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Towards a Policy Model for Identifying Victims of Human Trafficking through Ethical Artificial Intelligence and Big Data Analytics

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ABSTRACT

Structural inefficiencies in identifying victims of human trafficking, particularly reliance on subjective human judgment and limited institutional coordination, significantly impact the effectiveness of current policies. This study adopts a qualitative document analysis approach using the Policy Process Model to assess these gaps within a national context. The examination of official data shows a significant inconsistency between the high number of potential interviews and the low number of confirmed victim diagnoses, highlighting a critical failure in traditional identification methods. In contrast, the study proposes a transition to policy development through the integration of ethical artificial intelligence and big data analytics. The findings show that AI modeling-supported analytics not only provides greater reliability and consistency in inter-institutional operations but also offers a robust framework for protecting victim rights when applied with strict ethical oversight.

Keywords: Human Trafficking, Victim Identification, Artificial Intelligence, Policy Development

Etik Yapay Zekâ ve Büyük Veri Analitiği ile İnsan Ticareti Mağdurlarının Tespitine Yönelik Politika Modeli Önerisi

ÖZET

İnsan ticareti mağdurlarının tespit edilmesinde karşılaşılan yapısal verimsizlikler; bilhassa öznel insan muhakemesine duyulan bağımlılık ve kurumlar arası koordinasyonun sınırlı olması, mevcut politikaların etkinliğini önemli ölçüde sekteye uğratmaktadır. Bu çalışma, söz konusu eksiklikleri ulusal bir bağlamda değerlendirmek amacıyla Politika Süreç Modeli'ni temel alan nitel bir doküman analizi yaklaşımını benimsemektedir. Resmi veriler üzerinde yapılan incelemeler, gerçekleştirilen potansiyel görüşme sayısının yüksekliğine karşın doğrulanan mağdur tespitlerinin düşüklüğü arasındaki belirgin tutarsızlığı ortaya koymakta; bu durum, geleneksel kimlik tespiti yöntemlerindeki kritik bir zafiyete işaret etmektedir. Bu doğrultuda çalışma, Etik Yapay Zekâ ve Büyük Veri Analitiği entegrasyonu aracılığıyla kanıta dayalı politika geliştirme sürecine geçilmesini önermektedir. Elde edilen bulgular, yapay zekâ modellemesi ile desteklenen analizlerin, kurumlar arası işleyişte güvenilirliği ve tutarlılığı artırmanın yanı sıra; sıkı bir etik denetim altında uygulandığında mağdur haklarının korunması adına güçlü bir çerçeve sunduğunu göstermektedir.

Anahtar Kelimeler: İnsan Ticareti, Mağdur Tespiti, Yapay Zekâ, Politika Geliştirme

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INTRODUCTION

Human trafficking is a widespread crime that constitutes a severe violation of human rights at the global level. The processes of identifying, protecting, and supporting victims are often impeded by bureaucratic complexities, policies, legal gaps and a lack of adequately trained personnel in the field level. Such barriers significantly undermine both the safeguarding of victims' rights and the effectiveness of anti-trafficking efforts. This study aims to explore the systemic challenges in the fight against human trafficking and focuses on how artificial intelligence solutions can be used in the process of victim identification. The objective is to offer a fresh perspective on policymaking in this domain and contribute a structured framework for more effective interventions and the need to develop analysis and indicator methods for artificial intelligence-supported victim identification is revealed. This study contends that the conventional reliance on human personnel capacity, fragmented institutional coordination, and subjective assessment methods is inadequate for addressing the growing complexity of human trafficking, particularly in light of the persistently high rates of unidentified victims and missed identification opportunities. In the context of adaptation to technological advancements, the integration of artificial intelligence and big data analytics emerges as a strategic, applicable and evidence-based response to existing barriers.

This study is focused to analyze the research question of "How can the practical implementation of AI-driven analytics and big data systems mitigate structural barriers specifically subjective bias and fragmented coordination to bridge the gap between potential victim screening and confirmed identifications as policy?" The discussion begins with a detailed analysis of the primary challenges and limitations of current policy strategies and practices. It then focuses on the potential of ethical (algorithm decision-making process) artificial intelligence possible solutions to address these shortcomings. Although existing literature mostly focuses on static visual analysis (photographs, advertising images), AI-supported micro-expression analysis and biometric emotion recognition systems have the potential to increase detection rates by analyzing victims stress levels and involuntary facial expressions during interrogation. By presenting a new approach centered on victim protection and institutional efficiency, this study offers a significant step toward advancing the fight against human trafficking in global perspective as well. This proposal is also positioned as a contribution to the development of more effective anti-trafficking policies at both the national and international levels.

This study adopts a qualitative document analysis approach designed to identify systemic flaws in existing anti-human trafficking policies. To bridge the gap between the identified problems and the proposed AI solutions, the study uses the "Policy Process Model" (Problem Identification, Formulation, Implementation, Evaluation) as its basic analytical framework. This structured approach allows for a systematic assessment of where traditional methods have failed and how algorithmic solutions can be integrated into specific policy stages. In addition, AI risk-scoring model was developed by mapping the ILO's forced labour indicators onto the administrative data fields of Türkiye's existing institutional systems (SGK, İŞKUR, PMM, and MoLSS), enabling cross-institutional analysis through existing records without requiring additional data collection.

The data for this research was collected through purposive sampling, focusing on documents that provide official qualitative evidence related to human trafficking in Turkiye and the broader European context. Data obtained from national authorities (PMM) was analyzed to calculate the inconsistency rates between "potential victims" (interviewed individuals) and "verified victims." This analysis was used to illustrate the inadequacy of current subjective identification methods (e.g., the discrepancy between 21,176 interviews and 1,173 identifications). Regarding to primary and secondary data (GRETA reports, Palermo Protocol, etc.) were analyzed to identify recurring themes related to operational failures. Key themes identified included "reliance on subjective human judgment," "fragmented inter-agency coordination," and "lack of standardized risk indicators". The identified operational errors were categorized under the "Problem Identification" stage, while the proposed Ethical AI model was analyzed as part of the "Policy Formulation" stage, creating a consistent and evidence-based policy proposal rather than a theoretical assumption.

1. CONCEPTUAL FRAMEWORK

Human trafficking essentially occurs through the use of force, coercion, or deceit to subject individuals to exploitation. The crime is characterized by the exploitation of victims and is defined as such in the United Nations Palermo Protocol and the International Organization for Migration (IOM) Glossary of Migration (Sironi et al., 2019). In this study, the term "human trafficking" refers only to the victims of human trafficking and the mechanisms leading to their exploitation, rather than to the human traffickers themselves. Human trafficking is the process of exploiting individuals against their will for the benefit of others (TC Dışişleri Bakanlığı, 2026). The phenomenon of human trafficking can be approached through a dual framework that involves both push and pull factors. Push factors are those that predominantly force individuals into trafficking situations and typically include poverty, armed conflicts, social exclusion, domestic violence, dysfunctional families, unemployment, harmful traditions or customs, and disparities between countries in terms of economic and social development. These circumstances generally leave individuals with limited or no voluntary agency. Pull factors, on the other hand, are typically associated with the perceived benefits in destination regions, such as the promise of higher income, better living conditions, or enhanced educational opportunities. Taken together, these factors demonstrate the close interconnection between human trafficking and migration, suggesting that trafficking is often a subset of broader migration dynamics.

A critical point of conceptual and practical ambiguity lies in differentiating human trafficking from other related phenomena, notably migrant smuggling and child labor. While human trafficking and migrant smuggling are both illicit practices, they differ fundamentally in terms of their purpose, the victimization process, and the legal framework (Kleemans & Smit, 2014). Migrant smuggling generally involves facilitating irregular border crossings with the consent of the individuals involved in exchange for financial gain. In contrast, human trafficking involves ongoing exploitation and the abuse of vulnerability, which renders the issue of consent legally irrelevant. Although these two crimes may overlap in practices individuals who are initially smuggled may subsequently become victims of trafficking due to their vulnerability and lack of legal awareness they remain distinct legal categories. A similar difficulty arises in distinguishing between child trafficking and child labor, where differing legal criteria frequently impede definitive case categorization in field practice. These difficulties are further compounded by the lack of specialized expertise among field actors such as judges, prosecutors, lawyers, and law enforcement officers, which can result in inaccurate victim identification and case processing. Because human trafficking involves a wide range of complex and context-specific issues, variations in knowledge and approach among personnel can result in inconsistent victim identification and service provision. Ultimately, these systemic weaknesses underscore the need for better training, standardized victim identification indicators, and more coordinated institutional responses (Salt, 2000). Furthermore, this legal and operational complexity extends to the geographic scope of the crime: unlike the formal legal distinctions made between internal and international migration, such a separation is rarely present in human trafficking, as both nationals and non-nationals can become victims regardless of whether an international border is crossed.

Building upon these structural and operational challenges, existing research defines human trafficking as a multifaceted phenomenon shaped by inequalities, poor governance, exploitation, financial gain, gender discrimination, and international criminal networks (Shelley, 2010; Obokata, 2012). Recent studies particularly highlight that economic crises, climate-induced displacement, armed conflicts, and irregular migration significantly increase individuals' vulnerability to human trafficking and exploitation (United Nations Office on Drugs and Crime, 2024). Conceptually, the definition of human trafficking remains a topic of ongoing debate that is still relevant today. At its core, the process of exploiting individuals against their will manifests itself through actions, means, and ends. While the subject of these actions is fundamentally human beings, the means typically take the form of threats and the use of force. The end, meanwhile, revolves around exploitation in exchange for personal gain. According to the Global Estimates of Modern Slavery, approximately 49.6 million people were living in situations of modern slavery in 2021, including 27.6 million victims of forced labor and 22 million victims of forced marriage (International Labor Organization, Walk Free, & International Organization for Migration , 2022).

Human trafficking typically manifests in four major forms: labor exploitation, sexual exploitation, trafficking of children, and organ/tissue trafficking. Categorizing trafficking in this way helps facilitate the identification of victims and the investigation of cases. However, not all acts within these categories constitute human trafficking. Therefore, for a case to qualify as human trafficking, it must exhibit certain core characteristics. According to the Palermo Protocol (2000), trafficking is defined based on three components: acts, means, and purposes. Acts include recruitment, transportation, transfer, harboring, or receipt of persons. Means refer to the use of force, coercion, abduction, fraud, abuse of power, or taking advantage of a victim's vulnerability. The purpose is exploitation, which may include forced labor, sexual exploitation, slavery, or organ removal. Only when these elements are present in conjunction can a situation be legally recognized as human trafficking. However, the distinction between trafficking and other forms of exploitation is not always clear-cut United Nations Office on Drugs and Crime (UNODC, 2013). This ambiguity makes it difficult not only for judicial and law enforcement actors but also for society to accurately identify victims. Although legal definitions exist, identifying victims without evaluating all three elements act, means, and purpose remains problematic. Another critical challenge involves the proper identification of victims across diverse demographics. Victims of human trafficking can be of any age, gender, or nationality. Notably, individuals under the age of 18 are considered victims even if they appear to consent to the exploitative situation. Victim identification is also challenging due to factors such as financial transaction analysis, social media analysis, and behavioral anomaly analysis. Therefore, the adoption of ethical AI and algorithmic decision-making processes by authorized institutions for detection and monitoring will enable this complex challenge to be managed in a more systematic, transparent, and effective manner.

2. NATIONAL AND INTERNATIONAL LEGISLATIVE LANDSCAPE

In its most basic form, the term "commerce" refers to the buying and selling of goods for material gain. When human beings are commodified, exploited, or subjected to abuse for profit, it constitutes a grave violation of human rights. Human trafficking, in this context, is a form of rights violation that manifests in various forms including forced labor, early or forced marriage, child exploitation, and sexual abuse. As a serious crime, it not only infringes upon fundamental human rights but also produces both individual and societal consequences. In response, governments around the world have begun to form alliances and adopt cooperative mechanisms to counter this evolving threat. One of the most significant international instruments in this field is the *Council of Europe Convention on Action against Trafficking in Human Beings*, which came into force on February 1, 2008, under reference number CETS No. 197 with the initial ratification of eight-member states. The convention focuses on the comprehensive protection of trafficking victims and the enforcement of their rights.

Parties to the convention are obligated to develop preventive mechanisms and to prosecute human traffickers effectively. The convention also ensures the provision of compensation and legal support for victims. Article 19, in particular, enables states to penalize individuals or institutions that knowingly exploit trafficking victims. Presidency of Migration Management (PMM), in line with this commitment, has implemented numerous actions to fulfill these international obligations (PMM, 2020). Additionally, Türkiye is a party to the 2000 United Nations Convention against Transnational Organized Crime, more commonly known as the Palermo Protocol. In 2003, the Turkish Grand National Assembly approved the Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, thereby committing to combat this issue at both national and international levels. Türkiye's legislative efforts in this domain date back as early as 1937, when it became a party to the 1921 International Convention for the Suppression of the Traffic in Women and Children. Subsequent commitments include the 1926 Slavery Convention (ratified in 1955), the International Labour Organization's Forced Labour Convention (1961), the Convention on the Elimination of All Forms of Discrimination Against Women (1985), and the Convention on the Rights of the Child (1995), along with its Optional Protocol on the sale of children, child prostitution, and child pornography (ratified in 2002). In addition to these international instruments, Türkiye has also amended its domestic legislation. Article 80 of the Turkish Penal Code criminalizes human trafficking, defining it as:

"Anyone who, with the intent of exploiting a person by forcing them to work, perform services, engage in prostitution, or become subject to slavery or the removal of their organs, commits acts such as threatening, using force or coercion, abusing power, deceiving, or taking advantage of a person's vulnerability to bring them into, remove them from, procure, transport, or harbor them within the country shall be punished by imprisonment for eight to twelve years and a judicial fine of up to ten thousand days." (General Directorate of Security, 2020) Despite these legislative advances, victim identification and case processing in practice remain challenging in Türkiye, as is the case globally. Furthermore, according to Article 3(1)(o) of the Regulation on the Implementation of the Law on Foreigners and International Protection, victims are defined as *"individuals who are subjected to human trafficking or for whom there is a strong suspicion of such." Presidential Decree No. 63 also defines victims as "real persons who suffer physical, psychological, or economic harm due to the crime."* Although legal definitions exist, effective victim identification requires the development of objective indicators and mechanisms supported by secondary regulations and administrative directives. Without consistent policy implementation and legal cohesion, fragmented legislative approaches to trafficking remain difficult to operationalize.

Given the limited public awareness of legal protections and the complexity of identifying victims, it is critical that institutional frameworks are clarified and that vulnerable individuals are empowered to recognize their rights. While constitutional protections such as Articles 17 (personal inviolability), 18 (prohibition of forced labor), 19 (personal liberty and security), 20 (privacy), and 50 (right to rest) aim to safeguard fundamental freedoms, public understanding and enforcement of these rights remain insufficient. Accordingly, the capacity-building of law enforcement and public officials is an essential component in advancing a more effective and rights-based response to trafficking.

3. THE DISCREPANCY BETWEEN POTENTIAL AND CONFIRMED VICTIMS: TRADITIONAL SYSTEMIC CHALLENGES IN IDENTIFICATION AND INTERVENTION

Recent studies have identified several critical barriers to combating human trafficking, including policy and regulatory gaps, entrenched cultural norms, ethical concerns surrounding algorithmic decision-making (EG, algorithmic bias, transparency, and accountability), and challenges in the timely identification of victims along with their referral to appropriate protection and support services. These difficulties may also vary regionally within countries, as observed in various European contexts such as Austria, Belgium, Bulgaria, Latvia, Malta, the United Kingdom, Luxembourg, the Netherlands, and Norway. However, the nature of these barriers, the legal frameworks governing national responses, institutional capacities, and underlying socio-economic conditions vary significantly across jurisdictions. For example, research in the United States shows that despite a sophisticated legal framework, fragmented inter-institutional coordination creates difficulties in the victim identification process (Farrell & Pfeffer, 2014). In European countries, the main challenges are observed to be related to cross-border criminal networks, identifying victims of human trafficking amid mixed migration flows, and providing victim-centered protection mechanisms (Europol, 2025). In Southeast Asian countries, this situation manifests itself mostly as irregular migration and labor exploitation due to weak labor regulations. Furthermore, victim identification and follow-up are difficult because victim identification is not homogeneous across sectors (ILO, Walk Free & IOM 2022). Increased vulnerabilities in countries like Ukraine, Sudan, and Syria, where people are forcibly displaced due to war or conflict, have led to higher reported risks of human trafficking (UNODC, 2024).

In Türkiye, identification of trafficking victims in non-border areas becomes significantly more difficult. According to the Presidency of Migration Management (PMM), between 2015 and 2020, a total of 21,176 interviews were conducted with potential victims of human trafficking; however, only 1,173 individuals were officially identified as victims. In 2019 alone, out of 3,738 potential cases assessed by provincial directorates of migration management, merely 215 were confirmed as trafficking victims (PMM, 2020; Turkish Ministry of Interior, 2019). The difficulty of identifying victims and the need for evaluations with a complex and holistic approach are important in this process.

These figures highlight a considerable discrepancy between the number of interviews and actual victim identification, indicating deep-rooted challenges in detection and intervention. GRETA's monitoring reports are important for examining and tracking developments related to human trafficking and identifying challenges. Based on the published reports (GRETA, 2019, 2024 & US Department of State, 2017-2025, the core challenges undermining effective victim identification indicators in Türkiye can be summarized as follows:

- Inadequate number of qualified (both female and male) specialists for conducting interviews and identifying victims in the field level (GRETA, 2019; US Department of State, 2023).
- Bureaucratic complexity and length of formal victim identification and referral processes (GRETA, 2024; PMM, 2023). Challenges in conducting comprehensive financial transaction and social media analysis using big data (proactive detection) (UNODC, 2022, 2024).
- Institutional challenges in interagency coordination and role-sharing (GRETA, 2019; Salt, 2000).
- Absence of a comprehensive anti-trafficking strategy and preventive policy framework (GRETA, 2024; US Department of State, 2024).
- Inconsistent investigative practices across different institutions (GRETA, 2019; US Department of State, 2022).
- Ambiguity regarding the roles and responsibilities of public institutions and civil society organizations (GRETA, 2024; IOM, 2020).
- Challenges in distinguishing between trafficking and migrant smuggling or between child trafficking and child labor (UNODC, 2024; van der Leun & van Schijndel, 2016)
- Needs in standardization of knowledge, technical expertise, and training among public officials and law enforcement personnel (GRETA, 2019; Salt, 2000).
- Unequal workload distribution within referral mechanisms (PMM, 2023).
- Procedural inconsistencies in victim identification by different actors (e.g., law enforcement vs. civil servants) (GRETA, 2024; US Department of State, 2023).
- Lack of standardized criteria for assessing the qualifications of professionals conducting interviews (GRETA, 2019).
- Inadequate use of indicators (in term of ethical, data protection, bias etc.) in victim identification processes (UNODC, 2022).
- Unclear institutional responsibility for rural labor exploitation cases (e.g., whether under the jurisdiction of the gendarmerie, Ministry of Labor, etc.) (GRETA, 2019).
- Legal ambiguities concerning the roles of labor inspectors in workplaces with fewer than 50 employees, particularly in informal rural settings (GRETA, 2019, 2024; ILO, 2022).
- Coordination difficulties between different institutional actors (land, sea, and border units) (IOM, 2020; US Department of State, 2024).
- Inadequate systems for evidence collection, preservation, and information sharing (GRETA, 2024; UNODC, 2024).
- Discontinuity between operational successes (e.g., raids or interventions) and long-term victim support (GRETA, 2019, 2024; US Department of State, 2025).

All the challenges faced in combating human trafficking demonstrate the need for a holistic approach. Technological advancements, migration, and dynamics such as social media make it difficult to identify victims and assess the crime. Advances in artificial intelligence and big data analytics will enable a more objective and holistic approach to addressing these problems. However, it is anticipated that discussions will continue regarding ethical values, data privacy, and jurisdiction.

4. APPLYING POLICY PROCESS MODELS: FROM PROBLEM IDENTIFICATION TO ANALYTICAL SOLUTION

Developing an effective public policy necessitates a structured and strategic process model. The process model not only serves as a framework for understanding the formulation and implementation of policies but also helps define the scope and direction of the intervention. Scholars such as Lasswell, Dye, Hill, Ham, Anderson, Peters, and Sabatier have proposed various models for policy-making processes, yet a general consensus point to five core stages; problem identification, policy formulation, legitimization, implementation, and evaluation (Kulaç & Çalhan, 2013). Beyond these five stages, it is also essential to consider the roles and influence of public, private, and civil society actors in the policy process (Gül, 2015). Depending on the nature of the policy issue, the stages may be adapted or elaborated. For example, in service delivery or implementation-oriented policies, the process may include stages such as idea generation, preparation and planning, implementation, monitoring, and final evaluation. Policy analysis can be conducted across a range of domains, including public administration, where action research is often used as a guiding methodology. This approach, originally introduced by Kurt Lewin in 1946, emphasizes iterative cycles of planning, action, observation, and reflection as a means to improve practice and policy (Lewin, 1946). Another prominent method in policy development is policy evaluation research, which involves analyzing existing or proposed interventions in relation to their stated goals and desired outcomes (Derince & Özgen, 2015). Within this context, the data collected from the field whether qualitative or quantitative are examined with a focus on policy relevance and effectiveness. Through such evaluations, gaps can be identified, and alternative or corrective measures can be designed.

In the case of combating human trafficking, applying the policy process model allows for a systematic understanding of both the challenges and the potential solutions. One of these solutions, artificial intelligence and big data analysis, will make it easier to address the challenges.

The identification of shortcomings in victim referral systems, inconsistencies in inter-agency cooperation, and the lack of specialized personnel highlight the need for a restructured, more focused policy approach. For example, an exploratory study by Van Rij (2017) examined the use of a predictive policing approach in human trafficking for sexual exploitation and the profiling of potential victims in at-risk areas through cyberethnographic observations (Rij, 2017). Another study (2020) conducted on Electronic Health Records (EHR) data showed that AI-guided keyword searches within EHRs allowed the identification of child sex trafficking victims, with psychological disorders being the most common diagnoses among these children (Murnan, et al., 2023).

5. CURRENT ANTI-TRAFFICKING LANDSCAPE: INSTITUTIONAL EFFORTS, INTERNATIONAL ASSESSMENTS, AND THE GAPS IN TECHNOLOGICAL INTEGRATION

Türkiye, situated at the intersection of Asia, Europe, and the Middle East, and serving as both a transit and destination country for victims of human trafficking, constitutes an important case study for research on human trafficking. The 2024 report by the Group of Experts on Action against Trafficking in Human Beings (GRETA) under the Council of Europe highlighted in Articles 47 and 48 that research on human trafficking in Türkiye remains insufficient (Council of Europe, Group of Experts on Action against Trafficking in Human Beings (Council of Europe, 2024). The latest assessment highlights a sharp escalation in human trafficking in Türkiye, with recognized victim numbers jumping from 775 cases (2014-2018) to 1,466 cases (2019-2023). Women and children made up 82% and 29% of the victims, respectively. Sexual exploitation was the most prevalent form of abuse at 52%, followed by labor exploitation (30%), forced marriage (9%), and forced begging (6%). Most victims originated from Syria, Uzbekistan, Afghanistan, and domestic regions within Türkiye (GRETA, 2024). The Group of Experts on Action against Trafficking in Persons (GRETA), in its latest assessment report published in 2024, stated that state-sponsored research on human trafficking in Türkiye is rare. GRETA therefore recommends that the Turkish authorities strengthen, support, and finance research on trafficking in human beings as an evidence base for future policy development (GRETA, 2024). Despite various initiatives, civil society organizations (CSOs) in Türkiye have played a limited role in the field, with

most anti-trafficking projects being implemented by the Presidency of Migration Management (PMM), the Council of Europe, or the United Nations. Some noteworthy international and national projects in this field include:

- The Council of Europe's Action to Strengthen the Human Rights Protection of Migrants and Victims of Human Trafficking in Türkiye (2019–2022): Implemented under the EU/CoE Horizontal Facility II program, this joint initiative enhanced the capacity of judicial and law enforcement authorities to identify trafficking victims and ensure human rights-compliant referral mechanisms (Council of Europe, 2022).
- Efforts by the International Organization for Migration (IOM): Through its multi-year Assistance to Victims of Trafficking (AVOT) program (2004–present),
- PMM-led Initiatives Involving Provincial Migration Offices and Municipalities (2016–2023): Under national coordination mechanisms, the Presidency of Migration Management partnered with municipal authorities and provincial directorates to operationalize specialized victim support shelters and implement localized National Referral Mechanism (NRM) protocols (Presidency of Migration Management, 2023).
- The International Center for Migration Policy Development (ICMPD)'s Fight Against Trafficking in Human Beings and Organized Crime Project (2010–2013), (ICMPD, 2013).
- The Family Counselors Association's Empowering Civil Society in Combating Human Trafficking Project (2018–2020): Supported under EU civil society dialogue schemes, this project provided grassroots non-governmental organizations and social workers with identification tools and psychosocial case-management training to strengthen local referral pathways (Family Counselors Association, 2020).
- The Human Resource Development Foundation's (HRDF) Comprehensive Anti-Trafficking Program (2003–2016), (HRDF, 2016).

The Ministry of Interior's Institutional Strengthening in Combating Human Trafficking (EU Twinning Project TR 07 IB JH 03; 2009–2011), (European Commission, 2011).The limited number of NGOs actively engaged in this field reflects the lack of qualified and experienced personnel, particularly those trained in victim identification and legal processes. Consequently, provincial migration offices often fill this institutional gap. One major development in response was the training of PMM staff and the 2019 resolution by the National Anti-Trafficking Coordination Commission to appoint at least one contact person responsible for anti-trafficking work in 36 provinces. On the legal front, the Law on Foreigners and International Protection (Law No. 6458), published in the Official Gazette on April 11, 2013, and the Child Protection Law (Law No. 5395) have assigned responsibilities to the Ministry of Family, Labour and Social Services. However, all these efforts are based on traditional methods and lack AI integration. Authorized authorities will increase their success by using AI tools to analyze data more holistically, including data collection, analysis, tracking, and victim identification. Adapting and updating existing policies and reports with these new technological advancements will also play a critical role. Therefore, this gap will be filled in areas such as artificial intelligence and ethics.

Countries that have developed advanced traditional models for victim identification and support through independent or semi-independent institutions include Austria, Belgium, Bulgaria, Latvia, Malta, the United Kingdom, Luxembourg, the Netherlands, and Norway. These international examples illustrate the feasibility of alternative structures, particularly in the creation of specialized bodies responsible for victim protection, identification, and referral. In practice, the United Kingdom relies on designated first responder organizations and a centralized Single Competent Authority to standardize identification, the Netherlands utilizes CoMensha as an independent coordination center for victim registration and support (CoMensha, 2022), and Belgium operates through specialized, accredited non-governmental reception centers (such as Payoke, PAG-ASA, and Sürya) that manage shelter and legal assistance (Council of Europe, 2020). Considering Türkiye’s current challenges such as high case volume, staff turnover, and lack of specialized personnel a new institutional mechanism could significantly improve service delivery and policy implementation by adapting AI solutions in this field.

6. ARTIFICIAL INTELLIGENCE APPROACHES FOR PRECISE VICTIM IDENTIFICATION

The sensitive nature of work in the field of human trafficking as well as the complexity of identifying, defining, and referring victims poses significant challenges and bureaucratic hurdles. While continuous training and awareness-raising for public officials is a commonly recommended solution, this approach often proves unsustainable due to limited institutional capacity, staff turnover, and funding constraints. These challenges underscore the necessity of a more focused and streamlined structure to address the core problem areas effectively. In this context, the establishment of a AI tools and big data analysis model to combating human trafficking would offer a more strategic and operationally feasible solution. Such an institution could play a complementary role in reducing the workload of provincial migration offices, minimizing victim identification errors, supporting judicial authorities, and ensuring legal oversight during interventions.

The ILO's forced labor indicators, used as a primary reference worldwide, are shown in **Table 1** as an example using ai risk-scoring model mapping. The indicators and data listed in the table have been processed to match the data fields collected by existing institutional systems in Türkiye (SGK, İŞKUR, PMM, MoLSS) and designed as an exemplary or policy model for decision-makers. Instead of requiring new data collection tools, the model is designed to cross-reference existing administrative records that exist independently of each other and directly addresses the problem of fragmented inter-institutional coordination, which is identified as a key obstacle in Section 3.1 of the study.

Table 1. Mapping the ILO Forced Labour Indicators to the AI-Based Risk Scoring Model

ILO Code	Indicator	Definition	Approaches that can be adapted to Artificial Intelligence models	Risk Status
ILO-01	Abuse of vulnerability	Exploitation of a person's precarious legal, economic, or social situation	SuTP/temporary protection status combined with absence of registered SGK employment	High
ILO-02	Deception	Discrepancy between promised and actual working conditions, pay, or job type	Mismatch between İŞKUR job posting/registration data and SGK-declared occupation (NACE code)	Medium
ILO-03	Restriction of movement	Confinement to the workplace or employer-controlled premises	Interview-form field: reported inability to leave residence/workplace unsupervised	High
ILO-04	Isolation	Deliberate separation from family, community, or interpreters	Interview-form field: no independent contact with community; absence of a registered address	Medium
ILO-05	Physical and sexual violence	Use or threat of violence against the worker or their family	Law enforcement / GBV referral records cross-matched with interview case ID	Critical
ILO-06	Intimidation and threats	Threats of denunciation to authorities, deportation, or harm to family	Interview-form field: reported threats of reporting to authorities	High

ILO-07	Retention of identity documents	Employer holds passport, residence permit, or ID card	PDMM / PMM registration records showing no document in worker's possession	High
ILO-08	Withholding of wages	Wages not paid, delayed systematically, or paid to a third party	SGK declared wage vs. self-reported actual pay discrepancy	Medium
ILO-09	Debt bondage	Work demanded to repay a debt whose terms are unclear or unpayable	Interview-form field: self-reported recruitment/transport debt to employer or intermediary	Critical
ILO-10	Abusive working and living conditions	Degrading, hazardous, or inhumane conditions	Labour-inspection reports (MoLSS) linked to workplace ID	Medium
ILO-11	Excessive overtime	Hours far beyond legal or contractual limits, often involuntary	SGK-declared working hours vs. labour law thresholds	Low–Medium

Source: International Labour Organization. (2012).

Another study regarding the victim identification process is titled *"Improving Sex Trafficking Victim Identification: Indicators of Trafficking in Online Escort Ads,"* which utilized artificial intelligence in the victim identification process, examined over 250 indicators across 1,263 advertisements collected from various states. The research found that the concealment of contact information (via symbols), the use of trust-themed language ("professional"), and the implicit emphasis on youth were statistically significant risk factors for human trafficking. However, contrary to common assumption, it was observed that certain visual cues frequently accepted by law enforcement as signs of victimhood, such as "young-looking photographs" or "visible tattoos," were more prevalent in non-trafficking commercial sex ads. These findings provide an evidence-based, practical framework for more accurately directing operational resources toward cases with the highest probability of victimhood (Lugo-Graulich, ve diğerleri, 2024).

Another study in this area, conducted by Iglesias-Vergara (2025), using Latent Class Analysis (LCA), demonstrated that human trafficking victimization does not fit a single pattern and is highly heterogeneous. By categorizing victims' experiences along a "control intensity spectrum," the researcher identified distinct classes, such as high-control sexual exploitation and forced labor. These findings clearly demonstrate that victimization patterns vary by geographic context and that anti-trafficking programs should be tailored to these specific types of exploitation rather than standardized approaches (Iglesias-Vergara, 2025).

From a policy analysis perspective, the development and implementation of such a mechanism should be adapted to international legal standards, ethics and treaty obligations. This multi-phase model ensures not only functional and legal coherence but also need to align with international human rights norms.

CONCLUSION

This study aims to analyze systemic shortcomings in identifying victims of human trafficking and to propose a technology focused policy framework as a new alternative solution as decision support. The examination of the significant inconsistency between national data, particularly the low number of verified victims despite the high number of interviews conducted, provides empirical evidence that traditional, human-based identification methods are inadequate in understanding the complexity of this crime. The findings

indicate that the current reliance on subjective assessments by field personnel results in limited analysis and observation, leading to missed findings and inconsistent policy implementation., The integration of artificial intelligence and big data analytics is not merely a technological improvement but also a strategic necessity to ensure evidence-based policy making. Artificial intelligence models that process complex data sets, ranging from financial transactions to digital behavior patterns, offer a way to standardize risk indicators and reduce errors arising from manual detection. AI models are designed as decision support tools, not decision-making tools: they generate risk scores and supporting justifications, but determining victimization remains a human decision and is subject to judicial review. From this aspect, subjective judgment and limited inter-institutional coordination will contribute to the difficulties and inconsistencies in current identity verification practices through these methods. However, this transition requires careful ethical balance. Furthermore, efforts to prevent algorithmic bias and ensure data privacy must be supported by rigorous oversight. By incorporating AI-supported analyses such as "Affective Computing" or "Micro-expression Analysis" into existing policies, provided that international ethical concerns and norms are also taken into account, process tracking will become more efficient. In summary, the transition from subjective observation to AI-supported, objective analysis will bring national efforts to combat human trafficking into line with international standards and provide a more reliable, consistent, and rights-based protection mechanism for victims. Herein AI-supported anti-trafficking policies also should incorporate mandatory human oversight, regular bias audits, and explainable decision-making to ensure accountability and the ethical use of AI in victim identification.

Consequently; this study responds a conceptual framework for an evidence-based policy development process grounded in ethical artificial intelligence and big data analytics, moving beyond traditional subjective assessment approaches in the identification of human trafficking victims. In this respect, the study not only identifies existing problems but also provides a theoretical foundation for technology-supported policy models that could be implemented in the future. This policy recommendation is also highlights the growing importance of AI-assisted human trafficking detection by emphasizing both its potential and its associated risks. Adapting AI-supported assessment models to the identification of human trafficking an inherently complex domain characterized by significant detection challenges and the risk of subjective assessments through internationally recognized indicators can facilitate and strengthen victim identification processes. In particular, AI can generate substantial gains in terms of both time efficiency and cost-effectiveness through the analysis of financial transactions, travel patterns, and online linguistic indicators.

From another perspective, this study demonstrates that a technology-enabled model incorporating stakeholder participation, transparency mechanisms, and bias auditing from the outset can help address key challenges, including limited specialist capacity, weak inter-institutional data sharing, and the inconsistent application of victim identification indicators. At the same time, such an approach can mitigate the surveillance and human rights risks highlighted in international reports, thereby promoting a more effective, accountable, and rights-based victim identification framework.

Author Statement

Ethics Statement: *In this study, no data were collected from participants through surveys, interviews, focus groups, observations, experiments, or other qualitative research techniques. No experiments were conducted on humans or animals. The study fully complies with the Law on the Protection of Personal Data. As the corresponding author, I confirm that all co-authors have been informed regarding this declaration, and I hereby declare that this research does not require approval from an ethics committee.*

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