



The Socioeconomic Impact of the Spread of Illegal Cigarettes: A Bibliometric Analysis

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ARTICLE INFO	ABSTRACT
<p>Article History: Submitted/Received Februari 05, 2026 First Revised April 10, 2026 Accepted Mei 12, 2026 First Available online Juni 01, 2026 Publication Date Juni 23, 2026</p> <p>Keyword: Bibliometric tobacco, Excise tax policies, Illegal cigarettes, Socioeconomic impacts</p>	<p><i>The circulation of illegal cigarettes is a problem that not only impacts public health but also has significant social and economic consequences. Illegal cigarettes contribute to the loss of government revenue from the excise tax sector, weaken the effectiveness of tobacco control policies, and expand public access—particularly among low-income groups—to low-cost tobacco products. This study aims to map and analyze how the social and economic impacts of the spread of illegal cigarettes are represented in scientific literature and media coverage through a bibliometric approach. The method used is bibliometric analysis utilizing publication data obtained from the Scopus database as well as supporting data from online media coverage related to the issue of illegal cigarettes. The data were analyzed using VOSviewer software to identify publication trends, dominant keywords, thematic clusters, and evolving relationships between issues over a specific time period. The analysis focused on the interrelationships between social, economic, consumption behavior, and tobacco control policy aspects. The results indicate that research on illegal cigarettes has seen a significant increase over the past decade, with a primary focus on issues of state revenue loss, fiscal policy, consumer behavior, and social impacts on vulnerable groups. Network visualizations reveal that the issue of illegal cigarettes lies at the intersection of public health, political economy, and law enforcement perspectives. This study confirms that the circulation of illegal cigarettes is a multidimensional phenomenon requiring an integrated policy approach—not only through law enforcement but also through sustainable economic and social strategies.</i></p>

1. INTRODUCTION

Indonesia is one of the countries with the highest levels of tobacco consumption globally, ranking third behind China and India in terms of the number of active smokers. The trend of increasing e-cigarette use has also risen dramatically, increasing tenfold over the past decade. In addition to the high number of adult smokers, public attention is also focused on the increasing exposure to nicotine among adolescents, reflecting the dynamics of tobacco consumption across various age groups. Economic dependence on tobacco consumption is accompanied by high healthcare costs resulting from tobacco-related diseases such as heart disease, stroke, and lung cancer, as well as the financial burden on the national healthcare system. These facts indicate that tobacco product consumption remains a major challenge for public health in Indonesia.

The state of tobacco consumption in Indonesia in 2025 demonstrates impacts not only on health but also on the socioeconomic aspects of households and the nation. Data from the 2021 Global Adult Tobacco Survey (GATS) Indonesia indicates that the prevalence of tobacco product use among adults reached approximately 34.5 percent, equivalent to 70.2 million people. Furthermore, this prevalence is dominated by men, accounting for over 65 percent, while women make up only about 3.3 percent.

Given this high level of cigarette consumption, it is important to note that not all cigarettes circulating in the market comply with government legal and tax regulations. The circulation of illegal cigarettes is a significant issue because such cigarettes are often sold without the required excise taxes, thereby reducing state revenue and weakening government control over tobacco products. This phenomenon has direct implications for the national economy through lost excise revenue, as well as social implications due to the widespread availability of cigarettes at lower prices, which can drive increased consumption, particularly among low-income groups. This situation creates an urgent need to systematically assess the social and economic impacts of the circulation of illegal cigarettes, including how trends in the literature and previous research describe this phenomenon through a comprehensive bibliometric approach.

2. METHODS

Bibliometric analysis is a method used to evaluate, map, and interpret the knowledge structure of a collection of interrelated publications. In this study, bibliometric analysis was used to examine how the social and economic impacts of the circulation of illegal cigarettes are represented in media coverage in the West Java region. This method was chosen because it is capable of processing large amounts of data, identifying publication patterns, tracing conceptual connections, and mapping the development of issues based on keywords, authors, or the media outlets publishing the news.

Bibliometric analysis works by organizing publications into a structured model. This model illustrates the relationships between information elements—such as keywords, themes, and news sources—allowing reporting patterns to be visualized systematically. Consequently, complex issues can be broken down into simpler elements, thereby facilitating the analysis of the social and economic impacts emerging within media discourse.

The bibliometric approach was chosen because the construction of meaning regarding illegal cigarettes is largely shaped through media coverage. Each media outlet places different emphasis on the issue of illegal cigarettes, whether from health, economic,

social, or law enforcement perspectives. Therefore, bibliometric techniques allow researchers to see how the issue is framed as a whole. Additionally, this method can handle qualitative data and news narratives that are difficult to measure directly with numbers, ensuring that the analysis results better represent the dynamic nature of news coverage.

In this study, bibliometric analysis was used to:

1. Identify the intensity of media coverage regarding illegal cigarettes.
2. Trace dominant keywords related to social and economic impacts.
3. Map relationships between keywords (co-occurrence) to identify issue clusters. Interpret how the media frames the circulation of illegal cigarettes in West Java.

This analysis method was conducted through the following stages:

1. Defining the scope and objectives of the study
The first step is to clearly define the problem: how the social and economic impacts of the circulation of illegal cigarettes are represented in media coverage in West Java. Next, the research objectives were established: to map news patterns and identify emerging issue clusters.
2. Collecting news data from online media
Data was collected from national and regional media outlets relevant to the issue of illegal cigarettes. News searches were conducted using keywords such as “illegal cigarettes West Java,” “illegal tobacco taxes,” “DJBC enforcement,” or other related terms. The collected data includes news headlines, media outlet names, publication dates, abstracts or summaries of content, and keywords. All data was then screened based on eligibility criteria, namely the relevance of the topic to the circulation of illegal cigarettes in West Java and the publication period between 2020 and 2025.
3. Data cleaning (data cleaning)
Each data point was checked to avoid duplication, categorization errors, and metadata inaccuracies. At this stage, keywords or terms with similar meanings were standardized to facilitate mapping, such as “illegal cigarettes,” “untaxed cigarettes,” or “plain cigarettes.”
4. Bibliometric Analysis
This phase consists of several processes:
 - a) Descriptive analysis of publications: calculating the number of news articles per year, media distribution, and news coverage intensity.
 - b) Keyword co-occurrence analysis: mapping relationships between keywords to identify dominant clusters related to social and economic impacts.
 - c) Information network analysis: identifying patterns of issue interconnections and how the media shapes specific narratives.
 - d) Bibliometric-based thematic analysis: grouping publications into major themes such as law enforcement, state losses, public perception, health, and black market dynamics.

Mapping results are visualized using bibliometric analysis tools such as VOSviewer or similar applications. Visualizations are used to clarify the structure of knowledge.

5. Interpretation of results and synthesis of findings

The final stage involves interpreting the patterns and relationships identified. The analysis focuses on how media coverage constructs social impacts such as public anxiety, the normalization of illegal cigarettes, and the dynamics of consumption behavior. From an economic perspective, the analysis addresses issues of state losses, black market distribution, and implications for legitimate businesses.

3. RESULT AND DISCUSSION

Analysis of data sourced from Scopus indicates that publications discussing the socioeconomic impacts of the spread of illegal cigarettes have shown a year-over-year increase up to the most recent observation period. The data search began when Scopus first published studies relevant to the topic of illegal cigarettes. However, for the purposes of analysis using VOSviewer, the research data was limited to publications from the past ten years. This restriction was implemented to ensure the recency and relevance of the studies regarding the socio-economic developments of illegal cigarettes in the scientific literature. The data search process was conducted using primary keywords related to illegal cigarettes and illicit tobacco.

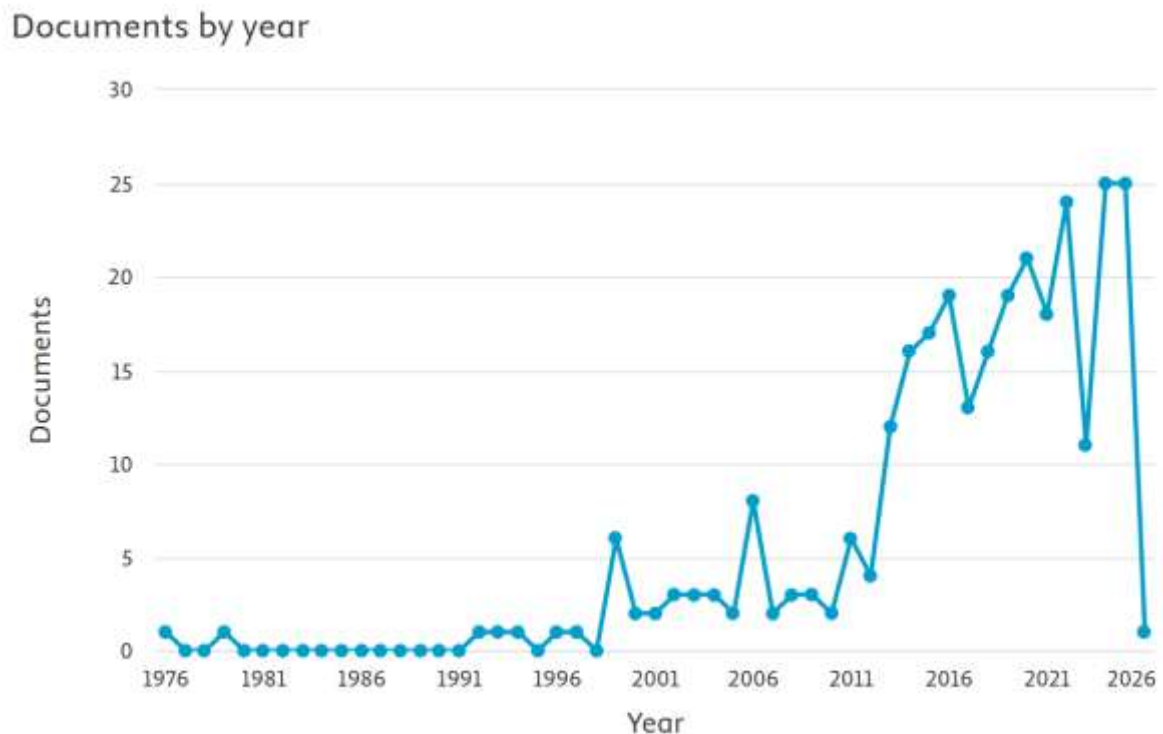


Figure 1. Results of the Scopus analysis

Figure 1 Description:

Based on the visualization of the number of documents per year, the trend in publications related to the analyzed topic shows clear variations over the period from 1976 to 2026. In the early period, specifically from the late 1970s to the late 1980s, the number of publications was very limited and tended to range from zero to one document

per year. This trend continued into the early 1990s, with increases that remained relatively low and sporadic.

By the mid-to-late 1990s, slight fluctuations began to emerge, including the appearance of several years with increases of up to about six documents, although numbers declined again in subsequent years. In the early 2000s, the number of publications showed a gradual upward trend, ranging from two to three documents per year, accompanied by several spikes, such as around eight documents in the mid-2000s.

More significant development was evident after 2012. Since this period, the number of publications has experienced a more consistent increase, reaching around 12 documents at the start of the growth phase, then rising to a range of 16–19 documents in the mid-2010s. From 2019 to 2022, the number of documents showed fluctuations at a relatively high level, ranging from 18 to 24 documents per year.

The peak in the number of publications was recorded in the early years of the 2020s, with around 25 documents per year. However, in the final year shown in the graph, a fairly sharp decline is evident, with the number of publications returning to the range of one document. Overall, this pattern illustrates the dynamics of publication numbers that were initially low, then increased gradually, and reached a higher intensity in the last decade before declining at the end of the observation period.

Documents by subject area

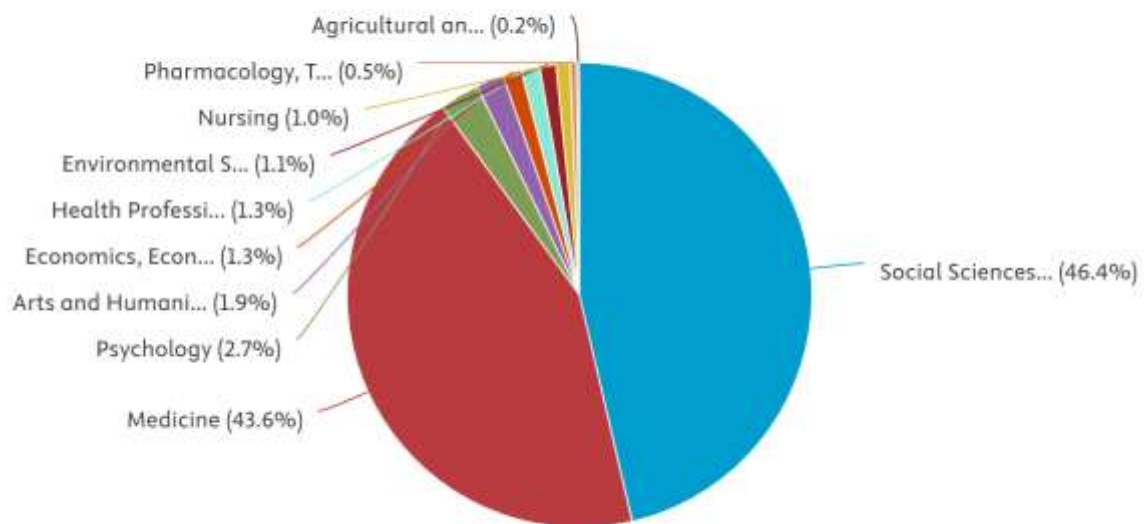


Figure 2. Results of the Scopus analysis

Figure 2 Description:

The distribution of documents by field of study in the figure reveals a very clear pattern regarding the disciplinary orientation of tobacco research. The two dominant fields are the Social Sciences **46.4%** and Medicine **43.6%**, which together account for nearly all publications in the dataset. The dominance of the social sciences underscores

perspectives. The close interconnection between the keywords “tobacco,” “cigarette smoking,” and “tobacco consumption” demonstrates that smoking behavior remains the central axis of scientific discourse. Additionally, the presence of age groups such as “adolescent,” “young adult,” “adult,” and “middle-aged” within a dense network indicates researchers’ significant attention to life-cycle dimensions, while also suggesting that smoking behavior is understood as a phenomenon that evolves and changes across different life stages. The blue cluster, which contains many terms related to risk factors, attitudes, and demographic characteristics, underscores the epidemiological and behavioral approaches as key foundations in this literature.

On the other hand, the green and yellow clusters reveal a shift in focus toward economic-political and regulatory aspects, marked by the close interconnection between tax, taxation, price, commerce, and the tobacco industry. The strong relationship among these keywords indicates that fiscal issues, pricing, and market mechanisms are positioned as strategic instruments in tobacco consumption control. The presence of terms such as illegal trade, supply and distribution, and consumer behavior suggests that research not only highlights formal policies but also their indirect consequences, including the black market and consumer responses. Meanwhile, the red cluster, which includes socioeconomic factors, poverty, and harm reduction, highlights the dimension of social inequality as a cross-cluster issue bridging public health and economic approaches. Overall, this network reflects that the tobacco literature is multidisciplinary, with close interactions between health, social, and economic perspectives. The density of relationships between clusters underscores that a robust analysis of tobacco issues demands an integrative approach, as fiscal policies, socioeconomic conditions, and individual characteristics mutually influence one another in shaping consumption patterns and control efforts.

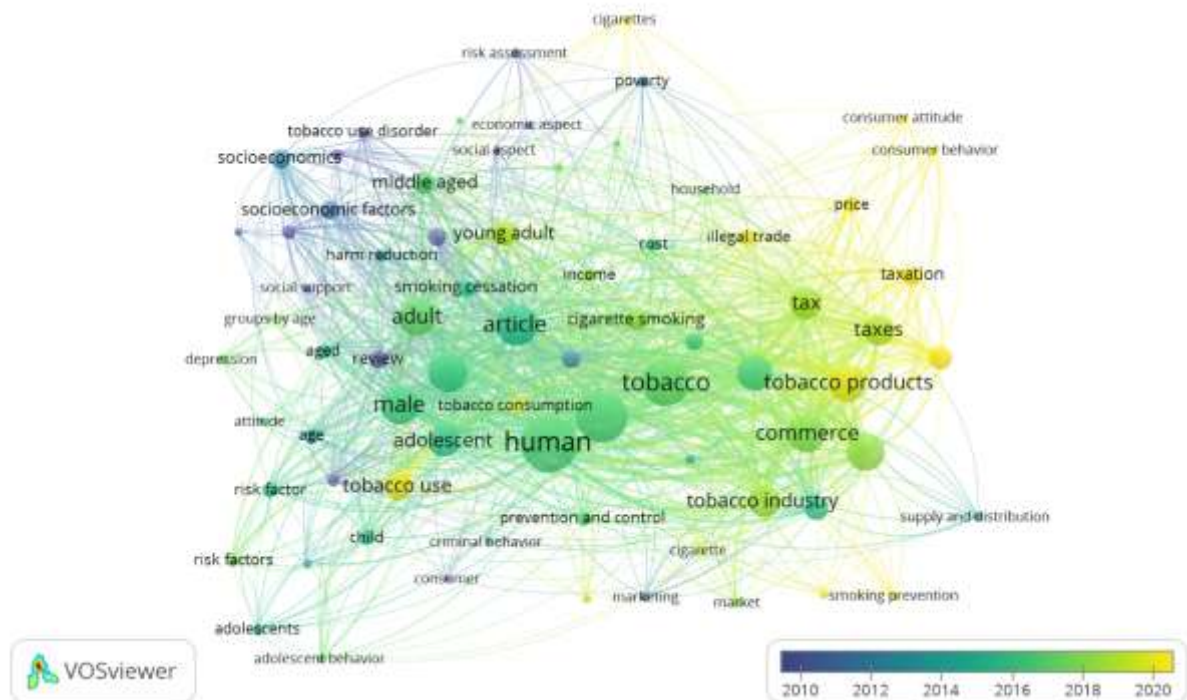


Figure 4. VOS Viewer Visualization Overlay

Figure 4 Description:

The overlay visualization covering the 2015–2025 timeframe illustrates the direction of tobacco research, which has become relatively more up-to-date and policy-oriented. The color gradient from blue to green to yellow represents the shift in research focus over the past decade. In the early phase of this period, around 2015–2017, keywords that tend to be blue—such as socioeconomic factors, socioeconomics, risk factors, depression, and terms related to individual characteristics and age groups—indicate that research still heavily relied on social and epidemiological approaches. The primary focus during this phase was understanding social determinants, household economic conditions, and the vulnerability of specific groups to smoking behavior. This indicates that problem mapping and the identification of at-risk groups remained a crucial foundation in tobacco research during the early part of this period.

Entering the middle phase, around 2018–2020, green dominated central keywords such as “human,” “tobacco,” “tobacco use,” “cigarette smoking,” and “article.” At this stage, a process of thematic deepening and integration is evident, where smoking behavior is no longer discussed in isolation but is linked to issues of smoking cessation, prevention and control, as well as dynamics across age groups such as adolescents, young adults, and adults. This pattern indicates increasing attention to the transition of smoking behavior and the continuity of tobacco consumption throughout the life cycle. The literature in this phase reflects a shift from descriptive analysis toward a more applied approach, with the aim of supporting the design of more effective interventions and control strategies.

In the final phase, around 2021–2025, yellow keywords such as tax, taxes, taxation, price, commerce, tobacco products, illegal trade, and consumer behavior become increasingly dominant. The dominance of these themes indicates that current research is increasingly focused on economic instruments and regulations as the main pillars of tobacco control. Attention to pricing and tax issues reflects the recognition that fiscal policies have strong leverage in reducing tobacco consumption, yet simultaneously raise new challenges such as illicit trade and shifts in consumption patterns. Overall, the visualization overlay for the 2015–2025 period shows the evolution of tobacco research toward a more strategic and multidisciplinary approach, with a strong emphasis on the interaction between social factors, behavior, and economic policies in efforts toward sustainable tobacco control.

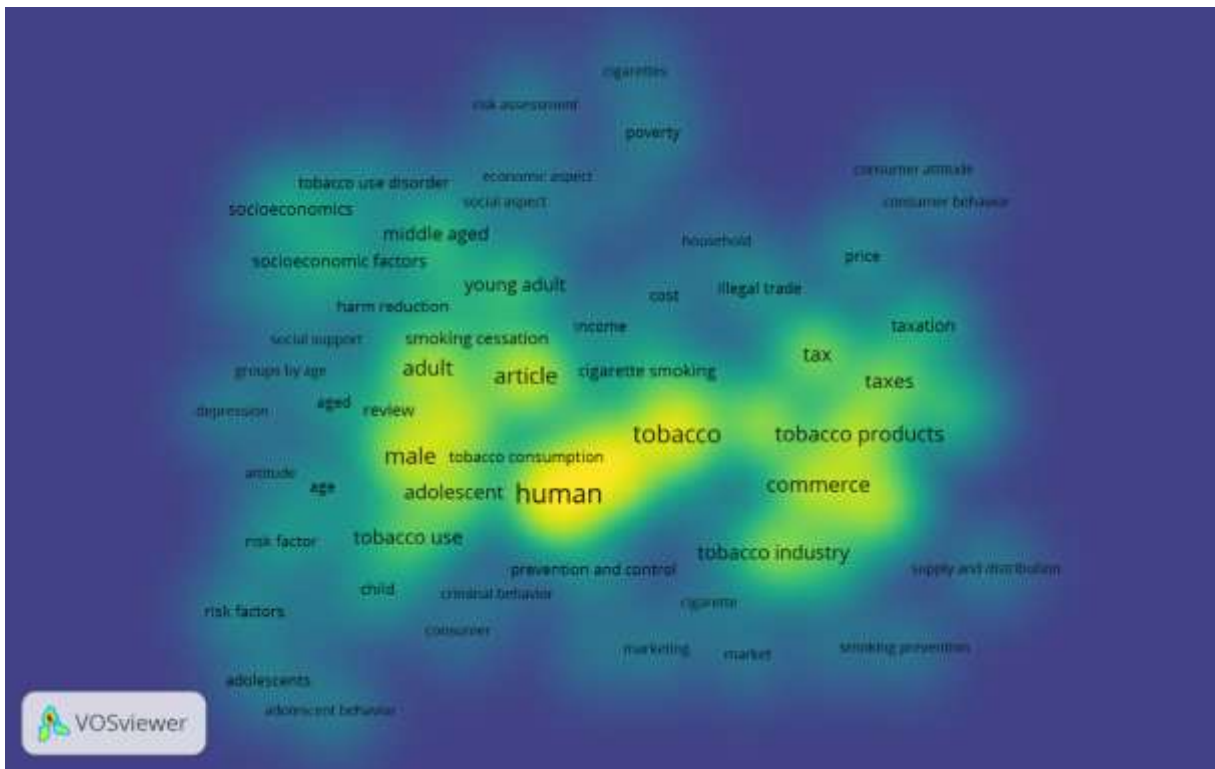


Figure 5. Density Visualization in VOS Viewer

Figure 5 Description:

This density visualization illustrates the concentration levels and frequency of keyword occurrences in the tobacco literature, represented by a color gradient ranging from blue (low density) to bright yellow (very high density). Areas with the highest intensity appear concentrated around the keywords human, tobacco, article, male, and adolescent. This pattern confirms that tobacco research predominantly focuses on humans as the primary subjects, with particular attention to tobacco consumption behavior among males and adolescents. This high density of these keywords reflects that issues regarding smoking behavior and tobacco consumption among the productive-age group and adolescents are the most frequently studied themes and form the mainstream of the literature’s development. This simultaneously indicates global concerns regarding the persistence of smoking habits starting at a young age and their implications for future population health.

In addition to behavioral and demographic clusters, high-density areas are also evident for the keywords “tobacco products,” “commerce,” “tobacco industry,” as well as “tax,” “taxes,” and “taxation.” This concentration indicates that economic, industrial, and fiscal policy aspects have become a significant and relatively established focus in tobacco research. The spatial proximity between the industry theme and tax instruments indicates that the literature not only addresses health impacts but also intensively examines the role of economic regulation in controlling tobacco consumption. Meanwhile, keywords with medium density—such as “smoking cessation,” “harm reduction,” “prevention and control,” and “socioeconomic factors”—serve as connectors between the public health cluster and the economic-political cluster. As for themes with low density—such as illegal trade, supply and distribution, or consumer attitude—they indicate relatively more specific research areas with potential for further development. Overall, this density visualization confirms that the tobacco literature is dominated by well-established core

themes, while simultaneously opening space for the exploration of peripheral topics that still hold significant potential for scientific contribution.

DISCUSSION

1. Cluster 1

Cluster 1 represents the core of tobacco research focused on public health, social, and control policy aspects. Keywords such as addiction, tobacco dependence, and tobacco use disorder indicate a strong focus on dependence as the primary issue, which is then addressed through smoking cessation, harm reduction, and prevention approaches. The presence of terms like “human,” “article,” and “review” confirms that this cluster is dominated by empirical studies and literature reviews that place humans as the primary subjects. Additionally, social and structural dimensions are evident through terms such as “social aspect,” “social support,” “socioeconomic factors,” and “socioeconomics,” indicating that smoking behavior is understood within the context of social environments and economic conditions. Keywords such as “policy,” “law enforcement,” “tobacco control,” and “risk assessment” demonstrate the connection between prevention efforts and regulatory and law enforcement frameworks. Meanwhile, the presence of “high-risk behavior,” “criminal behavior,” “groups by age,” and “attitude” indicates that this cluster also encompasses the analysis of risky behaviors and their variations across age groups within the framework of comprehensive tobacco control policies.

2. Cluster 2

Cluster 2 highlights the economic, industrial, and regulatory dimensions of tobacco research. Core keywords such as tobacco, cigarette, tobacco products, and tobacco industry indicate a focus on the commodity and industry actors as part of the market system. Economic and commercial aspects are reflected through terms like commerce, commercial phenomena, economics, market, and marketing, which describe how tobacco is produced, marketed, and consumed. The role of the state and regulation is evident through terms like government, government regulation, tax, taxes, and smoking ban, signaling the importance of policy interventions in controlling tobacco consumption. Additionally, the terms prevention and control and smoking prevention indicate that economic and regulatory policies are not standalone but are directed toward public health objectives. The presence of “supply and distribution,” “crime,” and “tobacco industry documents” indicates a focus on the supply chain, industry practices, and potential legal violations. The keyword “humans” in this cluster underscores that economic and regulatory analysis remains oriented toward its impact on society.

3. Cluster 3

Cluster 3 focuses on demographic and psychological characteristics, as well as individual risk factors related to tobacco use. Keywords such as adolescence, adolescent, adolescent behavior, and adolescents indicate a strong focus on adolescence as a key group in studies of smoking behavior. This cluster also encompasses a broader age spectrum through terms like child, young adult, adult, middle-aged, and elderly, signaling a cross-life-cycle analysis. Biological and social dimensions are evident through “male,” “female,” “age,” and “age factors,” while mental health and vulnerability aspects are indicated by “depression,” “risk factor,” and “risk factors.” The keywords “tobacco use” and “tobacco consumption” serve as the primary connectors uniting these various demographic groups. The presence of “consumer” underscores that individuals are not merely viewed as subjects of health but also as actors within the tobacco consumption system.

4. Cluster 4

Cluster 4 represents the interrelationship between consumer behavior, economic conditions, and pricing policies in the context of tobacco. The keywords “consumer attitude” and “consumer behavior” indicate a focus on how consumers’ attitudes and responses toward tobacco products are formed. Microeconomic and macroeconomic factors are reflected through income, poverty, and cost, underscoring that household economic capacity plays a crucial role in consumption patterns. Fiscal policy instruments are evident through price and taxation, which are often positioned as the primary tools for suppressing demand. Additionally, the presence of illegal tobacco products indicates that price and tax pressures can lead to indirect consequences such as the circulation of illegal products. Overall, this cluster positions consumers as the intersection between economic policy and social reality.

5. Cluster 5

Cluster 5 covers specific themes related to smoking practices, household dynamics, and the illegal trade. The keywords “cigarette smoking” and “cigarettes” indicate a direct focus on smoking as the primary behavior under analysis. Temporal and evaluative aspects are reflected through “follow-up,” suggesting the presence of longitudinal studies or ongoing monitoring of the effects of smoking. The presence of “household” signifies attention to the household context as a crucial space in the formation and persistence of smoking behavior. Meanwhile, the term “illegal trade” indicates that this cluster also intersects with issues of illegal trade, which are often linked to cigarette distribution and control efforts through policy. This cluster, though relatively small, enriches the literature with a more focused micro-level and thematic perspective.

4. CONCLUSION

Based on the results of the bibliometric analysis conducted, it can be concluded that the circulation of illegal cigarettes is a complex issue with far-reaching impacts, not only on the country’s economy but also on social and public health dimensions. Scientific literature indicates that illegal cigarettes contribute to lost excise revenue, undermine the effectiveness of tobacco control policies, and increase public access—particularly among vulnerable groups—to low-cost tobacco products. Research cluster mapping and trends also reveal that the issue of illegal cigarettes lies at the intersection of public health, fiscal policy, consumer behavior, and law enforcement. Therefore, efforts to combat illegal cigarettes cannot be carried out in isolation but require an integrated approach that combines legal oversight, adaptive economic policies, and sustainable social strategies to more effectively mitigate their negative impacts.

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6. AUTHORS' NOTE

The author declares that there are no conflicts of interest in the writing and publication of this article. The entire content of the article is the result of the author's own thoughts and analysis and has been prepared in accordance with academic standards. The author also affirms that this article is free from plagiarism.

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