



## Information Technologies in Improving Crime Prevention Mechanisms in the Border Regions of Southern Ukraine

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### Abstract

The purpose of this study is theoretical and methodological substantiation, deepening of the conceptual provisions and development of the scientific and practical recommendations on the formation of mechanisms for crime prevention in the border regions of the southern of Ukraine. The relevance of this study is due to the need to solve the problem crime by introducing precautionary measures in the border regions of the southern of Ukraine (Bondarenko et al., 2021).The study proved the direct dependence of the level and intensity of crime on the proximity of areas to areas of significant social and criminological tension, to areas of instability and armed conflict, which contributes to the militarization of the population

and increasing psychological preparedness for conflict and its antisocial methods (Iatsyshyn et al., 2020). It is established that in the border regions of the south of Ukraine the growth of criminal crime for the studied period significantly exceeds the data for Ukraine.

The threats to irredentism and separatism, international terrorism, organized crime of a transnational global scale are real for the southern regions of Ukraine: economic smuggling, smuggling of weapons, ammunition and means of terror, drug trafficking, unregulated migration, trafficking in human beings and their organs.

Priorities for Ukraine have been set task of crime prevention: introduction of the newest technologies of protection of a law and order, attraction of scientific and industrial potential of regions, establishment of coordination and interaction between subjects of maintenance of frontier safety at all levels (frontier, national, interstate and international) and cross-border interaction with the international organizations of fight against organized crime.

Based on international experience, crime prevention measures in the border regions of southern Ukraine are proposed in the following areas: general social precautionary measures; special criminological precautions; international cooperation in the development of cross-border cooperation; introduction of automated security systems and crime prevention; informational and educational activities of formation legal culture among the population and the public.

**Keywords:** Information Technology; Crime; Crime Prevention; Border Regions of the South of Ukraine; Mechanisms.

## Introduction

Border regions of the southern of Ukraine - Mykolaiv, Odessa, Kherson regions are a separate integrated macro-region, which is characterized by: depressed development, weak development of the maritime complex, agrarian economy, suffering from hostilities in eastern of Ukraine and the annexation of Crimea (NISS, 2020). The armed aggression of the Russian Federation against the Ukraine and the loss of control in certain districts of the Donetsk and of the Luhansk oblasts intensified potential threats to the state sovereignty and territorial integrity of Ukraine.

Thus, the threats of irredentism and separatism, international terrorism (Bersten, 1990), organized crime (Laycock, 2010; Shvets, 2013), which has the character of a transnational global scale, are real for the southern regions of Ukraine (Van der Woude & Van Berlo, 2015): economic smuggling, smuggling of weapons, ammunition and means of terror, drug trafficking, unregulated migration, trafficking in human beings and their organs, etc.

Crime is the most pressing social problem (Hawkins, 2003) border regions of southern of Ukraine, which is actively developing through the diversification of criminal activity, the growth of its criminal professionalization, which is a real threat to national security (Schneider, 1992).

Such circumstances require the State Border Guard Service of Ukraine, subject to close cooperation with the subjects of border security, and law enforcement agencies to take a set of measures to combat all illegal manifestations in the border area. In the context of the reform of decentralization of the state system (Kuznetsov et al., 2020; Gontareva et al., 2020), active implementation of the latest standards of law enforcement, the focus of the fight against crime is transferred to the regional level (Holovaty, 2014; Sudomyr et al., 2020).

This requires additional attention from law enforcement agencies border regions of southern of Ukraine, as areas with the most favorable conditions for the illegal activities of criminal groups (Maltz, 1976) and increased criminal threat (Levi, 1998).

According to official statistics from the Ministry of Internal Affairs and the Prosecutor General's Office of Ukraine, the criminogenic situation has significantly deteriorated recent years. In the border regions of the southern of Ukraine, the intensity and severity of crime is growing. For example, in the territory of Odessa region it is noted growth of crime by 33%, for the Nikolaev area by +63%, for Kherson by +46% (for Ukraine this indicator makes on the average + 4%). Deterioration of the socio-criminological situation in the border regions of southern Ukraine need new approaches to preventing and combating crime (Bullock & Lister, 2014), actualizes the issue of improving the efficiency of law enforcement agencies (Scottish Government, 2009), search for the latest tools crime prevention in border regions.

Therefore, the need and non-alternative modernization of the law enforcement system has become relevant, especially with regard to mechanisms for preventing regional and cross-border crime. Thus, an urgency of the problem of the improving of the socio-criminological situation in the border regions of the southern of Ukraine on the basis of the crime prevention mechanisms led to the choice of research topic, defined its purpose and objectives.

The purpose is theoretical and methodological substantiation, deepening of conceptual provisions and development of scientific and practical recommendations on the formation of mechanisms for crime prevention in the border regions of the southern of Ukraine. The object of study is the process of forming mechanisms for crime prevention, taking into account the regional and cross-border specifics of the border regions of southern of Ukraine. The subject of research is a set of theoretical, organizational, methodological and practical provisions for the determination of crime in the formation of prevention mechanisms in border regions.

The main idea of the study is that the law enforcement system needs to be modernized on the basis of a systematic approach to the formation and qualitative changes in crime prevention

mechanisms in border regions. The condition for modernization of the law enforcement system is the integration of the principles of determining the phenomenon of crime in the design of security environment on the basis of crime prevention, use of special units and combating cross-border crime, exchange of experience in automation of border control, corruption, protection of territories and exclusive zone.

### **The essence of crime prevention in border regions**

The crime, according to Ukrainian law, is a criminal offense, that is socially dangerous type of act (action or omission) committed by the subject of a criminal offense. The legal basis for the onset of criminal liability is the presence in a socially dangerous act of a person signs of a crime under the relevant article Of the Criminal Code of Ukraine. The composition of the crime includes: the object of the crime, the objective side of the crime, the subject of the crime and the subjective side of the crime. The absence of at least one feature of the crime means the absence of a legal basis for criminal liability and subsequent punishment of the offender (Criminal Code).

Crime is a set of criminal offenses. According to the official data of criminal law statistics of criminal offenses, the International Classification of Crimes for statistical purposes distinguishes the following types of crimes: bodily harm, child abduction, sexual violence, sexual exploitation, robbery, car theft (illegal possession of a vehicle); corruption (bribery and other acts of corruption); smuggling of migrants (illegal smuggling of persons across the state border); arms and explosives trade; participation in an organized criminal group; terrorist financing (United Nations, 2017). Violent crimes include premeditated murder, rape, and intentional bodily harm (Uniform Crime Reporting). The latest structuring of crime (fraud, cybercrime) has resulted from the widespread use of Internet technologies and the rise of cybercrime (Cybercrime, 2019).

In Ukraine, a number of the provisions of the Criminal Code came into force in 2020, which introduce the concept of the "criminal offense" and provide for a significant increase in fines for a number of offenses. Depending on the severity, criminal offenses are divided into criminal offenses and crimes. A criminal offense is an act (action or omission) provided by the Criminal Code of Ukraine, for the commission of which the main punishment is a fine. Crimes will be divided into light, serious and especially serious.

- A non-serious crime is an act for which the main punishment is established up to five years of imprisonment, or a fine of up to ten thousand non-taxable minimum incomes.
- A serious crime is an act for which the main punishment is established up to ten years of imprisonment, or a fine of up to twenty-five thousand non-taxable minimum incomes.

- A particularly serious crime is an act for which it is established the main punishment is more than ten years of imprisonment, or a fine of more than twenty-five thousand non-taxable minimum incomes.

Border regions are characterized by cross-border crime, which is a type of transnational crime and embodies local (regional) criminal features. The Criminal Code of Ukraine distinguishes the following types of cross-border criminal offenses to assess the level of cross-border crime: Article 201 "Smuggling", Article 305 "Smuggling of drugs, their analogues or precursors", Article 332 "Illegal smuggling of persons across the state border of Ukraine", Article 334 "Violation of the rules of international flights", Article 332-1 "Violation of the order of entry into and exit from the temporarily occupied territory of Ukraine" (Criminal Code of Ukraine).

In scientific research on the phenomenon of crime in the region and its determination in heterogeneous territorial and spatial regional systems (Aliverti, 2014) distinguish the following specific regional features: highly urbanized regional environment (Chacón, 2009); industrial center, big city (Eagly, 2011); resort region, territorial cross-border systems (Black & Webber, 2010).

The state strategy of regional development of Ukraine for 2021 - 2027 identifies regions of special attention to national security:

- border areas in unfavorable conditions - territorial communities located near the border with states with which relations provide an additional level of state border security, restrictions on the movement of goods and people, which hinders the development of local economy and investment (Russian Federation, Transnistria, Moldova) within 30 kilometers of accessibility, or the demarcation line according to of the Law of Ukraine "About temporary measures for the period of carrying out anti-terrorist operation";
- temporarily occupied territories of Ukraine - parts of the territory of Ukraine temporarily occupied as a result of the armed aggression of the Russian Federation (Laws of Ukraine: "On Peculiarities of State Policy to Ensure State Sovereignty of Ukraine in the Temporarily Occupied Territories in Donetsk and Luhansk Oblasts"; "On Ensuring the Rights and Freedoms of Citizens and the Legal Regime in the Temporarily Occupied Territory of Ukraine"). The situation in such areas is characterized as a humanitarian catastrophe.

According to international experience, the legislative regulation of border areas applies to regions similar in geographical, natural, socio-economic and cultural characteristics of municipalities, in which part of the administrative border of at least one of the subjects coincides with part of the state border (Black & Webber, 2010; Mitsilegas, 2015).

One of the components of the state policy to combat crime is criminological policy, which is a

scientifically sound strategy and tactics to prevent crime through a system of special criminological measures, as well as ways to prevent specific crimes and stop them.

## Methodology

To achieve the goal of this study, a system of general and special methods and approaches was used, a set of approaches to criminological research in particular: general, general scientific, interdisciplinary and special research methods. The search for mechanisms to prevent crime in the border regions of the southern of Ukraine includes the following stages and components of the study (Figure 1).

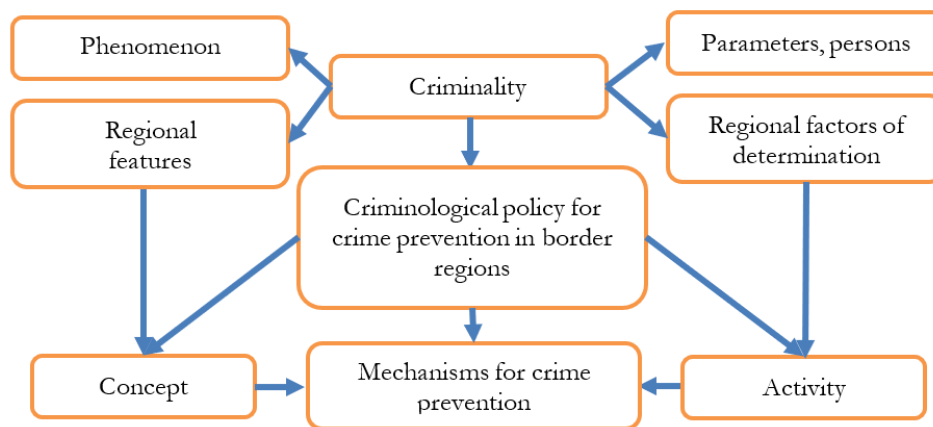


Figure 1. Structural and logical scheme of the study

Within the application of the systems approach, preference was given to methods of analysis and synthesis, in particular, comparative analysis (Tromp et al., 2002). The application of methods of induction and deduction, abstraction, formalization and concretization, as well as expert evaluation will help to ensure the optimal solution of research problems.

## Results

### 1. Characteristics of crime in the border regions of the southern of Ukraine

The border regions of the south of Ukraine (Mykolayiv, Odesa, Kherson regions) have undergone significant transformations over the last 5 years. The result of the armed aggression of the Russian Federation against Ukraine and the temporary occupation of part of its territory was a dissonance in the development of territories, which can be described as determinants of crime in the border regions of southern of Ukraine:

- significant gap in the levels of development of the regions of Ukraine, high number and unresolved problems of refugees and displaced persons from Donbass and the Autonomous Republic of Crimea;

- insufficient fortification for criminal penetration of borders, increased interest in them by cross-border criminal structures;
- prevalence of weapons, drugs, psychotropic substances;
- formation of cross-border and interregional organized criminal groups;
- mass outflow of able-bodied population and capital from the territories adjacent to the temporarily occupied and high population density;
- increasing the migration burden of the regions as a result of forced internal displacement of the population - high saturation of the regions with persons who have previously been convicted of serious and especially serious crimes;
- increase of business and investment risks in the territories remote from the zone of deterrence and repulse of the armed aggression of the Russian Federation;
- strengthening of criminogenic threats on the territory of border regions;
- deterioration of cross-border cooperation in combating crime.

According to the average indicators of criminal involvement - Odessa, Mykolaiv and Kherson regions are in the same criminological group with pronounced tendencies of deterioration of the criminogenic situation. According to the Unified Report of the Prosecutor General's Office of Ukraine on criminal offenses, the level and dynamics of registered cross-border crime in the border regions of southern Ukraine for the period 2014-2018 are presented in Figure 2.

As can be seen from the above data, the largest percentage of cross-border crime in the border regions of the southern of Ukraine falls on the smuggling of drugs, their analogues or precursors.

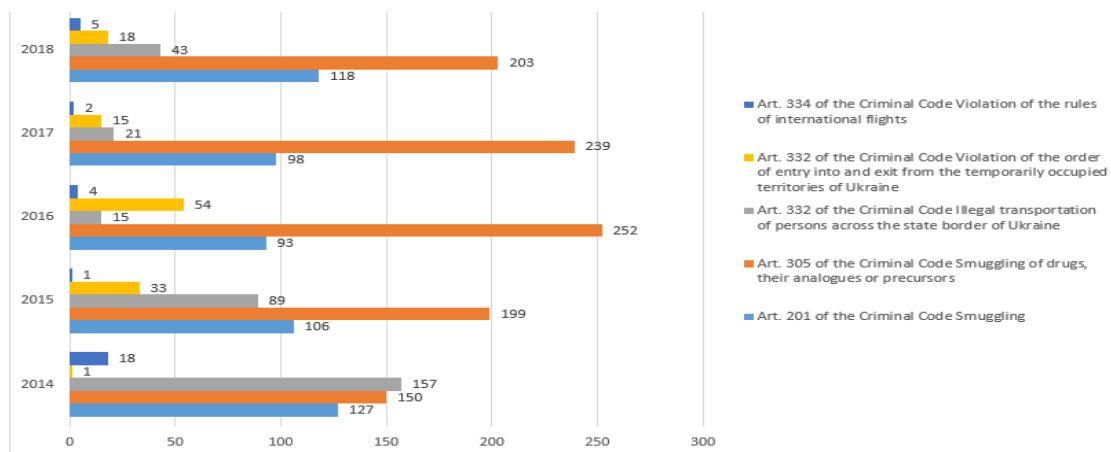


Figure 2. Dynamics of cross-border crime in the border regions of the southern of Ukraine for the period 2014-2018 (Statistical information of the Prosecutor General's Office of Ukraine)

The negative trend is growing. Thus, in early 2019, Ukrainian law enforcement agencies seized more than a ton of drugs (760 kg of heroin, 258 kg of cocaine, 10 kg of psychotropic substance PVP, 5 kg of amphetamine and 5 kg of methamphetamine, 4.4 kg of phenylnitropropene).

That is, it is necessary to strengthen measures to combat the smuggling of narcotic drugs, psychotropic substances and precursors across the state border of Ukraine.

The problem is the illegal crossing of the state border. For example, in 2018, the State Border Guard Service of Ukraine detained 1,006 people for using forged documents. Also, 3270 illegal migrants were found and detained when crossing the state border. In 2018, the number of illegal migrants increased by a third compared to 2017 (State Border Guard Service of Ukraine, 2018). In addition, 668 firearms and 22,612 pieces of ammunition, about 60 kg of explosives were found. In 2018 alone, 9 organized criminal groups were identified and closed down, including 20 people involved in human trafficking. Only for the first quarter of 2019, units of the State Border Guard Service of Ukraine together with interacting bodies terminated the operation of 8 illegal groups (29 people, 14 organizers, 6 accomplices). The courts passed 3 convictions, initiated 20 criminal proceedings under Art. 149 of the Criminal Code of Ukraine "Trafficking in human beings or other illegal transfer agreement." At the same time, the export of 26 potential victims of human trafficking, mostly women, was prevented. Data on criminal crime in the border regions of southern Ukraine, compared to data on Ukraine, are shown in Figure 3. According to official data, in the border regions of the southern of Ukraine, the growth of criminal crime during the study period significantly exceeds the data for Ukraine. If across of Ukraine from 2012 to 2017 the crime rate increased by +4%, in the Odessa region these indicators made +33%, in the Kherson region +46%, in the Mykolaiv area crime increased by +63%.

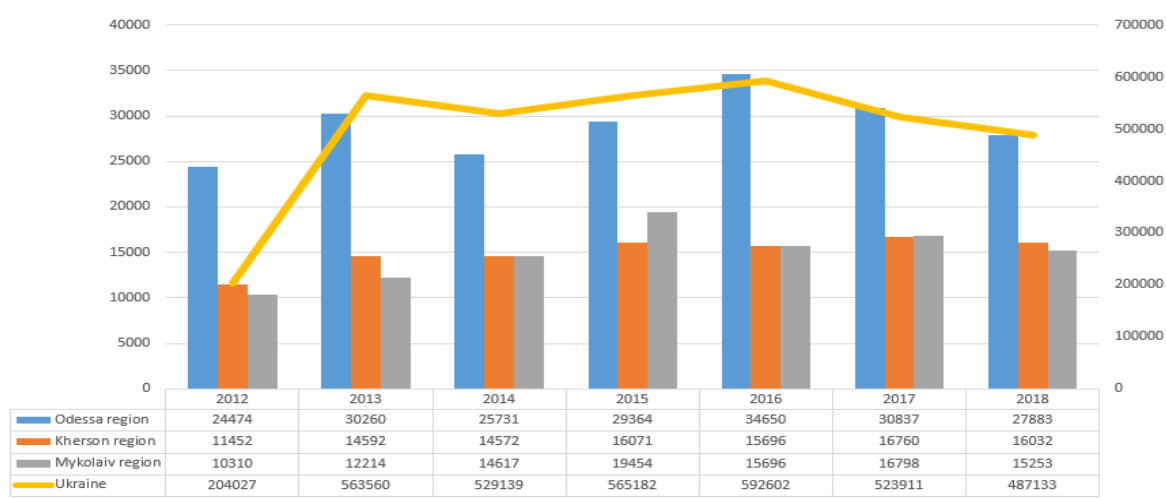


Figure 3. Dynamics of criminal crime in the border regions of southern Ukraine, 2012-2018 (Statistical information of the Prosecutor General's Office of Ukraine)



In border regions of Ukraine every tenth crime from all crime across Ukraine is fixed (Odessa region - 5,84%; Mykolaiv - 2,65%; Kherson - 2,64%). The dynamics of crime intensity per 100 thousand population is negative (Figure 4).

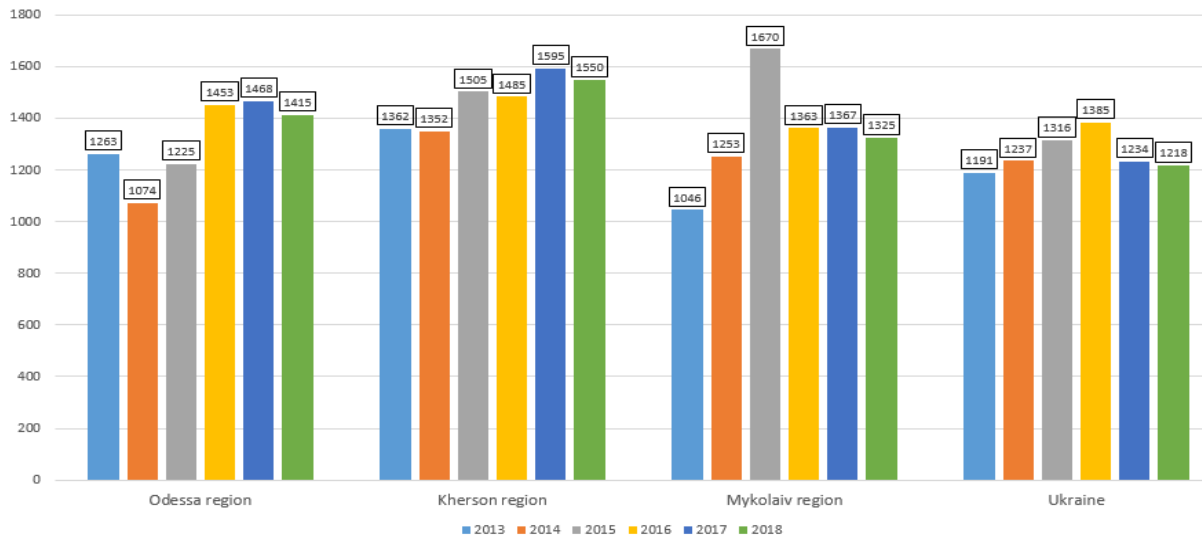


Figure 4. Crime intensity per 100 thousand population in the border regions of southern Ukraine, 2013-2018  
(Statistical information of the Prosecutor General's Office of Ukraine)

The data of the analysis indicate increase in intensity of the crime more than on third: in the Mykolaiv area +66%; in the Odessa region +33%; in the Kherson region +49%, which is much higher than the average Ukrainian indicators (+11%).

Moreover, there is a high correlation between the intensity of the crime and the size of the settlement - the highest crime is typical for large regional cities and towns. This, of course, is due to the concentration of criminal elements, the ease of communication, the development of professionalism in criminal groups, a large number of unregistered weapons and more. At the same time, the analysis of regional development programs in the border regions of Ukraine showed insufficient attention to the development of cross-border cooperation in crime prevention. So it needs special attention and revision of the system of strategic priorities of the border regions of Ukraine with detailing the development of cross-border cooperation in all areas in order to further preserve these priorities in the draft implementation plans.

Thus, the border regions of the southern of Ukraine, compared to other regions, have their own territorial differences in the crime rates, while reflecting the national negative trends in the crime growth. With a significant increase in the level of crime, there is a significant decrease in the level of crime detection and prosecution of perpetrators, which leads to the awareness of criminal persons of possible impunity for committing crimes. The law enforcement agencies are characterized by a decrease in the ability to control the criminogenic situation in the country and its regions, especially in terms of the preventive measures. In recent years, there has been a

decrease in the preventive effect on crime by law enforcement agencies. Thus, the border regions of the southern of Ukraine have a special criminological significance, due to:

- import of crime - due to the proximity of territories to areas of significant social and criminological tension;
- imposition of crime - through borders with buffer zones, areas of instability and armed conflict;
- the spread of crime - through the militarization of the population and increased psychological readiness for conflict;
- the prevalence of crime - due to the attractiveness of border areas (seaports, transport system, tourist flows, etc.).

Thus, this instability requires special attention from society and the leadership of law enforcement agencies to the border regions of southern Ukraine.

## **2. Measures and mechanisms to prevent Crime in the border Regions of the southern of Ukraine**

In a hybrid war, systematic cyberattacks from the sides intelligence services with a groups of hackers controlled by them, complicate the conditions for crime prevention in the border regions of the southern of Ukraine.

Crime prevention is a targeted influence and efforts of the certain subjects on the specific criminogenic objects, which in conjunction with other factors (determinants) are able to create phenomena that cause crime, criminal motivation and behavior. Measures to prevent crime activate anti-criminogenic factors, under the influence of which there is a gradual elimination of the determinants of crime and prevention (reduction) of their criminal manifestations.

The priority tasks are the introduction of the latest technologies of law enforcement (Bondarenko et al., 2020) and crime prevention, involvement of scientific and production potential of the regions of Ukraine, coordination and interaction between the subjects of border security at all levels (border, national, interstate and international) and cross-border cooperation (Lisakafu, 2018) with international organizations in the fight against organized crime (Begma et al., 2019).

The criminological policy to prevent crime in border areas should be a unity:

- the state concept of combating crime, which is expressed in the relevant directives;

- a special type of activity of the state, its bodies, the public, aimed at effectively combating crime as a social phenomenon and its individual varieties.

The state concept of combating crime is reflected in the strategy of crime prevention. National and regional strategies are being developed.

As international experience shows, the strategy of crime prevention considers, including the latest technologies, taking into account modern challenges and technologicalization of the criminal environment. For example, the UK experience - the Modern Crime Prevention Strategy - contains a section Using Data and Technology to Prevent Crime (Babenko et al., 2019). Here are allocated to prevent crime technology: mapping criminologically significant information; analysis of digital images online; use of cloud technologies to collect, analyze and store operational information from the public about crimes committed; monitoring of information in social networks; using the Internet of Things. There is a UK cyber security community to ensure national security, increase resilience to cyber threats, protect critical national infrastructure, criminal intelligence and prevention of organized crime. The main directions of police development: technological re-equipment, training of employees, close cooperation, partnership with the public on crime prevention, maximum use of the Internet to improve communication between the police and the public. Regional crime prevention strategies have been developed, such as Cambridge for 2016-2020 (UK). It is planned to create Digital Policing. Regional crime prevention strategies have been developed, such as Cambridge for 2016-2020 (UK). It is planned to create the Digital Policing. Regional crime prevention strategies have been developed, such as the Cambridge for 2016-2020 (UK). It is planned to create the Digital Policing.

Another example is the Crime Prevention Strategy in the Czech Republic (2016–2020), which highlights the latest threats of crime in the virtual environment - Crime in the virtual environment. The main measures to prevent crime are:

- 1) direct prevention of cybercrime - dissemination of information about existing risks and opportunities to protect, assist and support victims of crime on the Internet;
- 2) expanding the range of Internet technologies to prevent crime.

The Ottawa Crime Prevention Strategy (Canada) (2017–2020) provides for systematic monitoring (online surveys) of the state of crime - for prompt response and implementation of adequate precautionary measures. The New South Wales Crime Prevention Strategy (Australia) (2015–2017) provided for citizens to send online crime reports via mobile phones, tablets, etc. Citizens were asked to register, fill out a questionnaire, and receive a report on theft, robbery, fraud, and so on.

Measures to prevent crime in the border regions of the southern of Ukraine can be divided into the following main areas:

- general social precautionary measures: the formation of a positive criminological situation and a balanced regional border criminological policy: solving macro- and microeconomic problems of territories and populations; development of economic sectors; reduction of disparities in the development of border regions; providing all citizens with equal opportunities for socio-economic development; establishing effective cross-border socio-economic cooperation;
- special criminological precautionary measures: formation of coordinated cooperation of all bodies and structures of crime prevention, advanced training and organizational and informational support of law enforcement officers, introduction of systematic monitoring of the criminogenic environment;
- international cooperation in the development of cross-border cooperation: conducting international operations to prevent the involvement of Ukrainian citizens in illegal operations with illegal migrants - preventing the use of the territory of our state for the illegal transit of migrants; formation of joint operational and investigative groups, which would include representatives of various agencies; establishment of an interdepartmental regional analytical group to regularly assess the risks and threats associated with cross-border crime;
- introduction of automated security and crime prevention systems in cities, introduction of digital technologies, using international experience in crime prevention. For example, the Smart Safe City system - for automated management of the safety of the local community, protection of critical infrastructure, protection of public order (Safe Cities Index 2019). The European Crime Prevention Network (EUCPN) has been established in European countries. For example, the Safe Prague Online system (Czech Republic): created to protect the people of Prague, especially children and adolescents, from crimes related to the use of the Internet. Such a system helps prevent crime, increases the level of public communication with the police online. In Estonia, the Internet Constable allows the police to prevent crime. The project was to create virtual police stations on popular web portals to help fight cybercrime and juvenile delinquency; prevention of victimization; used for targeted campaigns, lectures and consultations on crime prevention;
- informational and educational activities for the formation of legal culture among the population and the public. For example, the annual conference of European experts, presenting their projects using the Internet to prevent crime.

Comprehensive application of dedicated mechanisms and implementation of crime prevention measures should be prescribed in a specific regional program and implemented in a planned manner, adequate to modern challenges.

## Conclusion

In this study the main aspects of the formation of mechanisms for crime prevention in the border regions of the southern of Ukraine are considered. The main components of crime prevention in the border regions are considered, the main patterns and key problems of counteracting crime prevention measures in the border regions of the south of Ukraine are highlighted. It is established that the border regions of the south of Ukraine are attractive for criminal structures due to the presence of seaports, developed transport system, large tourist flows. The study proved the existence of a direct dependence of the level and intensity of crime on the proximity of territories to areas of significant social and criminological tension, to areas of instability and armed conflict, which contributes to the militarization of the population and the growth of psychological readiness for conflict and its resolution by antisocial methods. The analysis found that in the border regions of the southern of Ukraine, the growth of crime during the study period significantly exceeds the data for Ukraine.

It is established npriority for Ukraine tasks to prevent crime: introduction of the latest technologies of law enforcement, attraction of scientific and production potential of the regions of Ukraine, establishment of coordination and interaction between subjects of border security at all levels (border, national, interstate and international) and cross-border interaction with international organizations. organized crime. Based on international experience, crime prevention measures in the border regions of southern Ukraine are proposed in the following areas: general social precautionary measures (to create a safe environment); special criminological precautionary measures (regulation of the integrity of cooperation of all bodies and structures of crime prevention);international cooperation in the development of cross-border cooperation (for the exchange of experience, cooperation, monitoring);introduction of automated security systems and crime prevention (for automated security management of the territorial community, protection of critical infrastructure, protection of public order); informational and educational activities of formationlegal culture among the population and the public (to create conditions for cooperation between law enforcement agencies and the public).

The formation of a safe environment in the border regions of the southern of Ukraine in the context of digital transformation of society - the direction of further research.

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