Tonry-Farrington Typological Approach to Preventing the Circulation of Illegal Processed Food in Indonesia's Border Areas

Yovia Rizki Arrahman [a,1,*], Andi Wibowo [a,2]

[a] The Indonesian Food and Drug Authority, Jl. Percetakan Negara No. 23, Central Jakarta 10560, Indonesia
[1] yovia.rizki@pom.go.id*; [2] andi.wibowo@pom.go.id
* corresponding author

ARTICLE INFO	ABSTRACT / ABSTRAK

The circulation of processed food, particularly imported unregistered products (TIE), is a significant contributor to crime vulnerability in border areas, accounting for 71% of total findings. This has become a complex issue due to its close links with the socio-economic conditions of local communities. A purely repressive approach has proven insufficient for comprehensive mitigation of this phenomenon. This study employed a mixed-methods approach, combining quantitative and qualitative methods, to examine and explain community and institutional participation, including law enforcement agencies, in addressing crime vulnerability related to processed food commodities in Indonesia's border regions, based on the Tonry-Farrington typology. The study area covers North Kalimantan, West Kalimantan, Riau, Riau Islands, and East Nusa Tenggara provinces. The findings indicate that crime prevention using the Tonry-Farrington typology can be implemented through: (1) Developmental and Social Prevention, emphasizing crime prevention functions by engaging local key opinion leaders and traditional authorities with reputable standing to support BPOM's efforts; (2) Community-Based Prevention, promoting collaborative approaches and resource-sharing to enhance value creation; (3) Situational Prevention, involving joint supervision and collaboration with well-informed stakeholders; and (4) Law Enforcement, advocating collaborative measures with the criminal justice system to establish strong legitimacy and a deterrent effect on offenders. The Tonry-Farrington typology can be adapted by BPOM as a novel approach to address the circulation of TIE food products in Indonesia's border regions, enabling holistic and integrated management of crime vulnerability in these areas.

Peredaran pangan olahan khususnya asal impor Tanpa Izin Edar (TIE) mendominasi kerawanan kejahatan di wilayah perbatasan dengan persentase sebesar 71% dari total temuan. Hal tersebut telah menjadi permasalahan kompleks karena kaitan yang erat dengan sosial ekonomi masyarakat setempat. Pendekatan represif saja terbukti tidak cukup dalam upaya komprehensif penanggulangan fenomena tersebut. Penelitian disusun dengan menggunakan metode mix method yakni kuantitatif dan kualitatif dengan tujuan untuk mengetahui dan menjelaskan bagaimana partisipasi masyarakat dan instansi terkait termasuk aparat penegak hukum dalam upaya penanggulangan kerawanan kejahatan khususnya untuk komoditi Pangan Olahan di wilayah perbatasan Negara Indonesia berdasarkan pendekatan tipologi Tonry-Farrington. Cakupan wilayah perbatasan yang dibahas adalah Provinsi Kalimantan Utara, Kalimantan Barat, Riau, Kepulauan Riau, dan Nusa Tenggara Timur. Hasil penelitian menunjukkan bahwa pendekatan pencegahan kejahatan dengan tipologi Tonry-Farrington, dapat diperoleh melalui konsep: (1) Developmental and Social Prevention terkait fungsi pencegahan kejahatan, perlu dilakukan penggalangan kepada key-opinion leader setempat termasuk tokoh masyarakat dan adat setempat yang memiliki reputasi baik serta mendukung upaya Badan POM; (2) Community Based terkait pendekatan kolaborasi dan berbagi sumber daya diperlukan dalam rangka meningkatkan nilai tambah; (3) Situational Prevention terkait kolaborasi yang dapat dilakukan dengan melakukan pengawasan bersama dan menggandeng pemangku kepentingan yang sudah teredukasi dengan baik; dan sebagai upaya terakhir (4) Law Enforcement yaitu upaya kolaboratif dengan Criminal Justice System sebagai upaya untuk memberikan legitimasi yang kuat untuk mewujudkan efek gentar kepada pelaku kejahatan. Teori tipologi Tonry-Farrington dapat diadaptasi oleh BPOM sebagai pendekatan baru dalam

penanggulangan permasalahan peredaran produk pangan TIE di wilayah Perbatasan Indonesia sehingga mampu ditangani secara holistik.

1. Introduction

The development and advancement of Indonesia's border regions have consistently been the subject of scholarly discussion, particularly among those advocating for substantial transformation to improve the welfare of border communities. The continuity of national development priorities is evident in the transition from President Joko Widodo's *Nawacita* program to President Prabowo Subianto's *Asta Cita*. While *Nawacita* emphasized "building Indonesia from the periphery and strengthening regions and villages within the framework of the unitary state," *Asta Cita* continues this spirit by focusing on "building from villages and the grassroots to achieve equitable economic distribution and poverty eradication." This underscores the government's strong commitment to supporting underdeveloped regions, especially border areas and outer islands, with particular attention to revitalizing socio-economic policies in these regions (Badan Pusat Statistik, 2017). The strategic position of border regions, coupled with their dynamic complexities, often exposes them to various criminal activities. Yunardhani (2012) noted that border vulnerabilities are closely linked to transnational crimes, including illegal fishing, illegal logging, human trafficking, narcotics distribution, terrorism entry points, illegal migrant labor, and diverse socio-economic and cultural challenges—among which food-related crimes are also included.

Border regions could potentially serve as competitive advantages if the goods and services consumed therein were sourced domestically. However, population growth and the lack of adequate transport infrastructure for supply chains have increased demand for food and beverages, which are often fulfilled through cross-border trade. The growing spatial inequality across districts and municipalities, as identified by Akita & Miyata (2017), reflects the limited effectiveness of decentralization in addressing logistics and economic needs in peripheral regions. Deficiencies in infrastructure and household expenditures in rural areas, including border zones, have weakened domestic supply chains and fostered reliance on imports. Such dependence on neighboring countries, particularly Malaysia, poses an anomaly to state sovereignty, as local communities increasingly prefer imported products due to inadequate local economic and logistical infrastructure (Nugroho et al., 2023). The resulting domino effect is the illegal circulation of processed food products from abroad within Indonesia's frontlines. Thus, the inability of domestic supply chains in border regions to achieve economies of scale across the food and drug sectors has become a significant impediment to socio-economic development in these communities.

These challenges inevitably contribute to heightened risks of crime. Cross-ministerial and inter-agency efforts have been undertaken to reduce such risks, including initiatives led by the Ministry of Agriculture (Sulaiman et al., 2017), which envision food security management in border regions through three simultaneous approaches: security, prosperity, and environment. This vision is operationalized via the concept of *Lumbung Pangan Berbasis Ekspor di Wilayah Perbatasan* (LPBE-WP, Export-Oriented Food Barns in Border Regions). The program aims to promote self-sufficiency in basic food supplies, reducing dependency on foreign countries and thereby mitigating associated criminal activities (Marwasta, 2016). However, food-related issues in border regions are not limited to staple commodities; derivative products such as processed foods exhibit similar vulnerabilities (Angriawan & Mutiarin, 2019). To implement the LPBE-WP plan, Sulaiman et al. (2017) identified several policy supports: (1) designation of special investment zones for food in border areas, (2)

accelerated infrastructure development, (3) assurance of business sustainability, including investment guarantees, and (4) the availability of technological and institutional innovations. Importantly, such efforts require not only government initiatives but also reciprocal policies aligned with community empowerment.

Moreover, shifts in food and drug supervision have been accelerated by the COVID-19 pandemic, which reshaped consumer behavior toward greater reliance on digital platforms (Barr & Ozturk, 2021), although physical transactions remain prevalent. This transformation compels regulatory authorities to revitalize law enforcement strategies, transitioning from reactive to preventive approaches. In this regard, the Indonesian FDA regularly analyzes crime vulnerability data, particularly for processed food commodities, using inputs collected by its technical units (*Unit Pelaksana Teknis/UPT*) in border regions. The 2022 vulnerability analysis covered North Kalimantan, West Kalimantan, Riau, the Riau Islands, and East Nusa Tenggara. Findings indicated that processed food vulnerabilities predominantly involve unregistered products (TIE), accounting for 71% of cases, followed by expired food products (27%) and food contaminated with hazardous substances (2%).

The issue of illegal imports, such as unregistered processed foods, is highly complex and cannot be effectively addressed through repressive measures alone (Angriawan & Mutiarin, 2019; Meutia, 2016). By adapting the Tonry-Farrington typology, organizations can adopt a more holistic approach to combating the circulation of unregistered processed foods in border regions. Achieving this requires synergizing law enforcement with community empowerment, communication, information, and education for vulnerable groups, as well as robust inspection and monitoring to support situational prevention strategies (Tonry et al., 2012).

In light of these challenges, this study seeks to examine crime vulnerabilities in the processed food sector, formulate recommendations for community participation in monitoring and enforcement, and strengthen local empowerment as part of crime prevention strategies in Indonesia's border regions. It is expected that this research will provide relevant recommendations to ensure that community-based prevention efforts targeting processed food commodities can be implemented effectively.

2. Methodology

The analysis of the Tonry-Farrington typology approach in preventing the circulation of illegal processed food in Indonesia's border regions was conducted using a mixed-methods design, combining both quantitative and qualitative approaches. As the initial stage, the researchers carried out quantitative data processing and analysis based on primary data collected by Indonesian FDA technical units (*Unit Pelaksana Teknis/UPT*) through the Enforcement Dashboard Application (*Aplikasi Dashboard Penindakan/ADP*)—specifically the *Modul Rawan Kasus* (Crime Vulnerability Module), accessible at https://penindakan.pom.go.id/. The dataset employed covered vulnerabilities in food and drug crimes during 2022. Quantitative analysis was conducted using Microsoft Excel's PivotTable function, enabling the researchers to calculate, summarize, and analyze the data, thereby illustrating comparisons, patterns, and trends. The processed data were further visualized in the form of charts and tables.

Subsequently, a qualitative descriptive analysis was undertaken to interpret the phenomena emerging from the quantitative findings, providing a basis for recommending solutions to the circulation of unregistered processed food products in Indonesia's border regions, in alignment with the Tonry-Farrington typology of crime prevention.

With regard to violations identified as crime vulnerabilities in the processed food sector, three main parameters were highlighted: (1) circulation of unregistered products (*Tanpa Izin Edar/TIE*), (2) distribution of expired food products, and (3) distribution of food products contaminated with hazardous substances (e.g., formalin, borax, and prohibited coloring agents). While expired and contaminated products are considered high-risk violations that are typically subject to strict

administrative and criminal sanctions, this study primarily focuses on addressing the circulation of unregistered processed food products (TIE) in Indonesia's border areas. The geographical scope of this study encompasses the provinces of North Kalimantan, West Kalimantan, Riau, the Riau Islands, and East Nusa Tenggara. Among these, North Kalimantan serves as the focal point, given its status as the youngest Indonesian province and the region with the lowest population density compared to other provinces.

3. Results and Discussion

3.1. Processed Food Crime Vulnerabilities in Indonesia, 2022

The proportion of processed food-related crimes in 2022 was recorded at 11% of the total food and drug commodity violations. Observing the trend from 2018 to 2022, processed food crimes have shown an increase both in terms of quantity and the diversity of information sources. Figure 1 illustrates the number of processed food crime cases reported on the *Dashboard Peta Rawan Kasus* (Crime Vulnerability Map Dashboard) from 2018 to 2022.
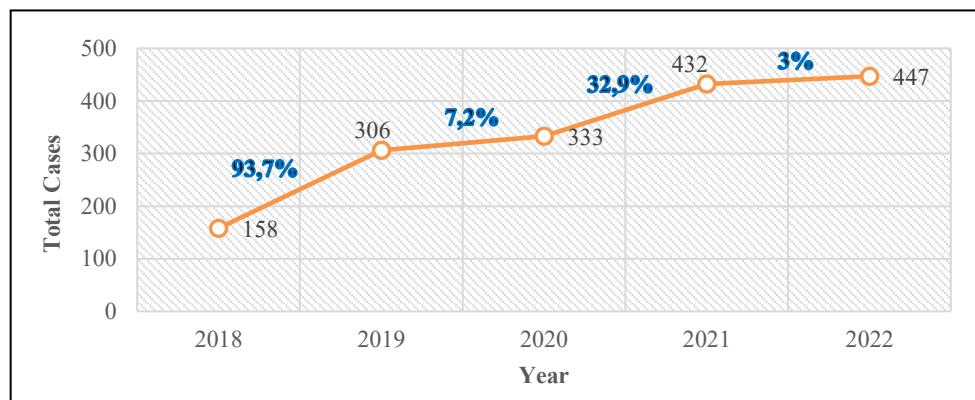

Figure 1. Trend of Processed Food Crime Cases in Indonesia, 2018–2022
(Source: Analysis of Processed Food Crime Vulnerabilities, 2022)

Analysis of the data indicates that there was a 93.7% increase in processed food crime cases in 2019, followed by 7.2% in 2020, 32.9% in 2021, and 3% in 2022, compared to the previous years. Further, based on the types of violations recorded in 2022, the majority of cases involved unregistered processed food products (*Tanpa Izin Edar/TIE*), with 294 cases (66%). This was followed by expired processed food products (*Expired Date/ED*), with 91 cases (20%), and processed foods containing hazardous substances (*Bahan Berbahaya/BB*), with 62 cases (14%) (Directorate of Prevention and Protection, 2022).

According to the 2022 Vulnerability Analysis of Processed Food Crimes, the main categories most frequently associated with violations under Indonesian FDA Regulation No. 34 of 2019 on Food Categories were:
a. 14.1.5 Coffee, coffee substitutes, tea, herbal infusions, and hot cereal- or grain-based beverages (excluding chocolate).
b. 07.2.1 Cakes, cookies, and pies (fruit-filled or custard/cream-based).
c. 05.1.1 Cocoa powder, cocoa cakes, and cocoa mass.
d. 15.1 Snack foods made from potatoes, tubers, cereals, flour, or starch (including legumes).
e. 14.2.6 Spirit-based beverages with more than 15% ethanol content.

3.2. Processed Food Crime Vulnerabilities in Border Areas, 2022

Based on the distribution data of processed food crime vulnerabilities in border regions in 2022, socio-cultural factors were identified as the most critical drivers of crime vulnerability (see Figure 2). The amplification of information technology use and the rise of the sharing economy, which simplifies business and promotional activities (Baur, 2017), suggest that uncovering future crimes will become increasingly challenging, requiring the adoption of advanced investigative techniques supported by sophisticated technologies.

Socio-cultural dynamics must therefore be closely monitored, as they intersect with technological advancements and demographic shifts—factors that have been recognized as key drivers in reshaping law enforcement strategies (Gelles et al., 2019). Nevertheless, the circulation of illegal products, particularly unregistered food, must be addressed with careful consideration. Persistent disparities in economic growth, where financial inclusion remains concentrated in major urban centers, combined with distribution challenges that increase consumer prices in underdeveloped regions (*daerah 3T*), further exacerbate vulnerabilities. While acknowledging the criminal potential of cross-border trade in unregistered products, enforcement measures should be implemented prudently to avoid counterproductive impacts on food and drug regulatory policies.
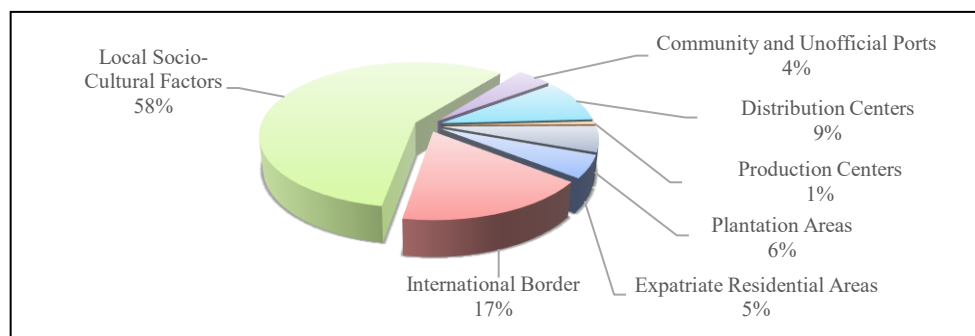

Figure 2. Distribution of Criteria for Determining Processed Food Crime Vulnerabilities in Border Regions, 2022
(Source: Enforcement Dashboard Application, 2022)

Reports from regional FDA offices (*Balai Besar/Balai/Loka POM*) that share direct borders with neighboring countries, as compiled in the 2022 Vulnerability Analysis of Processed Food Crimes—including BBPOM Pontianak, BBPOM Riau, BPOM Batam, BPOM Tarakan, BPOM Kupang, and Loka POM in various border areas—reveal that category 14.0 beverages (both ready-to-drink and powdered forms) dominated reported findings in the *Crime Vulnerability Map Dashboard*. Within this category, 14.1.5 Coffee, coffee substitutes, tea, herbal infusions, and hot cereal- or grain-based beverages (excluding chocolate) was the most frequent subcategory. This was followed by bakery products under 07.2.1 Cakes, cookies, and pies (fruit-filled or custard/cream-based), and confectionery products under 05.0 candies and chocolate, specifically 05.1.1 Cocoa powder, cocoa cakes, and cocoa mass. These findings indicate that the illegal circulation of unregistered food products in border areas typically targets consumers purchasing for personal consumption or as souvenirs, as the categories involved are generally not staple food items.

In the beverage category (14.0), alcoholic beverages without distribution permits present a particularly high criminal risk, whether promoted online or sold directly in retail outlets. According to Presidential Regulation No. 74 of 2013 on the control and supervision of alcoholic beverages, such products are prohibited from being advertised in any mass media. Furthermore, the regulation stipulates strict conditions for alcohol sales—limited to hotels, restaurants, and cafés with the proper licenses, or in duty-free shops for outbound travelers. As such, risk-based enforcement should be prioritized to ensure positive economic impacts while mitigating vulnerabilities.

Currently, the determination of crime vulnerability levels in border regions relies heavily on inputs provided by technical units, particularly BBPOM and Loka POM. Increasing the diversity of information sources would be valuable for mapping connections across datasets and is expected to enhance predictive enforcement measures, ensuring that risk-based interventions in the future become more targeted and effective.
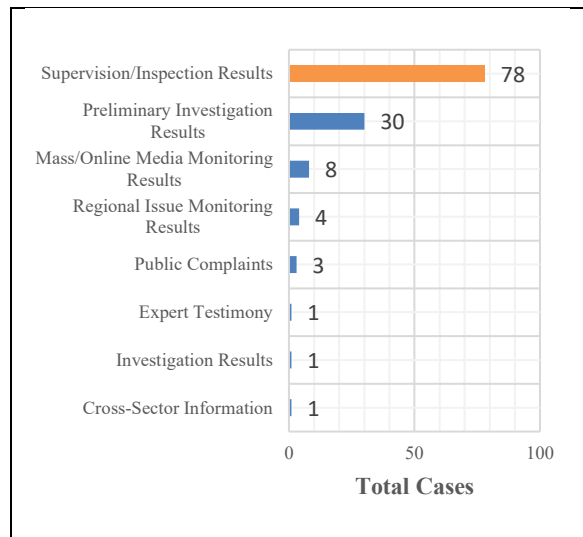

Figure 3. Distribution of Information Sources on Processed Food Crime Vulnerabilities in Border Regions, 2022
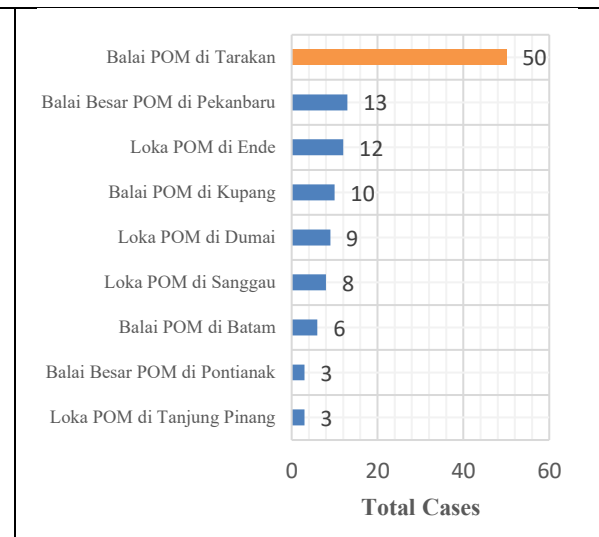(Source: Enforcement Dashboard Application, 2022)

Figure 4. Distribution of Processed Food Crime Vulnerabilities by Technical Units in Border Regions, 2022
(Source: Enforcement Dashboard Application, 2022)

Evaluation of 2022 input data on processed food crime vulnerabilities (see Figure 3) shows that case reporting remains dominated by primary business processes such as supervision/inspections and preliminary investigations. Given the socio-cultural shifts in society—particularly in relation to digital literacy—greater intensification of cyber monitoring is required. Meanwhile, Figure 4 illustrates that BPOM Tarakan reported the highest level of vulnerabilities, likely due to North Kalimantan's extensive borders with neighboring countries, followed by BBPOM Pekanbaru and Loka POM Ende. Risk-based analysis and diversification of information sources are essential to obtaining comprehensive data on crime vulnerabilities. Proactive engagement with emerging data sources is expected to strengthen crime prevention in the food and drug sector through accurate, evidence-based decision-making.

Further analysis of food crime vulnerabilities in border regions revealed that unregistered food products (TIE) dominate at 71%, followed by expired products - ED (27%) and those contaminated with hazardous substances - BB (2%), such as formalin, borax, and banned colorants (Directorate of Prevention and Protection, 2022)

In addition to licensing violations, another noteworthy trend is the promotion and sale of non-compliant food products via social media (6%), although direct sales in physical retail outlets in border regions remain dominant (82%) (see Figure 6). This phenomenon demands greater vigilance in food and drug crime prevention. Information technology has proven capable of transcending national borders, decentralizing food and drug crimes into smaller units driven by the sharing economy (Dharma Negara & Sri Soesilowati, 2021). Under this system, enterprises need not control complete supply chains before starting operations; rather, they can share economic value by leveraging the competitive advantages of other entities in production, transport, storage, logistics, or digital marketing. Consequently, products can be produced and distributed on a *just-in-time* basis, in stark contrast to the traditional supply chain model that is capital-intensive and lengthy.
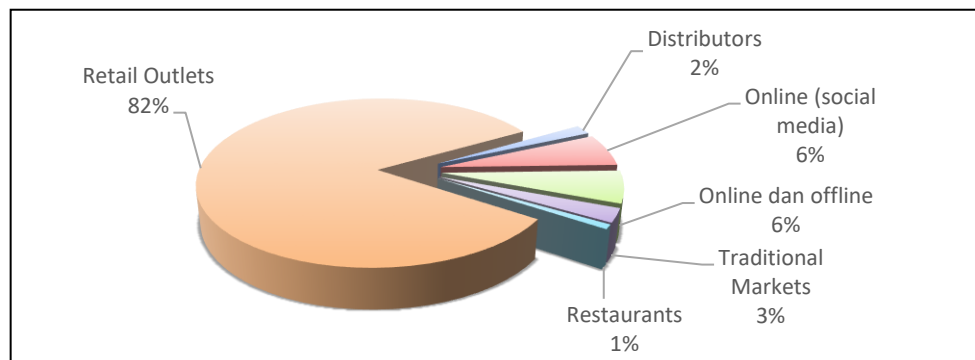
Figure 5.   Modes of Illegal Processed Food Circulation, 2022
(Source: Enforcement Dashboard Application, 2022)

3.3. Crime Prevention Approach Using the Tonry-Farrington Typology

Various typologies have been proposed to distinguish crime prevention strategies, particularly between situational and social contexts. Situational prevention focuses on "reducing opportunities" for crime (such as through surveillance technologies in public spaces), whereas social prevention emphasizes transforming social environments and individual motivations (Hughes et al., 2002). The term *social crime* is associated with economic, social, and cultural conditions that discourage potential offenders from engaging in future violations. Situational prevention, including crime prevention through environmental design, seeks to minimize opportunities for crimes to occur.

Another way to classify prevention strategies is by levels of intervention: primary, which reduces opportunities for crime by deterring potential offenders; secondary, which targets individuals before they engage in criminal behavior; and tertiary, which seeks to prevent recidivism among known offenders (Brisman & South, 2015; Weber et al., 2014). In this framework, primary prevention is linked to criminal law enforcement (rather than offender motivation), secondary prevention addresses pre-criminal interventions, and tertiary prevention focuses on deterring repeat offenses.

Tonry and Farrington (1995), however, rejected this secondary/tertiary classification and instead proposed four principal strategies of crime prevention, now known as the Tonry-Farrington Typology: 1) Law Enforcement – strategies involving the enforcement of criminal law aimed at prevention, incapacitation, and rehabilitation; 2) Developmental Preventive Interventions – interventions intended to disrupt the development of criminal potential in at-risk individuals; 3) Community Prevention – strategies designed to alter community conditions that influence the likelihood of crime; 4) Situational Prevention Interventions – strategies aimed at reducing crime by minimizing opportunities and increasing risks for offenders.

Socio-cultural challenges in Indonesia's border regions, as highlighted by Bakce et al. (2019), center on two key issues: inadequate population registration due to cross-border kinship ties, and the strong social bonds among border communities. These socio-cultural factors exacerbate economic challenges, including the ineffectiveness of cross-border trade cooperation and the dependence of border residents on neighboring countries. One of the most prominent examples of cross-border trade is the circulation of processed food products between Malaysia and Indonesia (Angriawan & Mutiarin, 2019). Illegal circulation of unregistered imported processed food products (TIE) remains a persistent issue, hindered by limited human resources and inadequate infrastructure for supervision (Angriawan & Mutiarin, 2019). In this context, food distribution licensing requirements are anchored in Law No. 18 of 2012 on Food, which, under Article 91(1), stipulates that for the purpose of ensuring food safety, quality, and nutrition, all processed food products produced domestically or imported for retail sale must have a distribution permit.

Supported by national policies promoting border region development, new economic hubs have begun to emerge, enhancing the competitiveness of local products (Marwasta, 2016). To address TIE

issues, the Indonesian FDA (Badan POM) has established exemptions for certain categories of processed foods from licensing requirements through Badan POM Regulation No. 27 of 2017 on Processed Food Registration. Exemptions apply to products used exclusively as raw materials (not sold directly to end consumers), foods sold and packaged in small quantities directly in front of consumers, and ready-to-eat foods. These exemptions were further clarified in Badan POM Regulation No. 7 of 2021, which refined technical and procedural provisions without altering the core exemption categories. Additionally, the enactment of Law No. 6 of 2023, which ratified the Government Regulation in Lieu of Law No. 2 of 2022 on Job Creation, introduced risk-based supervision principles. This allows low- and medium-risk food businesses to be exempt from criminal sanctions, shifting oversight toward administrative and supervisory measures.

From the perspective of enhancing competitiveness and creating added value for local products—while also preventing counterproductive conflicts with border communities—these exemptions offer opportunities to channel imported processed foods into legitimate uses rather than direct consumer sales. For instance, imported products could be processed within local culinary industries, thereby creating new economic opportunities (Siregar et al., 2020).

Given the high complexity of unregistered processed food circulation in border regions, addressing this issue requires a multiperspective strategy that reduces reliance on repressive enforcement (Angriawan & Mutiarin, 2019; Meutia, 2016). Adopting the Tonry-Farrington typology provides a holistic framework: integrating law enforcement, community empowerment, communication and education for vulnerable groups (developmental interventions), and robust inspection and monitoring (situational prevention) (Tonry et al., 2012).

Based on the background description of the problems raised in this paper, the following discussion will focus on processed food products without distribution permits (TIE) circulating in the Indonesian border areas with Malaysia, Singapore, and Timor Leste. This is evident from the recapitulation of the 2021 data input results conducted by the Enforcement Dashboard (ADP) officers in the case-prone module, which found that 71% of processed food crime problems in the border area were related to the circulation of imported food without distribution permits. In general, efforts to address the problem of TIE imported food by the Food and Drug Monitoring Agency (BPOM)'s UPT, which covers the country's borders, are still being implemented partially between functions, in addition to the constraints of limited human resources and infrastructure (Angriawan & Mutiarin, 2019).

As the youngest province in Indonesia, North Kalimantan has interesting socio-cultural dynamics for further discussion, particularly in the context of the distribution of food without a distribution permit (TIE). Referring to the study conducted (Marwasta, 2016), in the context of crime prevention, it is certainly necessary to involve cross-functional and focus on the context of collaboration in striving for added value for parties involved in the process. By adapting the Tonry-Farrington typology in the concept of crime prevention (Tonry & Farrington, 1995), which focuses on the synergy of law enforcement functions, strengthening social norms (Developmental), Community Empowerment (Community-Based), and a situational approach through surveillance efforts (Situational Prevention), the approach to preventing the crime of the distribution of processed food without a distribution permit (TIE), especially in the North Kalimantan region, can be elaborated as follows:

3.3.1 Law Enforcement Dimension

Based on a compilation of court rulings published on the Supreme Court (Mahkamah Agung/MA) website under the food category (last accessed June 12, 2022), it was recorded that between 2012 and 2022 there were 120 rulings related to violations of Law No. 18 of 2012 on Food. Of these, 37.5% (45 rulings) were associated with violations involving unregistered processed food products (*Tanpa Izin Edar/TIE*). The heaviest sentence handed down was 1 year and 6 months of imprisonment in cases concerning the circulation of alcoholic beverages in Papua (2020) and West Kalimantan (2018), which were investigated by the Indonesian National Police. Another case

involved bottled drinking water (AMDK) investigated by BPOM in Kendari in 2016 (Supreme Court Ruling No. 1741 K/PID.SUS/2016).

Cases in border regions can also be reflected in rulings investigated by BPOM investigators (PPNS Badan POM), including BBPOM Pontianak (Supreme Court Ruling No. 2048 K/PID.SUS/2014) – imprisonment of 3 months and a fine of IDR 25 million. BBPOM Samarinda (District Court Ruling No. 258/Pid.B/2016/PN.Tnr) – imprisonment of 10 months and a fine of IDR 15 million (or 5 months in lieu of payment). Loka POM Dumai (District Court Ruling No. 253/Pid.Sus/2019/PNDum) – a fine of IDR 5 million (or 2 months imprisonment in lieu of payment).

The evidence seized in these border-related cases consisted largely of imported food products from Malaysia. For example, in Samarinda (North Kalimantan), the evidence comprised 150 cartons (2,484 packs) of Milo chocolate powder. Under Article 91(1) of Law No. 18 of 2012 on Food, violations of TIE provisions are punishable under Article 142, with a maximum sentence of 2 years imprisonment or a fine of up to IDR 4 billion. Yet, rulings on TIE cases in border regions were generally lighter, with the heaviest sentence being 10 months imprisonment (41.67% of the statutory maximum). This is considerably lower than similar cases outside border regions, such as the bottled water case in Kendari, where the court imposed 18 months imprisonment (75% of the statutory maximum).

The variability in sentencing outcomes may be influenced by differences in judicial panels. In Indonesia, cases are typically adjudicated by at least three judges—one presiding judge and two members—allowing for the possibility of dissenting opinions (Firmansyah, 2018). Consequently, a more structured approach is needed to strengthen the role of judges in adjudicating TIE cases. This requires improving the quality of case dossiers, expert testimonies, and arguments supported by factual data to ensure that rulings create both deterrent and preventive effects.

3.3.2 Developmental and Social Prevention

At this stage, crime prevention interventions are focused on addressing the formation of individual character and criminal potential at an early stage. Tonry et al. (2012) illustrate that social crime prevention may begin as early as childhood. For example, introducing schoolchildren to programs that reshape their understanding of "environment," "fish," and "fishing." Such initiatives could involve strategies such as "catch and release" practices in recreational fishing, framed within broader issues like the impact of climate change on fish species. These approaches encourage children to participate in programs designed to shift attitudes and behaviors.

In applying this social prevention concept to the circulation of unregistered imported processed food (*TIE*) in border regions, one may consider the following example: According to Statistics Indonesia (Badan Pusat Statistik, 2021), the population structure in North Kalimantan is dominated by the millennial generation, aged 25–39 years. Data also show that 24.43% of the population aged five years and above had completed senior high school or its equivalent, indicating relatively high educational attainment among productive-age groups in the province.

Based on the Distribution of Communities in East and North Kalimantan Provinces (Ministry of Youth and Sports, 2014), communities in these provinces are significantly involved in religious organizations (44%), with Islam as the dominant faith. Given this demographic profile, communication, information, and education (CIE) programs, as well as character-building initiatives, can be effectively directed through religious leaders (ulama) and community figures, ensuring strong cultural and moral resonance.

In addition, nationalistic and student organizations contribute significantly to youth engagement. Mobilizing these groups may involve collaboration with stakeholders such as the Department of Education, the Scout Movement, and local community organizations led by key opinion leaders. Activities must also align with the interests of younger generations. Traditional one-way activities, such as lectures, open discussions, and seminars, may not be sufficient. Instead, collaborative,

interactive, and value-adding initiatives are needed to foster a *learning-by-doing* approach to social crime prevention. Role-play, science projects, participation in food and drug regulatory student corps (*Saka POM*), cultural festivals, and creative product competitions can serve as effective tools to integrate crime prevention into social life while instilling pride in local products (*local pride*).

Such efforts require long-term commitment and continuous nurturing to achieve sustainable outcomes. Collaboration across sectors must also be mapped comprehensively. Organizations may implement *Creating Shared Value (CSV)* programs, proactively engaging students to identify opportunities for enhancing the value of local food products. This approach fosters entrepreneurial thinking while emphasizing food safety, quality, and nutrition. With early exposure to such knowledge, students can be expected to become agents of change, capable of transforming both local and imported food products into value-added commodities, thereby strengthening domestic economic potential.

3.3.3 Community-Based Crime Prevention

In implementing community-based crime prevention, two key factors must be considered: the socio-economic conditions of the community and the demographic composition of the population. These factors are crucial because each community is highly context-specific; approaches suitable for communities in western Indonesia may differ significantly from those required in the east. Within this framework, communities should not be perceived merely as objects of supervision, but rather as stakeholders who share responsibility for addressing the circulation of unregistered processed foods (*TIE*). As such, communities can contribute their voices and collaborate in building synergistic common values. By utilizing socio-economic data, organizations can identify community conditions requiring improvement, integrate these needs into operational processes, and implement empowerment programs with mutually agreed goals. Establishing an equal partnership between authorities and communities will facilitate consensus-building and ultimately foster a mutually beneficial ecosystem.

Table 1. Population Distribution in North Kalimantan

No	District/City	2018	2019	2020	2021
1	Bulungan	136,619	140,527	142,967	153,558
2	Malinau	79,903	80,822	81,243	81,925
3	Nunukan	178,975	182,028	188,246	194,119
4	Tana Tidung	24,19	24,145	25,352	26,508
5	Tarakan	228,723	241,893	237,601	241,893

(Source: kaltara.bps.go.id, accessed June 29, 2022)

Table 2. Average Monthly Per Capita Food Expenditure in North Kalimantan

District/City	Average Monthly Per Capita Food Expenditure in North Kalimantan (in Rupiah)		
	2019	*2020*	*2021*
Bulungan	755.385,86	820.903,87	787.950,35
Malinau	684.153,73	789.991,81	661.294,49
Nunukan	658.495,31	643.647,08	673.082,87
Tana Tidung	812.949,80	810.954,51	806.682,11
Tarakan	744.925,87	759.186,54	794.562,94

(Source: kaltara.bps.go.id, accessed June 29, 2022)

For example, data from Statistics Indonesia (BPS) show that the accommodation and food service industry contributed significantly to North Kalimantan's Gross Regional Domestic Product (GRDP), increasing from IDR 396.4 billion in Q1 2021 to IDR 457.2 billion in Q1 2022. However, there are stark disparities in per capita food expenditures. Although Nunukan District has the second-largest population in the province, its per capita food expenditure is lower than other regions. In contrast, Tana Tidung, with the smallest population, shows the highest per capita food expenditure. Such disparities may lead to the diversion of imported food products beyond border areas, undermining localized consumption.

A strong hypothesis is that ensuring imported products are fully absorbed within border communities—rather than leaking into other areas—requires efforts to increase local food consumption. This should not rely solely on household consumption but also extend to the industrial sector, such as hotels, restaurants, and catering (HOREKA). This aligns with local government initiatives to improve community welfare. For example, the Ministry of Public Works and Public Housing (PUPR), in partnership with the Nunukan District Government, implemented the *Kota Tanpa Kumuh* (KOTAKU, "City Without Slums") program to enhance sustainable livelihoods and housing quality. The program included the construction of culinary tourism houses in Nunukan Utara. By expanding culinary tourism, imported processed food products can be transformed into diverse local culinary offerings, thereby increasing economic value while absorbing cross-border supplies.

In this community-based prevention model, culinary tourism managers can be empowered to integrate cross-border processed food products into local culinary industries, household food enterprises, or start-ups. Because these products are used as raw materials rather than sold directly to consumers, they are exempt from licensing requirements. This approach not only generates added economic value for communities but also mitigates the risk of diversion of unregistered products into broader distribution networks.

3.3.4 Situational Prevention

Situational prevention focuses on reducing crime incidents by increasing risks for offenders, thereby limiting opportunities for criminal acts. In the context of unregistered processed food (*TIE*) circulation in border regions, this strategy emphasizes the mobilization of local resources through coordinated activities. One such initiative is SABER (Sapu Bersih / Clean Sweep), aimed at blocking and clustering diverted products to prevent their distribution beyond border areas. Mobilization can be achieved by engaging local stakeholders, such as municipal police (*Satpol PP*), youth organizations, and religious groups, while also aligning with regional government performance indicators—such as enhancing the competitiveness of local SMEs (small and medium enterprises). This ensures that collaboration is mutually beneficial, with all parties gaining advantages from the joint effort.

Another critical step is the implementation of **uniformed patrols** to intensify the "clean sweep" of diverted cross-border TIE products. Uniformed patrols are vital in situational prevention, which is grounded in rational choice theory: individuals engage in crime based on rational calculations of risks and benefits. If offenders perceive an environment as unfavorable due to heightened risks, they are more likely to refrain from criminal activity. Thus, visible and consistent patrols—both physical and digital—play an essential role in creating deterrence.

3.4. Conceptual Implementation of the Tonry-Farrington Typology in Preventing the Circulation of Unregistered Processed Foods in Border Regions

A purely repressive approach has proven insufficient to comprehensively address the circulation of unregistered processed foods (*TIE*) in Indonesia's border regions. Thus, a collaborative approach is required, integrating the roles and functions of both internal and external stakeholders of the

Indonesian FDA (Badan POM). By applying the Tonry-Farrington crime prevention typology, a comprehensive prevention framework can be developed, as illustrated in Figure 7.
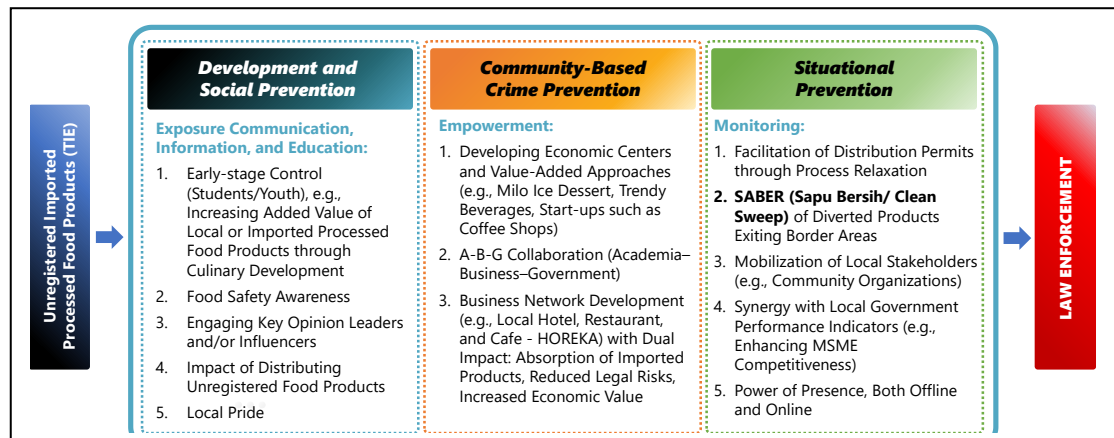

Figure 6. Application of the Tonry-Farrington Typology in Combating TIE Products in Indonesia's Border Regions
(Source: Tonry, M., & Farrington, D. P. (1995)

In the context of Social Development and Prevention, Crime prevention requires engaging local key opinion leaders, including respected community and traditional figures, to support the FDA's efforts in combating TIE imports. Social and cultural proximity enables more effective penetration of communication, information, and education (CIE) programs, reaching deep into grassroots communities—such as youth, students, and entrepreneurs—thus discouraging them from engaging in food-related crimes.

In the context of community-based crime prevention, a collaborative and resource-sharing approach is needed to increase added value, particularly in terms of the economy and competitiveness of local products. Considering the issue of imported products that are most widely circulated are from category 14. Beverages and category 07. Bakery Products, a culinary development approach can be a solution to increase added value compared to selling imported products directly to consumers who are required to have a distribution permit. The Food and Drug Monitoring Agency (BPOM), through its Technical Implementation Unit (UPT), can facilitate these frequently imported products to enter through official channels by fulfilling food safety requirements, for example through SKI requirements, where if used for Hotel, Restaurant or Catering needs, it is one of the exceptions to the requirement to have a distribution permit. For example, the product investigated by BBPOM Samarinda is chocolate powder (Milo Powder) from Malaysia which can be reconstituted into the Es Kepal Milo product which was once a favorite in Indonesia. This added value can certainly have a significant impact on economic progress in border areas. This needs to be supported by local stakeholders, for example the Regional Government, to share resources, especially budgets, to encourage the growth of new, innovative culinary centers without violating regulations and laws.

In the context of situational prevention, collaboration can be achieved through joint supervision and engagement with well-educated stakeholders. Furthermore, the intensification of supervision conducted by the Food and Drug Monitoring Agency (BPOM) through its Technical Implementation Units (UPT) must be continuously improved, not only physically but also virtually. The presence of BPOM in processed food business centers can encourage behavioral change, especially if more economically promising business alternatives are already available and supported by the regulatory ecosystem in border areas.

As a last resort, in the context of law enforcement, strong legitimacy is needed to create a deterrent effect manifested in the form of quality decisions. This needs to be supported by a strong Criminal Justice System (CJS), where the role of the POM Agency is crucial in supporting it in accordance

with its duties and functions, for example in terms of the quality of the files by investigators, expert opinions, and arguments supported by factual data related to the consequences of the case. Cooperation with other law enforcement agencies is also essential, so that good orchestration by law enforcement officers can be assessed by potential criminals as a manifestation or logical consequence of committing a crime.

In addition, the Enforcement Dashboard Application (ADP) marks an important institutional step in risk-based enforcement strategies. By serving as a collaborative data lake, ADP strengthens FDA's position as a data-driven organization. The analysis generated from ADP is expected to further improve targeted, evidence-based approaches to preventing the circulation of unregistered imported processed foods.

4. Conclusion

The circulation of processed food, especially imported food without a distribution permit (TIE), dominates the crime risk in border areas. This has been going on for a long time and has become a complex problem because the problem is closely related to the social culture of the community. A repressive approach alone is not enough in a comprehensive effort to overcome this case, so another approach is needed which is a collaboration between elements of duties and functions, especially within the POM Agency. The research concentrates on overcoming the problem of the circulation of TIE food in Indonesia's border areas. Among the provinces discussed are North Kalimantan, West Kalimantan, Riau, Riau Islands, and East Nusa Tenggara. This discussion will focus on North Kalimantan as the youngest province in Indonesia. Through a crime prevention approach with the Tonry-Farrington typology, a concept can be obtained for handling the circulation of processed food without a distribution permit in border areas, namely (1) Developmental and Social Prevention; (2) Community Based; (3) Situational Prevention; and as a last resort (4) Law Enforcement, namely collaboration can be carried out by conducting joint supervision and involving stakeholders who have been well educated. The Tonry-Farrington typology theory can be adapted by the Food and Drug Monitoring Agency (BPOM) as a new approach to addressing the problem of the circulation of TIE food products in Indonesia's border regions, enabling holistic management. Further research can focus on pilot projects implementing the Tonry-Farrington typology crime prevention in border regions for further evaluation.

5. Recommendations

Based on the foregoing analysis, crime prevention strategies in border regions should emphasize socio-cultural approaches and economic value creation. Short-term strategic measures rooted in local wisdom can serve as catalysts to absorb cross-border food products within border areas, preventing their diversion into other regions. Community mobilization thus becomes a key factor in addressing these challenges. The following recommendations are proposed:

5.1 Community Empowerment and Processed Food Business Development

Community-based crime prevention should involve collaboration with local leadership forums (*FORKOMPIMDA*) and culinary communities in border regions. These groups can support the empowerment of culinary hubs and promote local processed food products, particularly in Category 14 (Beverages, excluding dairy) and Category 07 (Bakery products). Culinary entrepreneurs already organized in local associations should be nurtured as role models for utilizing cross-border food products as raw materials, thereby strengthening community-based economic resilience. The ultimate goal is to ensure that cross-border processed foods are fully absorbed within border regions, minimizing the risk of diversion.

5.2 Social Engineering and Public Communication

Prevention efforts should identify demographic characteristics and cultural contexts in border regions, engaging key opinion leaders and influencers who resonate with target audiences. Tailored communication strategies will ensure that food safety messages reach specific groups—such as youth and students—while simultaneously fostering **local pride** in domestic production. Communication must be adapted to the unique characteristics of each community to ensure effectiveness and sustainability.

5.3 Pre- and Post-Market Supervision

Collective engagement with local government agencies (*SKPD*) is needed to ensure shared perspectives and coordinated action, particularly in implementing risk-based "clean sweep" (*sapu bersih*) measures against diverted products. Strengthening both physical and digital uniformed patrols will reinforce the visible presence of regulatory institutions, affirming their authority in safeguarding food safety and public health.

5.4 Law Enforcement as *Ultimum Remedium*

As a final step, enforcement against TIE products in border regions must focus on offenders with clear criminal intent (*mens rea*). This requires specific regional analyses targeting supply chains that frequently divert cross-border TIE products into domestic markets. By concentrating enforcement on deliberate offenders, authorities can maximize deterrence and ensure proportionality in the application of criminal sanctions.

References

Akita, T., & Miyata, S. (2017). Spatial inequalities in Indonesia, 1996–2010: A hierarchical decomposition analysis. *Social Indicators Research.* https://doi.org/10.1007/s11205-017-1694-1

Angriawan, F., & Mutiarin, D. (2019). Efektivitas pengawasan Badan Pengawas Obat dan Makanan (BPOM) terhadap peredaran makanan impor oleh pedagang UMKM di Kota Pekanbaru. *Journal of Government and Civil Society, 3*(1), 47–61.

Badan Pusat Statistik. (2017). *Buku pedoman pencacahan survei impor daerah perbatasan 2017.* BPS.

Badan Pusat Statistik. (2022). *Sebaran jumlah penduduk dan rata-rata pengeluaran per kapita sebulan menurut kabupaten/kota untuk makanan.* https://kaltara.bps.go.id (Diakses pada 29 Juni 2022)

Bakce, D., Syahza, A., & Asmit, B. (2019). Pembangunan ekonomi wilayah perbatasan antar-negara di Provinsi Riau. *Unri Conference Series: Agriculture and Food Security, 1,* 182–189. https://doi.org/10.31258/unricsagr.1a24

Barr, S., & Ozturk, O. (2021). *The consumer transformed: Changing behaviours are accelerating trends along a reinvented customer purchase journey.* PwC. https://www.pwc.com/gx/en/consumer-markets/consumer-insights-survey/2020/pwc-consumer-insights-survey-2020.pdf

Baur, A. W. (2017). Harnessing the social web to enhance insights into people's opinions in business, government and public administration. *Information Systems Frontiers, 19*(2), 231–251. https://doi.org/10.1007/s10796-016-9681-7

Brisman, A., & South, N. (2015). An assessment of Tonry and Farrington's four major crime prevention strategies as applied to environmental crime and harm. *Journal of Criminal Justice and Security,* 127–151.

Dharma Negara, S., & Sri Soesilowati, E. (2021). E-commerce in Indonesia: Impressive growth but facing serious challenges. In W. Choong, L. P. Onn, L. Sue-Ann, & N. K. Meng (Eds.), *ISEAS Perspective*. ISEAS – Yusof Ishak Institute. https://www.iseas.edu.sg/wp-content/uploads/2021/07/ISEAS_Perspective_2021_102.pdf

Direktorat Cegah Tangkal. (2022). *Laporan nomor PD.01.01.614.03.23.09 tanggal 31 Maret 2023 perihal analisis kerawanan kejahatan pangan olahan tahun 2022*. BPOM RI.

Direktorat Cegah Tangkal. (2023). *Aplikasi dashboard penindakan*. https://penindakan.pom.go.id (Diakses pada 26 Oktober 2023)

Firmansyah, T. W. H. (2018). *Perbedaan pendapat dalam putusan pengadilan*. Pustaka Yustisia. https://books.google.co.id/books?id=pv2BDwAAQBAJ

Gelles, M., Mirkow, A., & Mariani, J. (2019). *The future of law enforcement: Policing strategies to meet the challenges of evolving technology and a changing world*. Deloitte. https://www2.deloitte.com/content/dam/Deloitte/xe/Documents/public-sector/DI_Future-of-law-enforcement.pdf

Hughes, G., McLaughlin, E., & Muncie, J. (2002). *Crime prevention and community safety: New directions*. SAGE Publications. https://books.google.co.id/books?id=ZeSPexoU0E0C

Marwasta, D. (2016). Pendampingan pengelolaan wilayah perbatasan di Indonesia: Lesson learned dari KKN-PPM UGM di kawasan perbatasan. *Indonesian Journal of Community Engagement, 1*(2).

Meutia, I. F. (2016). The implementation of community policing in Indonesia. *Kanazawa University*.

Nugroho, A. S., Rijanta, R., Santoso, P., & Marfai, M. A. (2023). Hubungan dinamika sosial ekonomi wilayah dengan interaksi ruang kawasan perbatasan di Pulau Sebatik, Kalimantan Utara. *Jurnal SPATIAL Wahana Komunikasi dan Informasi Geografi, 23*(1), 33–47.

Siregar, R. T., Suwarti, S., Yendrianof, D., Mistriani, N., Butarbutar, M., Dewi, I. K., Purba, P. B., & Yunianto, A. E. (2020). *Industri pariwisata dan kuliner*. Yayasan Kita Menulis.

Sulaiman, A., Las, I., Soetopo, D., Inounu, I., Setiawan, B. I., Subagyono, K., Hermanto, Alihamsyah, T., Torang, S., Suryani, E., Hoerudin, Herodian, S., Bahan, F., & Wirawan, B. (2017). *Membangun lumbung pangan di perbatasan: Sinergitas merintis ekspor pangan di wilayah perbatasan NKRI*.

Tonry, M., & Farrington, D. P. (1995). Strategic approaches to crime prevention. *Crime and Justice, 19*, 1–20. http://www.jstor.org/stable/1147594

Tonry, M., Ohlin, L. E., & Farrington, D. P. (2012). *Human development and criminal behavior: New ways of advancing knowledge*. Springer Science & Business Media.

Weber, L., Fishwick, E., & Marmo, M. (2014). *Crime, justice and human rights*. Palgrave Macmillan.