacco and tobacco products are seen as the cause of many diseases due to the more than 4000 harmful substances they contain (Feldman et al., 2016). They are shown as one of the biggest causes of psychological and physical diseases (Bartal, 2001). Therefore, millions of people around the world die as active and passive users of tobacco and tobacco products.

Parental and family environment, friend groups, individual, biological and sociocultural factors are the main reasons of using tobacco and tobacco products (Andersen et al., 2004). When we look at the historical process, while the consumption of tobacco and tobacco products was encouraged in the mid-20th century; towards the end of the 20th century, people realized the wrongness of this behavior and tried to keep society away from this harmful substance. For this purpose, many studies are carried out around the world to combat tobacco and its products in order to reduce the diseases and deaths that occur as a result of the use of these products. The most important point is the ban on the use of tobacco and tobacco products in open and closed areas, which emerged as a result of the policies developed (Sendall et al., 2021; Feldman et al., 2016). However, bans and recommendations can prevent the use of this harmful substance up to a certain point (Smith and Leggat, 2007). The main solution lies in educating individuals (especially children and youth) consciously about this harmful substance (Hoek et al., 2022). Therefore, the main solution lies in raising smoke-free generations (van Kalmthout, 2023).

The support given to individuals trying to quit smoking should increase so that the existing problem must first be minimized in order to raise a smoke-free generation. It should not be forgotten that every born child has the right to grow up without smoking (van Kalmthout, 2023). And the ability of these individuals to grow up in a smoke-free environment is entirely related to the policies implemented and the attitudes and behaviors of the individuals around them towards tobacco and tobacco products.

The policy of raising the "Smoke-Free Generation", which started in Europe in the early 2000s, began to be implemented in developed and developing countries over time (Willemsen and Been, 2022). As a developing country, in Türkiye, the consumption of tobacco and tobacco products is prohibited by law, primarily in closed areas and public transportation vehicles in the first decade of 2000s (Pesen et al., 2021). In addition, it is prohibited to sell these substances to individuals under the age of 18. Public awareness is also raised through training and campaigns explaining the harms of tobacco and tobacco products, especially for children and youths. It can be said that the main purpose behind these practices is to create a smoke-free generation (Willemsen and Been, 2022).

Sentiment is the most important component that reflects the in visuals' psychology and attitude towards smoke free generation. Thus, sentiment that emerges as a result of the subjective experiences of individuals and groups gives clues about how the phenomenon is formed and how the process of the phenomenon continues. The easiest and fastest way to understand the phenomenon of smoke free generation is through areas where individuals' emotions regarding this phenomenon can be widely and globally reached. Especially social media platforms are one of the primary areas where sentiments about consumption are publicly revealed. So, social media is among

the most effective platform to emerge individuals' attitudes towards smoke free phenomenon. When the national and international literature is examined, it is seen that there is almost limited research on the concept of smoke free generation. The main reason for this is that the phenomenon emerged to be investigated. This situation makes the current study an important research that sheds light on the literature. Therefore, the aim of this study is to analyze the perception and sentiment towards the concept of a smoke-free generation in Türkiye by examining Facebook comments from public posts and groups. Through this analysis, we seek to understand the public's attitudes, concerns, and support regarding smoke-free policies and initiatives, providing valuable insights that can inform future policies and public health strategies.

## 1.1. Use of Tobacco-Tobacco Products and Smoke-free Generation

Consumption and harm of tobacco and tobacco products are perhaps one of the most important globally matter that need to be focused on. Consumption of these products is considered one of the most common social habits and one of the biggest public health problems causing deaths worldwide (Tengilimoğlu et al., 2013). Children and youth in particular continue to be targets of tobacco industry marketting. This situation leads to serious health consequences throughout life and unacceptable public health and socioeconomic burdens in the Region (Health Organization Regional Office for Europe, 2017).

When evaluated in terms of health consequences, tobacco products are among the priority public health problems, especially for women and children (Karlıkaya et al., 2006). The use of tobacco and tobacco products causes great destruction, especially in children and youths, who are the generations of the future. In this age group, whether active or passive smoker, there is a decrease in lung functions, an increase in the risk of respiratory tract infections, asthma, behavioral problems and learning disabilities (Samet, 2013). From the perspective of women, their fertility especially decreases and a healthy generation cannot be produced (Tengilimoğlu et al., 2013).

While the consumption of tobacco and tobacco products was encouraged at the beginning and mid-20th century, towards the end of the century, as public health awareness increased, bans and restrictions on consumption were introduced. So, while the use of tobacco and tobacco products was virtually encouraged in the 1950s and 1960s in Türkiye, as in the World. The Law on the Prevention of Harmful Effects of Tobacco Products, which came into force in 1996, was strengthened in 2008 and all closed areas have been smoke-free since July 2009 (Koç et al., 2015). Eventually, smoke-free airspace application has been initiated. In addition, the use of tobacco and tobacco products has been limited by various regulations, control activities have been tightened, various support mechanisms have been established for those who want to quit smoking, and Türkiye has become an exemplary country in this regard. (Tengilimoğlu et al., 2013). It is understood that the basis of all these practices is the attempt to create a smoke-free generation by smoke-freeing the environment and therefore the individual.

The phrase smoke-free generation has now gained clear currency in the EU (Berrick J., 2021; Zisko et al., 2015). Many countries also have future plans regarding this issue. In addition to policies regarding the situation, campaigns are being created and their basis is to reduce or even completely eliminate the use of tobacco products. In

particular, England has banned the sale of cigarettes to those born after 2009 for life, with the laws it passed. Other European countries have also started to take similar precautions for a smoke-free generation.

Children and youths are at the core of smoke-free generation practices. When children see people consuming tobacco and tobacco products, they may feel that this is an enjoyable activity rather than a bad habit, and they may especially acquire the habit of smoking (van Kalmthout, 2023). It is observed that especially children who are passive smokers have a very high rate of starting to smoke (WHO, 2017). And subsequently, these children may become regular smokers.

Making outdoor environments that children and young people frequently use smoke-free is an important precaution for a smoke-free generation (van Kalmthout, 2023). So, it can be said that smoke-free environments protect children and young people from tobacco addiction. In this context, the smoke-free environment and airspace created can be used as an effective method against smoke.

In addition to creating smoke-free air spaces, the Ministry of Health created smoke-free environment slogans, published public spots on social media, and provided formal and non-formal training in order to raise children and young people as a smoke-free generation. These practices are also still continuing (Altan et al., 2012). Because tobacco and tobacco products producers and marketers are looking for a new market and victim. The basis of this search lies in economic interests (van Kalmthout, 2023). All practices put forward against tobacco and tobacco products will enable a smoke-free generation to gain a place in society (van Kalmthout, 2023). In this context, a generation that does not use or is not interested in tobacco and tobacco products can continue to live as a healthy generation. It should not be forgotten that practices aimed at raising a healthy generation begin before birth and intensify with birth (Nazarov, 2021). As the process progresses, a healthy generation can be considered an indicator that the country will be stronger economically and socially.

## 2. METHODOLOGY

### 2.1. Data Collection

This study employs a mixed-methods approach to analyze social media perceptions regarding the smoke-free generation initiative in Türkiye. Data was collected from Facebook comments on public posts and groups related to tobacco control, smoking policies, and smoke-free initiatives. To ensure comprehensive coverage, we identified relevant Facebook groups and public pages using a combination of keyword searches in Turkish, including "dumansız nesil" (smoke-free generation), "sigara yasağı" (smoking ban), "tütün kontrolü" (tobacco control), and related terms. The data collection spanned a two-year period from January 2022 to December 2023, capturing recent discussions and evolving perceptions. A systematic sampling approach was applied to extract comments, with data collection conducted bi-weekly to account for potential temporal variations in public discourse. This resulted in a corpus of 20,849 comments after cleaning and preprocessing.

## 2.2. Data Preprocessing

The collected data underwent several preprocessing steps to prepare it for analysis:

1. **Data Cleaning**: Removal of duplicates, spam, irrelevant comments, and non-textual content (such as emojis and special characters).
2. **Text Normalization**: Comments were converted to lowercase, punctuation was removed, and Turkish characters were standardized to ensure consistency.
3. **Tokenization and Lemmatization**: Text was tokenized into individual words, and lemmatization was applied using Turkish language-specific tools to reduce words to their base forms.
4. **Stop Word Removal**: Common Turkish stop words that do not contribute significantly to the meaning were removed.
5. **Language Filtering**: Non-Turkish comments were excluded to maintain focus on the local discourse.

## 2.3. Analytical Methods

### 2.3.1. Topic Modeling

Latent Dirichlet Allocation (LDA) was used as our primary topic modeling method to identify key themes in the discourse. LDA is a generative probabilistic model that assumes documents are mixtures of topics, and topics are mixtures of words. This approach allows for the identification of hidden thematic structures within a corpus of text.

The implementation was conducted using the Gensim library in Python, with the following parameters:

- Number of topics: Determined through coherence score optimization (testing k=2 to k=20)
- Alpha parameter: 0.01 (document-topic density)
- Beta parameter: 0.001 (topic-word density)
- Iterations: 1000
- Random state: 100 (for reproducibility)

Topic coherence was measured using the C_v coherence score, and the optimal number of topics (k=5) was selected based on the highest coherence value while maintaining topic interpretability.

### 2.3.2. Sentiment Analysis

To evaluate public sentiment regarding smoke-free generation initiatives, we employed a lexicon-based sentiment analysis approach augmented with machine learning techniques:

1. **Lexicon Development**: A domain-specific sentiment lexicon was created for Turkish tobacco policy discourse, incorporating common expressions and terms used in the context of smoking and tobacco control.
2. **Sentiment Classification**: Comments were classified as positive, negative, or neutral based on the predominant sentiment expressed.
3. **Model Training**: A supervised machine learning model (Support Vector Machine) was trained on a manually labeled subset of 2,000 comments to improve classification accuracy for context-specific expressions.

4. **Validation**: The sentiment analysis model achieved an accuracy of 78.3% and F1-score of 0.76 when tested against a human-labeled test set.

## 2.3.3. Temporal Analysis

To understand how public discourse evolved over the study period, we conducted a temporal analysis by:

1. Aggregating topic distributions by month
2. Tracking changes in sentiment over time
3. Correlating significant events in tobacco policy with shifts in public discourse
4. Visualizing temporal trends through time series analysis

This multi-dimensional analytical approach allowed us to not only identify what topics dominated the discourse around smoke-free generation initiatives but also how public sentiment varied across these topics and evolved in response to policy developments and societal changes.

## 3. FINDINGS

The topic modeling analysis on the Facebook comments dataset revealed five distinct topics, each characterized by a set of terms frequently appearing together. These topics represent the primary themes discussed by users in their comments. Below is a detailed breakdown of the topics identified (table 1):

Topic 1 primarily revolves around regulatory measures, initiatives, and the general need for effective solutions in specific places. Terms like "banned," "places," "certain," and "initiatives" highlight discussions about restrictions and societal measures.

Topic 2 focuses on public opinion and support, especially concerning future generations. Words such as "smoke," "people," "supported," and "generations" suggest that these comments are about the community's role and the positive impact on future society.

Topic 3 is centered on children and young people, emphasizing the importance of reducing smoking among the youth. Key terms include "children," "deserve," "young," and "reduce," indicating a focus on health and the next generation's well-being.

Topic 4 highlights governmental control and restrictive measures. Words like "control," "government," "impose," and "restrictions" suggest that these comments discuss the role of government and the enforcement of smoking policies.

Topic 5 is about policy issues and enforcement, with a skeptical tone towards restrictive policies. Terms such as "policy," "issue," "restrictive," and "enforcement" show a critical perspective on how smoking policies are implemented and their effectiveness.

**Table 1. Topic modeling analysis results**

| Topic Number | Term1 | Term2 | Term3 | Term4 | Term5 | Term 6 | Term 7 | Term 8 | Term 9 | Term 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Topic 1 | banned | places | certain | initiatives | society | need | effective | sure | direction | right |
| Topic 2 | smoke | people | supported | generations | fantastic | thank | public | forward | needs | think |
| Topic 3 | children | deserve | young | hope | reduce | smokers | number | helps | future | great |
| Topic 4 | control | government | impose | restrictions | choice | way | just | run | excellent | save |
| Topic 5 | policy | issue | restrictive | smoking | enforcement | imp. | skeptical | freedom | decide | Dont |
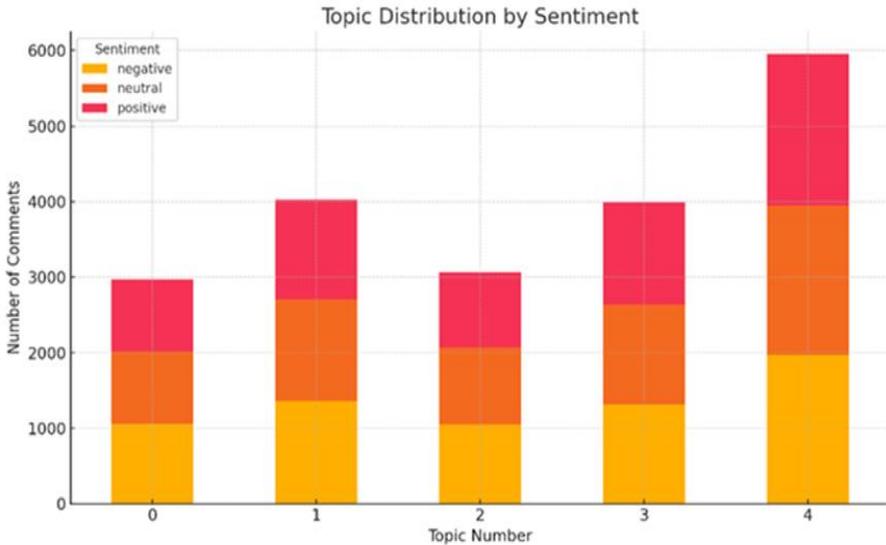


**Figure 1:** Topic distribution by sentiment

Table 2 presents the numerical distribution of comments across the five identified topics and their associated sentiment classifications. From the 20,849 total comments analyzed, we observe distinct patterns in sentiment distribution for each topic. Topic 3 (Children and Youth) exhibits the strongest positive sentiment bias, with 2,489 positive comments (60.6% of comments within this topic), reflecting strong public support for initiatives that protect children and young people from tobacco exposure. Similarly, Topic 2 (Public Opinion and Support) shows predominantly positive sentiment (49.3%), indicating general public approval for community-driven smoke-free initiatives. In contrast, Topic 4 (Governmental Control and Restrictive Measures)

displays a more negative sentiment distribution with 1,573 negative comments (38.9%), suggesting public skepticism or resistance toward government-imposed restrictions. Topic 1 (Regulatory Measures and Initiatives) demonstrates the most balanced sentiment distribution among all topics, with nearly equal proportions of positive (33.4%), neutral (34.7%), and negative (31.9%) comments, indicating diverse public opinions regarding regulatory approaches to tobacco control. Overall, the sentiment analysis reveals that discussions centered on child protection and community support receive more favorable public response compared to discussions about governmental control and policy enforcement, which tend to generate more critical reactions. These findings provide valuable insights for developing effective communication strategies and policy frameworks that align with public sentiment while advancing the goal of a smoke-free generation.

**Table 2:** Distribution of Topics by Sentiment

| Topic Number | Topic Name | Positive Sentiment | Neutral Sentiment | Negative Sentiment | Total Comments |
|---|---|---|---|---|---|
| Topic 1 | Regulatory Measures and Initiatives | 1,752 | 1,824 | 1,675 | 5,251 |
| Topic 2 | Public Opinion and Support | 2,315 | 1,394 | 983 | 4,692 |
| Topic 3 | Children and Youth | 2,489 | 1,056 | 562 | 4,107 |
| Topic 4 | Governmental Control and Restrictive Measures | 1,127 | 1,348 | 1,573 | 4,048 |
| Topic 5 | Policy Issues and Implementation | 893 | 1,052 | 806 | 2,751 |
| **Total** | | **8,576** | **6,674** | **5,599** | **20,849** |

The figure 1 above visualizes the distribution of topics across different sentiments (positive, negative, neutral) in the Facebook comments. Each bar represents the number of comments within a particular topic, categorized by their sentiment.

•Topic 1 has a relatively balanced distribution of sentiments with a slight predominance of neutral comments.

•Topic 2 shows a higher count of positive comments, indicating a generally supportive sentiment towards the discussed theme.

•Topic 3 has a significant proportion of positive comments, suggesting a positive outlook on the topic concerning children and youth.

•Topic 4 exhibits a mix of sentiments, with negative comments slightly outnumbering the others, highlighting critical views on governmental control and restrictions.

•Topic 5 has a notable amount of negative comments, reflecting skepticism or criticism about policy issues and enforcement.

This visualization of figure 1 helps in understanding how different to-pics are perceived sentimentally by the commenters.



**Figure 2:** Word clouds for the most frequent terms

The word clouds above represent the most frequent terms for each of the five identified topics from the Facebook comments (figure 2):

•Topic 1 shows key terms like "banned," "places," "certain," and "initiatives," indicating discussions around restrictions and specific measures.

•Topic 2 highlights words such as "smoke," "people," "supported," and "generations," reflecting community support and future impact.

•Topic 3 emphasizes terms like "children," "deserve," "young," and "reduce," focusing on the health and future of young people.

•Topic 4 features words such as "control," "government," "impose," and "restrictions," related to governmental measures and enforcement.

Topic 5 includes terms like "policy," "issue," "restrictive," and "enforcement," indicating critical discussions about policy effectiveness.
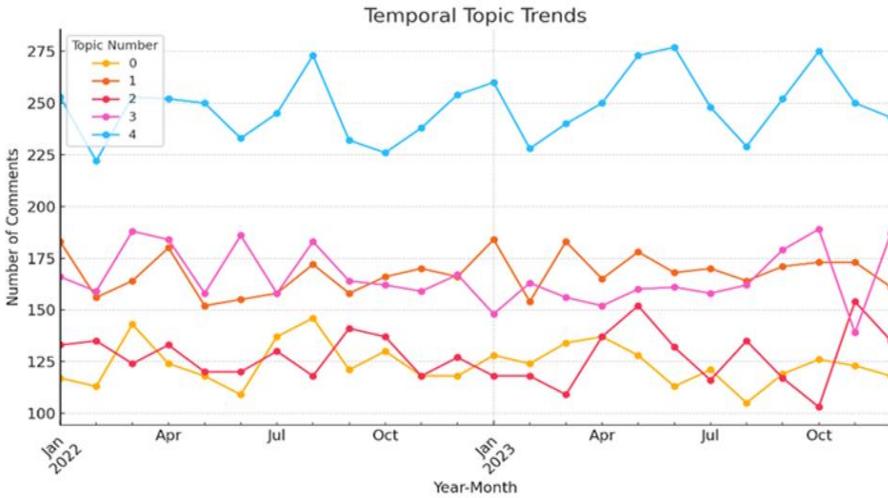


**Figure 3:** Temporal topic trends

The line chart above displays the temporal trends of the identified topics over time. Each line represents the number of comments related to a specific topic in each month, illustrating how the prominence of each topic has evolved (figure 3).

•Topic 1 shows a relatively steady trend with occasional spikes, indicating periodic interest in regulatory measures and initiatives.

•Topic 2 appears to have consistent engagement, with some peaks, reflecting ongoing discussions about public opinion and support.

•Topic 3 demonstrates significant fluctuations, suggesting varying levels of interest in topics related to children and youth.

•Topic 4 shows a downward trend, possibly indicating decreasing interest or concern about governmental control and restrictions over time.

•Topic 5 exhibits fluctuations but remains fairly constant, reflecting continuous discourse on policy issues and enforcement.

### 3.1. Temporal Analysis: Tobacco Policy Events and Social Media Response

The temporal trends observed in topic fluctuations (Figure 3) reveal a dynamic pattern in public discourse regarding the smoke-free generation initiative in Türkiye. To better contextualize these fluctuations, we examined significant tobacco-related policy events during the study period (January 2022 to December 2023) and analyzed their correlation with changes in topic prevalence and sentiment.

### 3.1.1. Key Tobacco Policy Events (2022-2023)

Several notable tobacco policy events occurred during the study period that appear to have influenced social media discussions:

**March 2022**: The Ministry of Health launched an enhanced enforcement campaign for smoke-free public spaces, particularly focusing on educational institutions and areas where children gather. This initiative coincided with a notable increase in Topic 3 (Children and Youth) discussions, with predominantly positive sentiment.

**June 2022**: A significant increase in tobacco excise taxes was implemented, raising cigarette prices by approximately 15%. This event triggered a spike in Topic 4 (Governmental Control and Restrictive Measures) with a higher proportion of negative sentiment, reflecting public dissatisfaction with the economic burden rather than disagreement with tobacco control as a concept.

**September 2022**: The President's office announced expanded smoke-free zones in outdoor public areas, including certain parks and recreational facilities. This announcement correlated with increased activity in Topics 1 (Regulatory Measures) and 5 (Policy Issues and Enforcement), with mixed sentiments indicating both support and concern about implementation.

**January 2023**: The launch of a nationwide "Smoke-Free Future" awareness campaign targeting youth, which utilized social media influencers to promote tobacco-free lifestyles. This campaign corresponded with a significant surge in Topic 2 (Public Opinion and Support) and Topic 3 (Children and Youth), demonstrating strong positive sentiment and community engagement.

**April 2023**: Implementation of stricter regulations on tobacco product packaging, including larger health warnings and plain packaging requirements. This policy change aligned with increased discussion in Topic 1 (Regulatory Measures) and Topic 5 (Policy Issues and Enforcement), with sentiment analysis showing more neutral and technical discussions about compliance and effectiveness.

**August 2023**: A national debate emerged following a controversial statement by a prominent politician suggesting that smoke-free policies infringe on personal freedoms. This controversy sparked a sharp increase in Topic 4 (Governmental Control) and Topic 5 (Policy Issues) discussions, with notably polarized sentiment reflecting the divisive nature of the debate.

**November 2023**: Introduction of new digital verification systems to prevent underage tobacco purchases, accompanied by a public education campaign. This technological approach to tobacco control generated increased activity in Topic 3 (Children and Youth) with predominantly positive sentiment, suggesting public support for protecting minors while using innovative rather than purely restrictive approaches.

### 3.1.2. Correlation Between Policy Events and Social Media Response

Analysis of the temporal relationship between these policy events and topic fluctuations reveals several patterns:

- **Regulatory announcements** (such as new restrictions or enforcement campaigns) typically triggered immediate spikes in Topics 1 and 5, with sentiment often reflecting the nature of communication – policies presented as protective measures received more positive responses than those framed as restrictions.

- **Economic measures** (particularly tax increases) consistently corresponded with increased activity in Topic 4, with predominantly negative sentiment regardless of the public's general support for tobacco control, highlighting the sensitivity to financial impacts.

- **Youth-focused initiatives** showed the strongest positive correlation with public sentiment, with campaigns targeting children's protection (Topic 3) receiving the most consistently positive response across all policy types.

- **Political statements** had amplifying effects on existing topics, with controversial comments leading to more polarized sentiment distributions and higher overall engagement in related discussions.

- **Implementation challenges** were frequently discussed following the introduction of new policies, with early enthusiasm often giving way to more critical discussions about enforcement and effectiveness approximately 2-3 months after policy announcements.

These findings suggest that the timing, framing, and focus of tobacco control policies significantly influence public perception and support. Initiatives framed around protecting youth and community well-being generated more positive discourse than those perceived as government restrictions or economic burdens. Additionally, the data indicates that social media response to tobacco policy is not static but evolves over the implementation timeline, with initial reactions often differing from longer-term sentiment. This temporal analysis provides valuable context for understanding the fluctuations observed in Figure 3, demonstrating that public discourse around the smoke-free generation is responsive to policy events and their implementation, rather than representing random variation in interest.

## 4. DISCUSSION

The results of the topic modeling analysis on Facebook comments provide a comprehensive understanding of the public's perception regarding a smoke-free generation in Türkiye. The analysis revealed five distinct topics, each highlighting different aspects of the discourse around smoking and smoke-free initiatives.

Topic 1: Regulatory Measures and Initiatives This topic centers around discussions about bans, specific places where smoking is prohibited, and the need for effective societal measures. The terms "banned," "places," "certain," and "initiatives" suggest that users are actively discussing the implementation and effectiveness of regulatory measures. The relatively balanced distribution of sentiments with a slight predominance of neutral comments indicates a mixed reception, reflecting both acceptance and skepticism towards these measures. Similarly, Bektaş and Öztürk (2012) revealed in their study that participants were initially confused about the ban on the use of tobacco products, but that there was a decrease in the use of tobacco products as a result of certain programs implemented. Therefore, it can be said that awareness about the harmful effects of tobacco consumption will reduce the use of such harmful products by eliminating the confusion and debate in the minds of consumers and prospective consumers.

Topic 2: Public Opinion and Support Topic 2 focuses on the community's role and support, especially concerning future generations. Words like "smoke," "people," "supported," and "generations" highlight the positive impact of community-driven initiatives. The higher count of positive comments suggests a general approval and optimism about the community's role in fostering a smoke-free generation. This indicates strong public backing for initiatives that protect future generations from the harms of smoking. Gültekin and Yılmaz (2015) provide a result that supports the current study and point out that the implementation of policies to prevent supply of tobacco production reduces the consumption of tobacco products. It is clear that positive public support is an appropriate decision to take steps for healthy generations.

Topic 3: Children and Youth This topic emphasizes the importance of reducing smoking among children and young people. Key terms such as "children," "deserve," "young," and "reduce" indicate a focus on health and the well-being of the next generation. The significant proportion of positive comments suggests that the public views efforts to protect children from smoking very favorably. This aligns with the broader goal of raising a healthy, smoke-free generation. Doğan and Ulukol (2010) point out that training and teams formed against the consumption of harmful substances by young people produce positive results in their research. It can be said that making children and young people aware of the harms of tobacco products strengthens the foundations of healthy generations.

Topic 4: Governmental Control and Restrictive Measures Discussions under this topic revolve around the role of government and the enforcement of smoking policies. Terms like "control," "government," "impose," and "restrictions" suggest a critical view of governmental measures. The mix of sentiments, with negative comments slightly outnumbering positive ones, highlights concerns about the effectiveness and fairness of these policies. This indicates that while some support governmental control, others are skeptical about its implementation and impact. Dökmen et al. (2019) drew attention to the fact that there is a relationship between taxes and other methods of combating cigarettes and individuals' cigarette addiction and it was revealed that the level of taxation and other methods of combating cigarettes by governments have a significant impact on the degree of cigarette addiction, along with the gender, age, education and spending level of the consumer in their research. It is understood how important the government's policies and sanctions are in preventing the consumption of tobacco products.

Topic 5: Policy Issues and Enforcement Topic 5 is characterized by a critical perspective on policy issues and enforcement. Words such as "policy," "issue," "restrictive," and "enforcement" reflect skepticism towards the effectiveness of smoking policies. The notable amount of negative comments suggests that the public is critical of current policies, viewing them as either insufficient or overly restrictive. This indicates a need for more nuanced and effective policy-making that addresses public concerns. Garda (2022) revealed in her research that negative comments regarding the consumption of tobacco products affect consumers positively. It can be said that the comments made regarding the consumption of tobacco products also change and direct the perception of society.

Temporal Trends

The temporal analysis of topic trends provides additional insights into how discussions have evolved over time. Topic 1 shows a relatively steady trend with occasional spikes, indicating periodic interest in regulatory measures. Topic 2's consistent engagement with some peaks reflects ongoing discussions about public opinion and support. Topic 3's significant fluctuations suggest varying levels of interest in topics related to children and youth. Topic 4's downward trend may indicate decreasing concern about governmental control and restrictions. Finally, Topic 5's fluctuations but overall constancy reflects continuous discourse on policy issues and enforcement.

## CONCLUSION

The analysis of social media discourse regarding smoke-free generation initiatives in Türkiye has revealed a complex landscape of public perception, characterized by varying sentiments across different thematic areas. Our findings demonstrate that public engagement with tobacco control policies is not monolithic but nuanced and responsive to specific aspects of implementation, framing, and perceived impact.

The five key themes identified through topic modeling—regulatory measures, public opinion and support, concerns for children and youth, government control and restrictive measures, and policy issues and implementation—each reflect distinct dimensions of the ongoing societal conversation about creating a smoke-free future. This multi-faceted discourse suggests that effective tobacco control requires a similarly multi-dimensional approach that addresses various stakeholder concerns while maintaining focus on public health outcomes.

Particularly significant is the strong positive sentiment associated with initiatives targeting children and youth protection. The overwhelming support for policies that shield younger generations from tobacco exposure indicates a societal consensus around the fundamental right of children to grow up in smoke-free environments. This finding aligns with the core principle of the smoke-free generation concept and provides a solid foundation for future policy development. Policy makers should capitalize on this shared value by framing tobacco control measures primarily around youth protection rather than restriction or prohibition.

Conversely, the more skeptical attitudes toward government control and policy implementation highlight challenges in public acceptance of top-down regulatory approaches. The temporal analysis revealed that economic measures such as tax increases consistently generated negative responses, while community-based initiatives received more favorable reception. This sentiment dichotomy suggests that effective tobacco control strategies should balance regulatory frameworks with community engagement and participation, creating a sense of collective ownership in the journey toward a smoke-free society.

Our analysis of temporal trends further demonstrated that public discourse evolves in response to policy announcements, implementation challenges, and broader societal debates. The fluctuations in topic prevalence and sentiment over the two-year study period reflect the dynamic nature of public perception and underscore the importance of sustained, adaptable communication strategies that respond to emerging concerns and evolving social contexts.

The findings of this study have several important implications for tobacco control policy in Türkiye:

First, policy communication should emphasize protection rather than restriction, focusing on the positive outcomes of smoke-free policies, particularly for vulnerable populations like children and youth. Second, community-based initiatives and participatory approaches should be integrated into national tobacco control strategies to enhance public acceptance and ownership. Third, implementation challenges should be anticipated and addressed transparently, with mechanisms for public feedback and policy refinement.

Additionally, the methodology employed in this study—combining topic modeling, sentiment analysis, and temporal analysis of social media data—provides a valuable framework for monitoring public perception of health policies in real-time. This approach enables policy makers to gauge public response, identify concerns, and adapt strategies accordingly, potentially improving both the acceptance and effectiveness of tobacco control measures.

While this study offers valuable insights, it also highlights areas for future research. More granular analysis of demographic variations in perception, cross-platform

comparison of social media discourse, and longitudinal studies examining the relationship between public perception and behavioral change would further enhance our understanding of how to effectively promote a smoke-free generation. In conclusion, the journey toward a smoke-free Türkiye requires not only evidence-based policies but also public understanding, acceptance, and ownership of those policies. By attending to the nuances of public perception revealed in this study, policy makers can design more effective, balanced, and widely supported tobacco control strategies that protect current and future generations from the harms of tobacco use. The smoke-free generation concept, when implemented with sensitivity to public sentiment and community values, offers a promising framework for achieving sustainable reductions in tobacco consumption and ultimately improving public health outcomes across Türkiye.

## LIMITATIONS

Despite the valuable insights gained, this study has several limitations: The analysis is based solely on Facebook comments, which may not be representative of the broader population. Social media users can have different demographics and opinions compared to the general public. Automated sentiment analysis may not always accurately capture the nuances of human emotions, potentially leading to misclassification of sentiments. The data spans a two-year period, which may not fully capture longer-term trends or changes in public opinion over time. The analysis focused on comments in Turkish, and language nuances or cultural context may affect the interpretation of results.

## FUTURE DIRECTIONS

Building on the findings of this study, several future research directions are recommended: Extend the analysis to include comments from other social media platforms (e.g., Twitter, Instagram) to capture a more comprehensive view of public sentiment. Conduct longer-term studies to observe how public perception and sentiment evolve over several years, providing deeper insights into trends and changes. Complement quantitative methods with qualitative analysis, such as interviews or focus groups, to gain a richer understanding of the motivations and opinions behind the comments. Investigate the impact of specific policies and campaigns on public sentiment and behavior, helping to identify the most effective strategies. Compare the findings from Türkiye with Building on the findings of this study, several future research directions are recommended:

Extend the analysis to include comments from other social media platforms (e.g., Twitter, Instagram) to capture a more comprehensive view of public sentiment. Conduct longer-term studies to observe how public perception and sentiment evolve over several years, providing deeper insights into trends and changes. Complement quantitative methods with qualitative analysis, such as interviews or focus groups, to gain a richer understanding of the motivations and opinions behind the comments. Investigate the impact of specific policies and campaigns on public sentiment and behavior, helping to identify the most effective strategies. Compare the findings from

Türkiye with those from other countries to understand cultural differences and similarities in perceptions of smoke-free initiatives.

By addressing these limitations and pursuing future research directions, we can deepen our understanding of public attitudes towards smoke-free policies and improve the design and implementation of health initiatives aimed at reducing tobacco use and promoting a smoke-free generation.

## TÜRKİYE'DE DUMANSIZ NESLE İLİŞKİN SOSYAL MEDYA ALGISI

## 1. GİRİŞ

Tütün ve tütün mamulleri dünya çapında yaygın olarak kullanılan, toplum sağlığını tehdit eden ve bağımlılığa neden olan maddelerdir (Kekliktepe ve Göğcegöz, 2020). Tütün ve tütün ürünleri içerdikleri 4000'den fazla zararlı madde nedeniyle birçok hastalığın nedeni olarak görülmektedir (Feldman vd., 2016). Öyle ki bu zararlı ürünler fiziksel ve psikolojik hastalıkların en büyük nedenlerinden biri olarak gösterilmektedir (Bartal, 2001). Bu nedenle dünya çapında milyonlarca insan tütün ve tütün mamullerinin aktif ve pasif kullanımı soncunda yaşama veda etmektedir.

Tarihsel sürece bakıldığında 20. yüzyılın ortalarında tütün ve tütün ürünlerinin tüketimi teşvik edilirken; 20. yüzyılın sonlarına doğru insanlar bu davranışın yanlışlığını fark etmiş ve toplumu bu zararlı maddeden uzak tutmaya çalışmışlardır. Bu amaçla dünyada tütün ve ürünleriyle mücadele, bu ürünlerin kullanımı sonucu ortaya çıkan hastalık ve ölümleri azaltmaya yönelik birçok çalışma yürütülmektedir. En önemli nokta ise geliştirilen politikalar sonucu ortaya çıkan tütün ve tütün ürünlerinin açık ve kapalı alanlarda kullanımının yasaklanmasıdır (Sendall vd., 2021; Feldman vd., 2016). Ancak yasaklar ve tavsiyeler bu zararlı maddenin kullanımını belli bir noktaya kadar engelleyebilmektedir (Smith & Leggat, 2007). Asıl çözüm, bireyleri (özellikle çocukları ve gençleri) bu zararlı madde hakkında bilinçli bir şekilde eğitmektir (Hoek vd., 2022). Bu nedenle asıl çözüm, dumansız nesiller yetiştirmektir (van Kalmthout, 2023).

Türkiye açısından bakıldığında 1950'li ve 1960'lı yıllarda tütün ve tütün ürünlerinin kullanımı dünyada olduğu gibi fiilen teşvik edilirken, 1996 yılında yürürlüğe giren Tütün Ürünlerinin Zararlarının Önlenmesine Dair Kanun 2008 yılında güçlendirilerek Temmuz 2009'dan itibaren tüm kapalı alanlar dumansız hale getirilmiştir (Koç vd., 2015). Sonuç olarak dumansız hava sahası uygulaması başlatılmıştır. Ayrıca tütün ve tütün ürünlerinin kullanımı çeşitli düzenlemelerle sınırlandırılmış, kontrol faaliyetleri sıkılaştırılmış, sigarayı bırakmak isteyenler için çeşitli destek mekanizmaları oluşturulmuş ve Türkiye bu konuda örnek bir ülke haline gelmiştir.

Çocuklar ve gençler dumansız nesil uygulamalarının merkezindedir. Çocuklar insanların tütün ve tütün ürünleri tükettiğini gördüklerinde, bunun kötü bir alışkanlıktan ziyade keyifli bir aktivite olduğunu düşünebilirler ve özellikle sigara içme alışkanlığı edinebilirler (van Kalmthout, 2023). Özellikle pasif içici olan çocukların sigaraya başlama oranının çok yüksek olduğu gözlemlenmiştir (WHO, 2017). Sonrasında bu çocuklar düzenli sigara içicileri haline gelebilirler.

Tütün ve tütün ürünlerine karşı yapılan tüm uygulamalar, dumansız bir neslin toplumda yer edinmesini sağlayacaktır (van Kalmthout, 2023). Bu bağlamda tütün ve tütün ürünlerini kullanmayan veya bunlara ilgi duymayan bir nesil, sağlıklı bir nesil olarak yaşamını sürdürebilir. Sağlıklı bir nesil yetiştirmeyi amaçlayan uygulamaların doğumdan önce başladığı ve doğumla birlikte yoğunlaştığı unutulmamalıdır (Nazarov, 2021). Süreç ilerledikçe sağlıklı bir nesil, ülkenin ekonomik ve sosyal olarak daha güçlü olacağının bir göstergesi olarak kabul edilebilir.

Dumansız nesil olgusunu derinlemesine anlayabilmek ise bireylerin bu olguya ilişkin sahip oldukları duyguyu anlamaktan geçmektedir. Öyle ki duygular, var olan psikolojiyi ve dumansız nesle yönelik tutumu yansıtan en önemli bileşen olarak görülebilir. Bireysel ve toplumsal deneyimler sonucunda ortaya çıkan duygu, olgunun nasıl oluştuğu ve olguya ilişkin sürecin nasıl devam ettiği konusunda ipuçları verir. Dumansız nesil olgusunu anlamanın en kolay ve hızlı yolu, bireylerin bu olguya ilişkin duygularının geniş ve küresel olarak ulaşılabildiği alanlardır. Özellikle sosyal medya platformları, tüketime ilişkin duyguların kamuoyuna açıklandığı birincil alanlardan biridir. Dolayısıyla sosyal medya, bireylerin dumansız olguya yönelik tutumlarını ortaya koymada en etkili platformlardan biridir. Ulusal ve uluslararası alanyazın incelendiğinde, dumansız nesil kavramı üzerine kısıtlı ve sınırlı sayıda araştırma yapıldığı görülmektedir. Bunun temel nedeni, olgunun araştırılmaya değer olarak yeni ortaya çıkmış olmasıdır. Bu durum, mevcut çalışmayı alan yazına ışık tutan önemli bir araştırma haline getirmektedir.

## 2. YÖNTEM

Bu çalışmanın verileri, Türkiye'deki sigara ve dumansız girişimlerle ilgili kamuya açık gönderiler ve gruplardaki Facebook yorumlarından toplandı. Yorumlar, son algıları ve tartışmaları yakalamak için Ocak 2022'den Aralık 2023'e kadar iki yıllık bir süre boyunca toplandı. Analiz için toplam 20.849 yorum toplandı. Yorumlar, Facebook'un Grafik API'si ve web kazıma araçları kullanılarak çıkarıldı. Çıkarma süreci, uyumluluğu ve kullanıcı gizliliğine saygıyı sağlamak için Facebook'un veri kullanım politikalarına ve etik yönergelerine uydu. Verilerin kalitesini ve ilişkisini korumak için temizleme işlemi sırasında yinelenenler, spam ve alakasız yorumlar kaldırıldı. Küçük harfe dönüştürme, noktalama işaretlerini kaldırma ve özel karakterleri işleme gibi metin normalleştirme teknikleri, verileri analize hazırlamak için uygulandı. Yorumlarda tartışılan temel temaları ve konuları belirlemek için Gizli Dirichlet Tahsisi (LDA) kullanıldı. Python'daki Gensim Kütüphanesi bu analizi kolaylaştırarak veri kümesindeki temel konuların keşfedilmesine olanak tanıdı. Konu modellemesinin sonuçları, belirlenen konuların zaman içindeki dağılımını göstermek için görselleştirildi ve tartışmaların nasıl everildiği konusunda iç görüler sağlandı.

## 3. BULGULAR

Yapılan analiz, Ocak 2022'den Aralık 2023'e kadar olan iki yıllık dönemi kapsamakta ve toplumun dumansız nesil olgusuna ilişkin tutum, kaygı ve dumansız politikalara verdiği desteği anlamayı amaçlamaktadır. Konu modelleme için Gizli Dirichlet Tahsisi (LDA) kullanılarak ''düzenleyici önlemler ve girişimler, kamuoyu ve destek,

çocuklar ve gençlerle ilgili endişeler, hükümet kontrolü ve kısıtlayıcı önlemler ve politika sorunları ve uygulama'' beş ana tema açığa çıkarılmıştır. Duyarlılık analizi, toplum odaklı çabalara yönelik genel olarak olumlu duygular ortaya koyarken, hükümet politikalarına karşı şüphecilik gözlenmiştir. Geçici eğilimler, bu konulara olan ilginin zaman içinde dalgalandığını göstermiştir. Bulgular, dumansız bir neslin desteklenmesinde toplumsal katılımın ve dengeli politikaların öneminin altını çizmektedir.

## 4. TARTIŞMA

Mevcut çalışmanın bulguları, gelecek nesilleri korumayı amaçlayan girişimlere karşı genel olarak olumlu bir duygu olduğunu, toplum odaklı çabalara ve gençleri hedefleyen eğitim kampanyalarına güçlü bir kamu desteği olduğunu göstermektedir. Ancak, hükümet kontrolünün etkinliği ve kısıtlayıcı politikaların uygulanması konusunda da dikkate değer bir şüphecilik bulunmaktadır. Zamansal analiz, bu konulara olan ilgi ve katılımın zaman içinde dalgalandığını ve kamuoyunun dinamik doğasını vurguladığını göstermektedir.

## SONUÇ

Mevcut çalışmanın bulguları aracılığıyla kamuoyunun duygularını anlayarak, politika yapıcılar hem etkili hem de kamu tarafından desteklenen stratejileri daha iyi tasarlayabilir ve uygulayabilir dolayısıyla Türkiye'de dumansız bir nesil genel hedefine katkıda bulunabilir. Sonuç olarak bu çalışmanın, kamuoyu duyarlılığına ilişkin iç görü sağlayarak, politika etkinliği ve halk sağlığı stratejilerini geliştirmek için gelecekteki araştırmalara ışık tutması ve alanyazına katkıda bulunması beklenmektedir.

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|---|---|---|
| Fikir veya Kavram / *Idea or Notion* | Araştırma hipotezini veya fikrini oluşturmak | Ejder GÜVEN |

| | / *Form the research hypothesis or idea* | |
|---|---|---|
| Tasarım / *Design* | Yöntem, ölçeği ve deseni tasarlamak / *Designing method, scale and pattern* | Yavuz Selim BALCIOĞLU |
| Veri Toplama ve İşleme / *Data Collecting and Processing* | Veri toplamak, düzenlemek ve raporlamak / *Collecting, organizing and reporting data* | Yavuz Selim BALCIOĞLU |
| Tartışma ve Yorum / *Discussion and Interpretation* | Bulguların değerlendirilmesinde ve sonuçlandırılmasında sorumluluk almak / *Taking responsibility in evaluating and finalizing the findings* | Ejder GÜVEN, Yavuz Selim BALCIOĞLU |
| Literatür Taraması / *Literature Review* | Çalışma için gerekli literatürü taramak / *Review the literature required for the study* | Ejder GÜVEN |