The use of digital technologies in criminalistic training of subjects of crime investigation

Krasnenko Yu.V.
Putilin Belgorod Law Institute of Ministry of the Interior of Russia
Belgorod, Russian Federation
8236@list.ru

Abstract — **Recently essential attention is paid to development of modern and innovative forms of human activity. These processes belong also to law enforcement activity which efficiency not only influences normal activity of society and state, but also provides sustainable development of the Russian economy in the conditions of the changing market conditions. The research objective consists in consideration of the directions of improvement of a system of criminalistic training of the students and the acting law enforcement officers who are carrying out activities for investigation of crimes. It is reached by means of introduction and application in educational process of modern digital technologies. In work general scientific and specific scientific methods, in particular sociological character were used. The author analysed materials of 118 criminal cases on investigation of thefts in which use of the special criminalistic technique mastered during the period of study. The method of questioning interviewed 216 respondents from 16 divisions of territorial authorities of internal affairs among which 103 investigator officer, 43 interrogating officer, 36 operative officer, 34 forensic expert. Surveys of 104 students of the Putilin Belgorod Law Institute of Ministry of the Interior of Russia were conducted. In the context of the concept of development of the higher education of Russia directed to informatization and digitalization of educational activity in article the characteristic features of criminalistic training and factors contributing to its development are considered, some aspects organizational and an educational methodological support of educational process, use by students of opportunities of online courses and distance learning, possession of digital technologies in daily activity and investigative practice, obtaining professional skills on use of the modern criminalistic technique and databases.**

Keywords — criminalistics, digital technologies, criminalistic activity, criminalistic training.

I. INTRODUCTION

The widespread use and implementation of digital technologies considerably defines vectors of development of modern society. The traditional public relations arising in various industries and spheres of action move towards information and telecommunication technologies. Changes occur in health care, education, energetics, transport, service trade and other directions. According to the annual «Report on information technology development» provided by the World Economic Forum, the Russian Federation holds the 38th place of rating of global competitiveness from 137 countries. [1]

At the same time indicators of our state for the last years show stable growth.

These trends have contributed to the approval on a national level of the «Digital Economy of the Russian Federation» Program which sets the following tasks in the fields of education and personnel training:

1) creation of key conditions for personal training of digital economy;

2) improving the education system which should provide digital economy with competent personnels;

3) development of labor market which should be based on the requirements of digital economy;

4) creation of a system of motivation on development of necessary competences and participation of personnel in development of digital economy of Russia [2].

Therefore development and introduction of the new technologies of education directed to a requirements satisfaction of society and state in qualified personnel is of great importance at digitalization of economy. Today in all spheres of action experts who have certain skills of use of digital technologies are required. Respectively there is a transformation of an education system connected with modernization and improvement of educational process.

With the introduction of the Federal law «About Police» dated 07.02.2011 №. 3-FZ (the edition of 03.08.2018) created some new directions its activity in the field of achievements of science and technology. So, according to provisions of article 11 of this law «the police in the activity are obliged to use achievements of science and technology, information systems, communication networks and also modern information and communication infrastructure» [3]. Considerably it belongs also to criminalistic training of students and the acting subjects of crime investigation.

Professional criminalistic training of law enforcement officers, is caused by the fact that now the criminalistic possesses as generalized, and highly specialized information from the theory and practice of disclosure and investigation of crimes. Herewith, criminalistics created comprehensively worked complex of the opportunities promoting preparation of educational and methodical literature, necessary for teachers, and, respectively, well stated training materials for subjects of criminalistic activity. This activity is of great importance in the long term of receiving the literate and competent specialist who owns modern criminalistic methods, means and recommendations, and having ability competently to apply them in investigative practice.

Questions of development of criminalistic training of law enforcement officers in the works were considered by such domestic scientists-criminalists as N.P. Yablokov [4], V.Ya. Koldin [5], A.F. Volynsky [6], E.P. Ishchenko, N.V. Kruchinina [7], E.R. Rossinskaya [8], etc. Among foreign scientists dealt with this problem Michael L. Birzer [9], Michael J. Palmiotto [10], Peter C. Kratkoski and Dilip K. Das [11], etc.

In scientific and methodical literature rather much attention is paid to various aspects of use of information and digital technologies in educational process. Among the representatives of the Russian scientific community that affect this topic should be highlighted V.V. Grinshkun [12], M.P. Lapchik [13], Yu.A. Prozorova [14], etc.

Thus, today there is a large variety of scientific works of domestic and foreign scientists which are directed to studying of separate aspects: digitalization of education, use in training of modern technical and criminalistic means, development of professional skills of subjects of disclosure and investigation of crimes. However, in interrelation criminalistic training, digital education and digital technologies till today were not considered, as defined the choice of a subject of a research.

II. RESEARCH METHODOLOGY

Obtaining empirical data is based on the strategy of a methodological triangulation according to which quantitative (diagnostic) techniques and qualitative (observation, a conversation) methods were used. Processing of results of a research was carried out by means of methods of mathematical statistics. For the purpose of considering the features of the subject of research by the author the following work is done:

Quantitative data are obtained in the analysis of results of interviewing of 216 law enforcement officers from 16 territorial divisions of the law enforcement bodies of the Russian Federation which are directly carrying out criminalistic activity. The survey of this category of employees was conducted during the period from 2016 to 2018 for the purpose of determination of level of their criminalistic training and identification of circumstances which promote increase in efficiency at investigation of crimes.

Also results of questioning and the spoken discussions led with 104 cadets of the third and fourth courses of the Putilin Belgorod Law Institute of Ministry of the Interior of Russia were used. During questioning by the student it was offered to choose digital competences which, according to them, need most to be seized in the course of criminalistic training for increase in efficiency of the activity directed to investigation of crimes.

Materials of 118 criminal cases on investigation of thefts of money, including from the cash cards made in the territory of the following territorial subjects of the Russian Federation are considered: Belgorod, Volgograd, Pskov, Saratov regions and Komi Republic.

After the analysis of results of a research of criminal cases of this category they were divided into two groups: thefts of money and theft of money from cash cards. As a result of

questioning data on use of the «Papilon» system are obtained

and published during the work with traces of hands of the person and drawing up a subjective portrait of the criminal.

III. RESULTS OF A RESEARCH

The organization of criminalistic training of students taking into account education digitalization.

Let's consider opinion of the acting police officers on circumstances which promote improvement of efficiency and quality of investigation of crimes. The results of interviewing this category are given in figure 1.
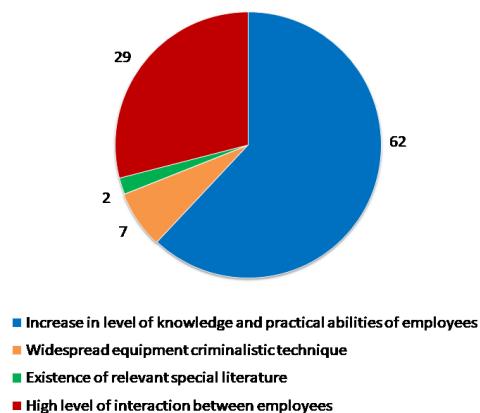

Fig. 1. Circumstances which promote improvement of efficiency and quality of crime investigation, %

Follows from the provided data that subjects of crime investigation as the most important circumstance influencing criminalistic activity allocate increase in level of knowledge and practical abilities of employees (62%). Criminalistic training which headed for general digitalization in recent years directly belongs to this direction also.

The analysis of results of survey conducted among students shows that among the digital competences acquired within criminalistic training the most relevant is use of modern technologies in official activity (fig. 2).
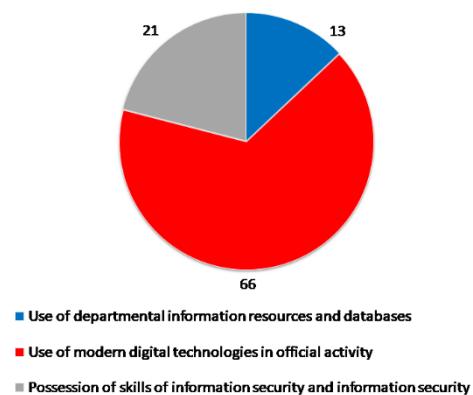

Fig. 2. Relevance of the digital competences received in the system of criminalistic preparation, %

Indicators in figure 2 demonstrate that 66% of students adhere to this position. It is connected with the fact that training of future specialists is directed to disclosure and investigation of general crimes. At the same time in the system of Ministry

of the Interior of Russia there are educational institutions which main profile is directed to training of specialists in the sphere of information security. So, in the Voronezh institute of Ministry of the Interior of Russia at department of criminalistics, the automated information systems of law-enforcement bodies, information and communication systems and technologies, train for information security specialists of this profile [15].

As a result of spoken poll of cadets of the Putilin Belgorod Law Institute of Ministry of the Interior of Russia, the vast majority of respondents (100%), expressed support for the mixed form of education which represents integration of «traditional» and «innovative» education. Including it belongs to use of opportunities of specially developed software, e.g. «virtual inspection of the scene», «the designer of the scene», «the virtual criminalistic polygon», etc.

The introduction of online education

According to the State program of the Russian Federation «Development of education» for 2018-2025 [16], an ambitious but quite achievable task was set for mass introduction of online education characterized by tenfold increase till 2025 in the number (fig. 3) which were trained remotely was put.
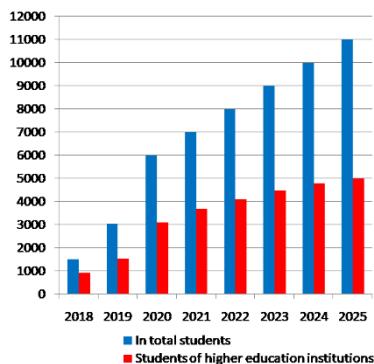

Fig. 3. The prospects of development of online education in the Russian Federation, thousand of people.

Follows from the results given in figure 3 that the state made the decision considerably to increase possibilities of online learning. The author assumes that in this way in the educational system of the Russian Federation the mixed form of education directed to training of the modern and competent specialist who owns and skillfully applies in practice the capabilities of rapidly developing digital technologies.

Use in the course of learning of the special criminalistic technique

At implementation of criminalistic training of subjects of disclosure and investigation of crimes much attention is paid to a practical side of learning. So, one of the main aspects of professional criminalistic training of subjects of crime investigation is the ability to use the modern criminalistic technique in investigative practice. It concerns introduction in educational process of information technologies and software and hardware solutions, modern systems of remote access, maintaining dactyloscopic massifs by means of scanners, the special software.

Let's estimate use indicators in investigative practice of opportunities of the «Papilon» system which was used for diagnostic and identification research on the traces of hands (fig. 4) found and withdrawn from the crime scene.
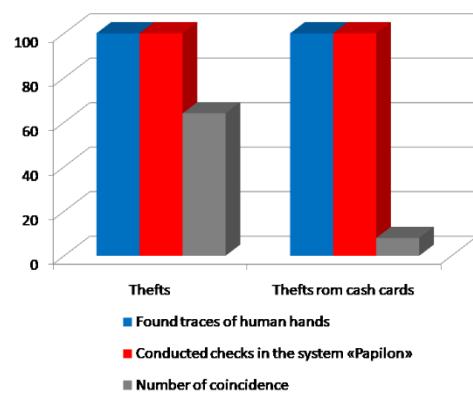

Fig. 4. Indicators of use of the «Papilon» system, %

The highest share of coincidence characterizes criminal cases on investigation of thefts (64%) because these crimes are generally committed by repeatedly previously convicted citizens whose dactyloscopic cards in the wake of hands are already available in the information database. However, indicators of work of a system with traces of hands, at investigation of thefts from cash cards considerably concede to classical types of plunders (8%) by the number of coincidence. It is connected with the large flow of people passing through ATMs and to their actions in gloves. Rather seldom, but it is possible to find traces of their hands directly on the most cash card after its detection.

One more direction attracting genuine interest of the digital technologies students in the system of criminalistic training with use is drawing up subjective portraits of offenders. The author defined indicators of this activity aimed at finding the criminals who made the category of crimes considered by us.
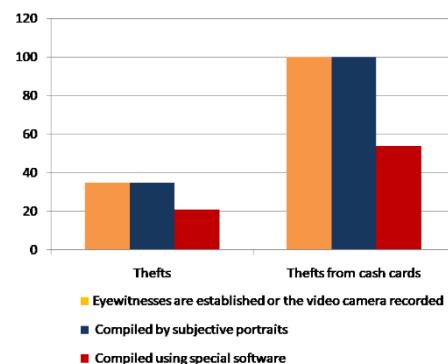

Fig. 5. Indicators of drawing up subjective portraits of criminals, %

The results given on figure 5 demonstrate that at investigation of usual thefts the smallest number of witnesses or fixings from video cameras (35%) is established that does not allow to create subjective portraits. It is connected with high latency of this type of crime and preliminary preparation for its commission.

At theft of money from cash cards in 100% of cases there is a video fixing of criminals and drawing up subjective portraits for their search, and 54% of portraits are compiled using special software. However, criminals in most cases act in evening or night time, at the same time in the various ways hide appearance, imitate gait unusual for them, a mimicry that complicates identification process. In such situations the route

of movement of malefactors is established and records from surveillance cameras of third parties are looked through.

IV. DISSCUSSION

According to the author, an important component of the effective implementation of digital technologies in the criminalistic training directed to increase in level of knowledge and practical skills of employees is increase in digital competences of teachers. Teaching activity in the 21st century, certainly, endures high-quality changes therefore we will allocate some vectors of development of its digital transformation:

1) Understanding of modern digital reality and competent orientation in it;

2) Ability to effectively implement digital technologies in professional activity;

3) Ability to carry out search and the analysis of relevant information sources;

4) The organization of remote cooperation with colleagues for the solution of professional tasks [17].

The modern teacher needs to be able to find a common language with the students who well are guided in the information and telecommunication environment and often use various gadgets and devices.

The analysis of the research results shows that majority of students consider the mixed training the most suitable form of development professional skills in the course of criminalistic training. According to E.V. Kostina the mixed training is understood as the system of learning or teaching which combines the most effective aspects and important advantages of conducting occupations in audience and interactive (distance) learning which interact among themselves and form a whole [18]. Herewith among advantages of this approach it is possible to note immersion of students in the center of educational process, increase in personal responsibility for results of the activity, emergence in them of communicative and digital competences [19].

At implementation of criminalistic training positively proved interaction of law enforcement higher education institutions of the Russian Federation [20] and the Republic of Kazakhstan [21] with limited liability company «Fundamental Analysis Systems» which developed and helped to introduce the virtual educational and methodical complexes representing special programs «The situational designer in educational process: Virtual inspection of the scene», «Virtual search», etc.

These tools allow to create interactive 3D models and scenes which imitate various places of incidents or a search (e.g., apartment, garage, underground passage, subway car, etc.). The interactivity of scenes allows to explore the territory and objects in real time and free movement therefore students not passively watch virtual space, and take active part in a concrete situation. Herewith they get advice from the teacher, perform various tasks, get and improve skills of work with the criminalistic technique and tools, carry out recording and fixing of a situation [22].

Thus, implementation of digital technologies in the higher education system promotes more intensive mastering of material, improvement of quality of tutoring and leadership.

However, achievements in this sphere cannot provide personal and communication relationship between the teacher and students which is formed at occupations in a class [23]. Therefore the mixed form of education most promotes increase in efficiency of educational process as allows is mutually advantageous to integrate classroom, interactive and distance learning.

Currently, in the Russian Federation the large-scale actions directed to increase in amount of the information technologies students when using are planned. In educational institutions of Ministry of the Interior of Russia there are Portals of distance learning which function within the internal electronic information and education environment. The police officers who are learned in these higher education institutions can find on the job the materials interesting them on academic disciplines and solve the tasks placed there.

As for online training, we will note experience of the United States of America and India. At the Academy of Forensic Science of the Volmer Institute of Southern California on a gratuitous and paid basis it is possible to get access to passing of the online courses directed to improvement of forensic and criminalistic training of students [24]. In the city of Delhi the Sherlock Institute of Forensic Sciences (SIFS) which was created in 2006 functions and carries out online courses on criminalistics and forensics examination, e.g. on a research of digital criminalistics, dactyloscopic and handwriting examination [25].

In our country such online courses can also be found in an open entry, but often they are presented by fragments from lectures and a practical training of scientists-criminalists, actually without implying feedback. The user is not able to directly ask the teacher the interesting question online.

It should be noted, practice of interaction between the educational organizations with use of information and telecommunication technologies became quite habitual now that promotes internationalization of educational and scientific activity, exchange of theoretical knowledge and practical experience. This direction opens before educational institutions new opportunities concerning methods of training, openness and access to education, joint research activity [26].

The presented opportunities distance and online learning have an impact on efficiency of counteraction crime in the conditions of formation of digital economy. Development of technical support of law enforcement agencies, training of highly qualified specialists, the international exchange of experience and information is connected with it [27].

So, in connection with development of digital technologies in various areas of human activity, considerable improvement is occurring in official activity of subjects of crime investigation. Before use of the criminalistic technique in investigation, it is initially necessary to train the literate and competent specialist [28].

Specialist training should be carried out comprehensively. Theoretical knowledge of the device and the specifics of the criminalistic technique and the software have to be followed by obtaining practical skills of work with specific technique.

As an example, we will give the domestic automated dactyloscopic information system «Papilon» which positively proved which active introduction began after 2010. The

Volgograd Academy of Ministry of the Interior of Russia in which educational laboratories since the end of 2011 application in educational process of the multifunctional dactyloscopic station «Papilon MDS 40c» began acted as one of founders of training in work with this system. On this polygon complex, besides students of academy, professional skills on work with this system got as law enforcement officers from the Volgograd region, and the neighboring regions (Astrakhan, Krasnodar regions, the Republic of Kalmykia, etc.) [29]. Herewith this system, besides identification of the person in the wake of hands, allows to establish participation of the person in earlier committed crimes and to unite the crimes committed by one person.

Also criminalistic training with use of digital technologies means obtaining professional skills on use of special hardware and software to obtain and research criminalistic significant information. It is possible to refer use of the automated information retrieval system of identification of the personality according to the image of the person or the system of the operational visual analysis to them «SOVA», system «Portrait-Search» and system «Portrait+». At acquaintance with work of these systems students receive skills of drawing up subjective portraits of the searched persons on signs of appearance, search of the criminal in the available images and so on. As a result the program provides an array of images which are most similar to the searched object.

given on figure 5 demonstrate that at investigation of usual thefts the smallest number of witnesses or fixings from video cameras (35%) is established that does not allow to create subjective portraits. It is connected with high latency of this type of crime and preliminary preparation for its commission.

At theft of money from cash cards in 100% of cases there is a video fixing of criminals and drawing up subjective portraits for their search, and 54% of portraits are compiled using special software. However, criminals in most cases act in evening or night time, at the same time in the various ways hide appearance, imitate gait unusual for them, a mimicry that complicates identification process. In such situations the route of movement of malefactors is established and records from surveillance cameras of third parties are looked through.

V. CONCLUSION

Thus, in this article the author considered some aspects of criminalistic training of subjects of crime investigation with use of opportunities of digital technologies. Results of the conducted researches characterize not only the current state of this activity, but also feature of use of its opportunities in disclosure and investigation of specific types of crimes. According to the author, it is necessary to carry to the main directions of development of a system of criminalistic training:

– improvement of quality of the organization of educational process taking into account education digitalization (training and retraining of teachers, expansion of the mixed form of education);

– introduction in educational activity of online courses and distance learning;

– implementation of complex theoretical and practical training for use of the special criminalistic technique on the basis of digital technologies.

The received results can be used by educational institutions and structural divisions of law enforcement agencies for a formulation of the directions of development of criminalistic training of subjects of crime investigation and also the scientists and researchers occupied with studying of aspects of digital education and counteraction of crime in the conditions of development of digital economy.

References

[1] Website of the World Economic Forum. [Electronic resource] URL: https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018/

[2] The state program "Digital economy of the Russian Federation" (it is approved by the Order of the Government of the Russian Federation of June 28, 2017 No. 1632-r).

[3] The Federal law of 07.02.2011 № 3-FZ (an edition of 03.08.2018) "About police" (with amendment and additional from 30.12.2018)

[4] Yablokov N.P. "Some problems of criminalistics in the light of today," Izvestiya Tula State University. Economy and jurisprudence, No. 4-2, 2013, pp. 137-141.

[5] Koldin V.Ya. "Pressing issues of methodology of criminalistics and forensic science," Theory and Practice of Forensic Science, No. 1 (21), 2011, pp. 12-18.

[6] Volynsky A.F. "Criminalistic maintenance disclosure and investigation of crimes," – M. : The Moscow University of the Ministry of Internal Affairs of the Russian Federation named V.Ya. Kikotya, 2016, 196 p.

[7] Ishchenko E.P., Kruchinina N.V. "On the role of criminalistics in the system of higher legal," Courier of the Kutafin Moscow State Law University (MSAL), No. 5 (33), 2017, pp. 28-36.

[8] Rossinskaya E. R. "Problems of modern criminalistics and direction of its development," Forensic expert, No. 1, 2013, pp. 2-6.

[9] Michael L. Birzer "The theory of andragogy applied to police training," Policing: An International Journal of Police Strategies & Management, No. 26, 2003, pp. 29 – 42.

[10] "Criminal Investigation," / edited by Michael J. Palmiotto, University Press of America, 2004, 349 p.Sfd

[11] "Police education and training in a global society," / edited by Peter C. Kratkoski and Dilip K. Das., Lexington books, 2007, 433 p.

[12] Grinshkun V.V. "Characteristics and consequences of the open educational resources and massive open online courses using in Russian universities," RUDN Journal of Informatization in Education, Vol. 15, No. 3, 2018, pp. 247-270.

[13] Lapchik M. P. "Preparation of pedagogical personnel in the conditions of informatization in education," / M : BINOM. Laboratory of knowledge, 2013, 186 p.

[14] Prozorova Yu.A. "Formation of the content of training teachers in the development and functioning of the information-subject invironment communication," The Human capital, No. 6 (66), 2014, pp. 125-132.

[15] Website of the Voronezh institute of Ministry of the Interior of Russia [Electronic resource] of URL: https://vi.ministryofinternalaffairs.rf/institute/Struktura_vimvd/kafedri/

[16] State program "Development of education" (edition of 22.01.2019) (Resolution of the Government of the Russian Federation of December 26, 2017 No. 1642)

[17] Hnatyshyn E.V., Salamatov A.A. "Digitalization and formation of digital culture: social and educational aspects," Herald of Chelyabinsk State Pedagogical University, No. 8, 2017, pp. 19-24.

[18] Kostina E.V. "Model of the mixed training (blended learning) and its use in teaching foreign languages," News of Higher Schools. Series Humanities, Vol.1. No. 2, 2010, pp. 141-144.

[19] Grigoriev S. G., Andryushkova O.V. "The combined learning as result of convergence in the conditions of education informatization," Informatics and education, No. 2 (281), 2017, pp. 23-27.

[20] Elinsky V.I. Ashimov F.M. "Virtual inspection of the scene — an innovative method of increase in professional skill of investigators," The Russian investigator, No. 4, 2013, pp. 6-8.

[21] Mediyev R.A., Lagutkin O.Yu. "Reconstruction of the scene (3d witness)," Bulletin of academy of law enforcement agencies, No. 2 (8), 2018, pp. 33-39.

[22] Ionova E.V. "Some aspects of the methodology of teaching criminalistic disciplines," E.V. Ionova, M.V. Savelyeva, A.B. Smushkin, Russian Journal of Criminology, Vol. 12, No. 2, 2018, pp. 247-257.

[23] Interview with professor of the Higher business school of Paris Pierre Dussauge [Electronic resource] URL: https://execed.hec.edu/en/news-resources/news/the-impact-of-digitalization-on-higher-education/

[24] Website of Academy of Forensic Science of the Volmer Institute of Southern California [Electronic resource] URL: https://forensictrainingunlimited.teachable.com/

[25] Website of Sherlock Institute of Forensic Sciences (SIFS) [Electronic resource] URL: https://www.sifs.in/index.php/

[26] Mentsiyev A.U. "Influence of digital technologies on traditional education and modern society", Messenger of modern researches, No. 6.1 (21), 2018, pp. 159-161.

[27] Sukhodolov A.P. "Issues of counteracting crimes in the sphere of digital economy," A.P. Sukhodolov, L.A. Kolpakova, B.A. Spasennikov, Russian Journal of Criminology, Vol. 11, No. 2, 2017, pp. 258-267.

[28] Meshcheryakov V. A. "Features of the special knowledge used in digital criminalistics" // Izvestiya Tula State University. Economic and jurisprudence, No. 4-2, 2013, pp. 87-92.

[29] Latyshov I.V. "Preparation of future forensic experts for using information technologies in professional activities," Forensic examination: Research-to-Practice Journal, Volgograd: Volgograd Academy of the Ministry of Interior of Russia, No. 4 (28), 2011, pp. 130-133.