TOOLS FOR ANALYZING DEVELOPMENT OF THREATS TO THE SOCIO-ECONOMIC SYSTEM "CITY"

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Abstract. Purpose of the paper *is to justify the choice of tools for analyzing development of a threat to a socio-economic system "city" and to disclose features of such development.*

Methodology. *Choice of tools for analyzing development of threats to the socio-economic system "city" is based on constructs of a framework of threats to the socio-economic system "city" analyzing that is developed by authors. Such constructs are the form and the instrument of scientific knowledge of a nature, a character, a probability and implementation conditions of threats to the city in a system of theoretical and methodological knowledge of meso-level economic security studies.*

Results. *Proposed tools for analyzing development of threats to the socio-economic system "city" are based on principles of the process approach. Absence of any technology of using the process approach in the study of any social relations phenomenon necessitated forming the framework concerning the technology of using the process approach in analyzing development of threats to the socio-economic system "city" and substantiating expediency of choosing appropriate tools.*

A S-shaped curve is chosen as a tool for analyzing development of threats to the socio-economic system "city". Such curve has certain advantages comparing with other tools of the process approach. Application of the S-shaped curve in analyzing development of threats to the socio-economic system "city" required structuring the threat development process with the description of the content and features of every defined stage.

Practical implications. *The sequence of analyzing development of threats to the socio-economic system "city" using the S-shaped curve should be carried out according to the developed algorithm. Actions for each block of built algorithm are described in detail. It is proposed to generalize and to formalize results of analyzing development of threats to the socio-economic system "city" in a threat map. Such threat map is not only a way to summarize results of analyzing development of threats. It allows making a picture of complex of threats to a city, which are relevant at a specific moment of time.*

Value / originality. *Obtained results shape the directions of analyzing joint simultaneous development of several threats to the socio-economic system "city". The set of threats to the socio-economic system "city", each of which is at a certain stage in its development, makes a system that functions on the principles of self-organization. Such self-organization is manifested in a constant uncontrolled shift of this system from some state to another one due to constant dynamics of threats development. Development processes of the each threat in the mentioned system to the socio-economic system "city" are non-linear, unstable, in some cases — irreversible. Constant regular and irregular fluctuations are observed in their development. Therefore, one can find reasons to suggest that there are arguments for using a synergistic approach while analyzing the entire set of threats to the socio-economic system "city".*

Key words: *socio-economic system "city", socio-economic security, threat, development, analyzing, tools.*

JEL Classification: *R13*

1. Introduction

View of any object of socio-economic security (including cities) from the position of the protective approach includes not only identifying threats to the system, defining their character and predicting consequences of their implementation, but also includes studying a process of a threat development.

Threats to the socio-economic system "city", as well as to other objects, do not emerge suddenly, immediately and unexpectedly. Under certain conditions, any threat to the socio-economic system "city" first occurs, further it can be identified, then the threat is implemented and, if there is no security activity by the city authorities, the threat becomes to be institutionalized.

A threat to the socio-economic system "city" is considered as processes and phenomena occurring in its external and internal environment that, under a certain combination of conditions and circumstances in functioning of such system, are capable to cause changes of negative character, different localization and scale in such system. Consequences of these changes worsen this system's state up to its changing, impair effectiveness of its functioning and limit abilities of system development. Such changes in the system also do not occur suddenly, immediately and unexpectedly: they also begin under certain conditions, then they begin to be activated (to spread and to deepen) with different speed. Further only in case of absence of resistance actions such changes become stable.

If negative changes in the socio-economic system "city" only occur, they obtain some form and expression, become noticeable and begin to make an impact on processes within the system or on state of its elements, but such changes have not yet acquired a stable character, then one should recognize a process of threat development that has been passing, however that has not been finished.

In case if negative changes in the socio-economic system "city" not only have occurred, but they have become stable, as it is testified with their perception by almost all elements of the system and their adaptation to these changes, then one should consider results of process of threat developing as its practically completed implementation.

It is considered that appropriate tools are necessary to analyze development of threats to the socio-economic system "city". Such tools include a set of methods, methodological techniques and analytical operations that objectify the ideology of some approach of economic security studies, from the positions of which socio-economic security of the city is studied.

2. Used methodology of research

Tools for analyzing development of threats to the socio-economic system "city" are the result of operationalizing constructs of such analyzing framework that are made by authors.

The framework of analyzing development of threats to the socio-economic system "city" is a form and an instrument of scientific knowledge of the nature, the character, the probability and conditions of implementation of threats to the city in the system of theoretical and methodological knowledge at the meso level of economic security studies.

The specified framework contains some constructs, which are interconnected in a unified system. Such framework is built, using following concepts:

post-neoclassical principles of scientific knowledge organization, including methodological pluralism as the main one;

a category "development" and its dual nature (development as a process and development as a result of the process);

postulates of the process approach;

imperatives of protective (threat, risk, danger) and harmonization (economic interest, balance of economic interests) approaches in economic security studies.

Considered constructs in total make a system of logical formations. Such logical formations allow identifying the development stage for any threat to the socio-economic system "city", estimating its character, scale and sources of origin, analyzing development and predicting consequences of its implementation to some extent. In total such logical formations allow analyzing processes that are not directly observed and objectively measured, despite such processes objectively exist at the same time.

3. Results

3.1. Basic provisions of using the process approach in analyzing development of threats to the socio-economic system "city"

Within boundaries of the process approach, development of threats to the socio-economic system "city" is considered in two ways: as, in fact, a process and as a result of such process.

The process of developing threats to the socio-economic system "city" is a consistent change in a state of this system and its qualities that is determined by certain regularities (sometimes unknown or incompletely known).

In the process of developing threats to the socio-economic system "city", each of its subsequent states is qualitatively different (worse) than the previous one due to negative changes occurring in the system under the influence of some combination of conditions and circumstances within the system and its environment.

The process of developing threats to the socio-economic system "city" can be considered as a complete one in case of one of two conditions:

there were changes in the system that caused to changes in its quality (worsening the system state): it is full and complete implementation of the threat;

changes in the system did not occur or they are so insignificant that they did not cause to a qualitative transformation of the system; the process of threat implementation was interrupted due to security activities (at the level of a city, a region or a state) or due to processes and phenomena that do not depend on decisions made and implemented in public administrating (independent objective circumstances).

It is considered that process of developing threats to the socio-economic system "city" can be:

uncontrollable, in which changes in the system's state occur chaotically, without any visible sequence and purpose; such changes are random, they are unsecured with necessary resources, but despite these features, their implementation causes to worsening the system's state during some time; such system's state is quite difficult to be predicted;

partially controlled, in which changes in the system's state are predictable to some extent; these changes are opposed by conscious, interconnected, consistent, directed in a some way, resource-provided and appropriately organized security actions, which are carried out in order to prevent negative changes in the system's state. Of course, even security activities by the city government, which are organized in an appropriate way, may not always be effective due to a number of reasons.

If security measures are not implemented, in other words, if the process of developing threats to the socio-economic system "city" is not influenced by available means, then threats develop chaotically, unsystematically, and the result of threats' development is unpredictable, including in terms of time. If city authorities implement security activities that are intended to destroy the existing combination of conditions and circumstances within the system and its environment, or to break the trend of their formation, there are reasons to expect a reduction of negative by the scale and consequences changes in the socio-economic system "city", in other words to expect, as a maximum, some strengthening the socio-economic security of the city (or, at least, its non-weakening).

3.2. Tools for using the process approach while analyzing development of threats to the socio-economic system "city"

Development of threats to the socio-economic system "city" is a process, however analyzing such process takes place at a specific moment in time. Therefore, using statistical modeling and dynamic processes forecasting is appropriate for such analyzing.

As it is correct for a lot of dynamic processes, the saturation effect exists for development of threats to the socio-economic system "city". Its manifestation is the following: with increasing the scale and intensity of negative changes in the socio-economic system "city" due to implementation of the threat, its marginal danger (a kind of analogue of "marginal utility" notion) decreases due to the complete or still ongoing institutionalization of changes in the socio-economic economic system "city", due to which one ceases to perceive the threat as a threat.

A general S-shaped curve (sigmoid curve) was chosen to provide the obvious representation of developing threats to the socio-economic system "city" from the class of curves used in the practice of statistical modeling of processes with a saturation effect [1,2,3]. This choice is made because of the following reasons.

The S-shaped curve (logistic curve or life cycle curve) is often used while predicting some process or behavior of a certain object. Using S-shaped curve allows detecting the dependence of the process on time.

Universal recognition of the logistic curve as a tool for development analysis is confirmed by its widely usage in studying processes, a course of which is influenced by limiting (restraint) factors of internal and external environment.

The S-shaped curve is almost an ideal tool for analyzing development of threats to the socio-economic system "city", because of the following reasons:

such curve describes a general form of threat's development trajectory clearly and conveniently;

the S-shaped curve formalizes a complex dynamics of this process graphically, because any threat is not a static phenomenon, it constantly changes over time, so any threat develops;

the considered curve allows structuring the threat development process by identifying certain stages, at each of which consequences of the threat development acquire a qualitatively new character;

it provides an opportunity to identify the possible limits of stages of the threat development and the speed of approaching these limits. This fact creates the general grounds for predicting shifts from the one stage to further one, at each of which consequences of the threat development acquire a qualitatively new character;

the S-shaped curve creates justifications for identifying signs of the threat's closeness to borders of stages, with each new one of which changes in the socio-economic system "city" become radicalized;

the considered curve allows combining stages of a process of the threat development into a united phenomenon simultaneously with the structuring of the threat development in order to make a whole picture of this process beginning with formation of the threat and finalizing with its institutionalization (saturation).

The process of development of threats to the socio-economic system "city" is graphically presented at fig. 1, using the S-shaped curve according to relevant stages. Development of the threat at this figure has a general character, according to a general form and features of the S-shaped curve. Such fact means that course of the process is considered under the condition of absence of any influence on the threat development to stop or to slow it down.

The beginning and the end of every stage at the fig. 1 are marked as T_n, E_n means the stage of threat's development.

Using the S-shaped curve in analyzing development of the threat to the socio-economic system "city" required the following activities:

structuring the threat development process;

disclosure of each stage content

identifying symptoms of each stage.

These activities can be relatively easily made in the retrospective analyzing development of the threat to the socio-economic system "city". Results of such analyzing have been accumulating. They make some kind of analytical bank, the data of which can be used in the predictive analysis of the threat's development.

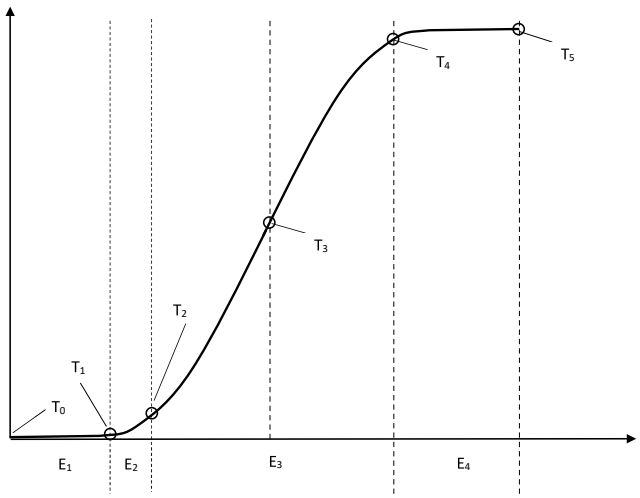

Fig. 1. The process of development of a threat to the socio-economic system "city"
Developed by authors using [4,5,6]

Predictive analyzing development of threats to the socio-economic system "city" is much more difficult by complexity of making, uncertainty of results and probability of errors. One should use the method of extrapolation very carefully and correctly in predictive analyzing. This means the necessity to take into account some conditions: the threat development is not an inertial process; regularities that existed in the past will unlikely exist in the future; the processes and phenomena that determined threats in the past under certain conditions, would no longer make a threat to the city in the future in the absence of such conditions (the same conditions also remain unchanged).

A schematic diagram of the process of developing a threat to an enterprise's activity using a S-shaped curve is considered in [6]. However, considered in [6] explanations concerning structuring of the threat development process have a schematic character, they describe the vectors of a new research direction in micro-level economic security studies — analyzing the threats development to the enterprise's activity — in a general form. Such explanations need to be clarified, concretized and specified according to the researched kind of security — socio-economic one — and its object — a city.

We are of the opinion that it is necessary to suggest other stages in the process of development of threats to the socio-economic system "city". Accordingly, the content and features of each of the defined stages will also be different. Such content and features are the framework of analyzing development of threats to the socio-economic system "city". Results of such analyzing by each stage determine tasks of security activities by the city authorities essentially and serve as starting points for its organization.

3.3. Stages of development of threats to the socio-economic system "city"

Stages of development of threats to the socio-economic system "city" according to the suggested structure of the process in accordance with fig. 1 and features of stages are described in table 1.

Concerning development of threats to the socio-economic system "city" according to defined stages, it is advisable to note the following.

The shift in development of threats to the socio-economic system "city" from some stage to another one does not occur automatically, it depends on influence of a number of factors, divided into catalysts (which are speeding up the shift) and inhibitors (which are slowing down the shift). Such factors can emerge spontaneously, moreover they can emerge due to actions or decisions by certain authorities (international or state institutions or regional administration bodies). That is why shift of the threat development from some stage to another one can happen quickly or, on the contrary, slowly. In general, the threat development may stop at some stage and it will not recover in the future under certain circumstances (for example, attenuation of processes or disappearance of phenomena due to reasons in external and internal environment of the system). The situation when the apparently stopped development of the threat resumes under the influence of certain factors is also possible.

Shift of the threat from some stage of development to another one happens with varying intensity and visibility degrees. Thus, the threat shift from the first stage of development to the second one is generally "painless" for the city, threats can still be identified only by specialists in social and economic security.

Table 1

Stages of development of the threat to the socio-economic system «city»

Threat development stages	Content of the stages	Symptoms of the stages
1. Emergence of premises for a threat formation (T0 - T1)	Appearance of new processes and phenomena in external and internal environment of the system or transformation of existing processes and phenomena, due to which they acquire a new quality	Visibility of new processes and phenomena in external and internal environment of the system or transformation of existing ones in the form of attention to them by state officials and city authorities Acquiring a systematic nature by single processes and phenomena

2. Forming the threat (T1 - T2)	Formation (or existence) of conditions within the system causing transformation of noticeable processes and phenomena in external and internal environment of the "city" system into a threat to the city	Ability to identify processes and phenomena in external and internal environment of the «city» system as threats to the city due to presence of conditions within the system that can become catalysts for a such transformation
3. Implementation of the threat		
3.1. First phase of implementation (T2 - T3)	Emergence of single negative changes that are not interrelated to each other in some elements of the socio-economic system «city». Such negative changes are not stable, that is why they can be eliminated (all of them, most of them or the most harmful changes). Lack of resistance to negative changes with the negative nature forms premises for the further degradation of the system «city»	Appearance of separate, unrelated, noticeable changes in the socio-economic system "city" — in state of its elements and their connections. Resistance to negative changes allows eliminating them
3.2 Second phase of implementation (T3 – T4)	Emergence of a significant number of negative changes that acquire systemic and stable character in some element of the socio-economic system «city» or emergence of negative changes with systemic and stable character in several elements of the system «city» that in general creates premises for transforming the system, its conversion into system of a different quality	Noticeable mass negative changes in elements of the system «city». Resistance to negative changes, as a rule, no longer allows restoring previous state of the system «city»
4. Institutionalization of the threat (T4 - T5)	Emerged negative changes in the socio-economic system «city» are gradually but steadily consolidated. They become stable in a form of building and implementing new norms, rules, statuses and roles in the system, ordering and formalizing new connections and relations of elements at the system «city». This causes to deterioration of the system «city» and reduces its ability to function in the direction of meeting the public needs of the city	Clarity and widespread using of new norms, rules, connections and relations in the system «city» There are widespread active attempts to adapt elements of the socio-economic system «city» to stable negative changes in it Lack of negative perception of new norms, rules, connections and relationships in the «city» system

Suggested by authors

At the second phase of the third stage the number of negative changes becomes significant, they become noticeable and begin to acquire systemic and stable character. If security activities by the city authorities are either not carried out, or they are unsystematic and inactive and, as a result, ineffective, there is a risk of turning a threat to the city into a danger. If some threat with the possibility of turning into a danger does not become the subject of security activities by the city authorities (or they have insufficient competence), then further implementation of the threat becomes a danger for the "city" system. That is because negative changes have been becoming strengthened, they turn into a kind of norm that causes the qualitative transformation of this system — its deterioration.

Development of threats has certain features at each stage. Manifestation of such features is characterized by symptoms of the stage. Symptoms of each defined stage of the threat development process are not only a characteristic of the stage, they do not only allow identifying the stage of the process. They can be used in attempts to define the duration of each stage of development, that is important in analyzing a local threat. After all, threats to the socio-economic system "city" always exist, they are sufficiently numerous and they are at different stages of their development. Therefore, the symptoms of each stage of threat development serve as a kind of tool to localize of threats in the researched process, despite the fact that they have qualitative nature, and therefore there is a subjective factor while evaluating their existence. Degree of influence for such subjective factor is determined by interests of the evaluators. With the usage of considered tool, it becomes possible to define the stage of the threat development and, accordingly, its nature — potential or real threat, the threat that has been forming or the threat that has been implementing.

3.4. Algorithm for analyzing development of the threat to the socio-economic system "city"

Considered stages of the threat development were used as the basis to build an algorithm of analyzing development of the threat to the socio-economic system "city" (Fig. 2).

Analyzing begins with a survey of processes, situations and phenomena in external and internal environment of the system (block 1). Such survey should cause to a clear view of processes, situations and phenomena, trends and stages of their development — such trends emerge and therefore they are visible only for specialists, such trends have become widespread or develop dynamically etc.

Actions in block 2 of the analyzing algorithm are aimed at identifying conditions within the system under which processes and phenomena in external and internal environment of the system can turn into a threat to the city. If such conditions or a high probability of their occurrence are detected, then there are reasons to identify processes, situations, phenomena or actions of certain bodies (state or international, etc.) in external and internal environment of the system as a threat to the social economic system “city” (block 3). If there are no conditions within the system for transforming of processes, situations or phenomena into external and internal environment of the system, then such processes, situations or phenomena can be considered as neutral, in other words they should not be considered as threats to the system at least at the time of analyzing.

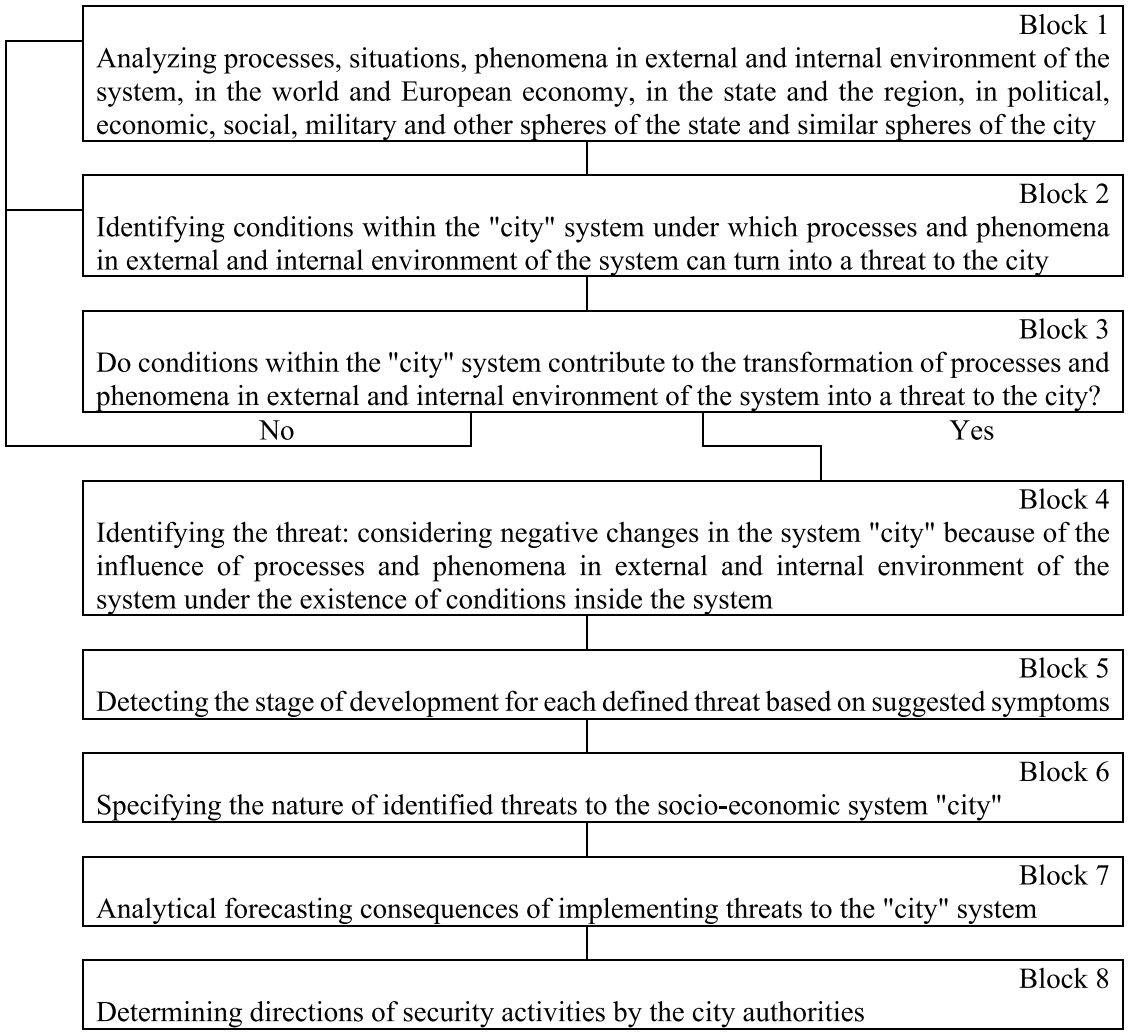

Fig. 2. Algorithm for analyzing development of a threat to the socio-economic system «city»

Developed by authors.

Actions in blocks 1 and 2 of the analyzing algorithm should be performed regularly, with a certain periodicity. Results of such actions make the basis for effectiveness of the analysis and provide reliability of its conclusions.

Threats to the socio-economic system “city” are identified in block 4, basing on the results of a joint studying processes, situations and phenomena in external and internal environment of the system (block 1) and identifying conditions within the system under which they can turn into a threat to the city (block 2).

After identifying threats in block 5 of the analyzing algorithm, it is necessary to define the stage of

development for each of the detected threats using the symptoms considered in the table 1. It is clear that such symptoms can have different forms of manifestation for a particular city.

Defining the stage of development for the each of identified threats is very important in analyzing, because the character of threats at each of their development stages is largely determined by vectors of security activities by the city authorities, the kinds of necessary resources and their amount. Thus, if, according to analysts, the threat is at the second stage (points T1 - T2), then while analyzing its development, one should pay the main attention to identifying changes (real and potential) in the socio-economic system "city". In this case while analyzing security activities by the city authorities an analyst should take into account formation of countermeasures against such changes or their prevention. It is a completely different matter if, according to the analysts, the threat is at the fourth and the last stage (points T4 - T5). In this case efforts to counteract the final institutionalization of negative changes in the socio-economic system "city" are necessary in security activities by the city authorities. Unfortunately, in some cases, local authorities have neither power nor resources in such a situation.

A description of detected threats to the socio-economic system "city" should be given in block 6 of the algorithm for analyzing development of the threat to the socio-economic system "city":

by probability of realization — real and potential;

by source of occurrence — internal and external;

by origin — subjectless (which are occurring spontaneously) and subjective (created by a certain subject, although sometimes without special intention);

by scale — systemic (which are covering all or most elements of the system) and local (which are relating to a single element of the system).

As it is mentioned in [7] correctly, a detailed cataloging of threats does not have a practical sense, because internal and external environment of the socio-economic system "city" constantly changes the character and content of such threats.

Thus, some threat that was identified as potential, can become the real one in some period of time (sometimes very short). Therefore, the city government must have a clear view concerning the character of threats to the city and the development stage of each of them, an ability to make an impact on their development basing on available resources and competencies. Moreover, the city government must prepare for negative changes in the city in case of full or partial realization of the threat.

Threats to the city at the 2nd stage of development may be both real and potential. It is clear that threats to the city at the 3rd stage of development are real, as it is evidenced by changes in the socio-economic system "city" that are especially noticeable at the second phase of this stage. Therefore, analytical forecasting of consequences of the threat's implementation should be carried out in block 7 of the threat development analyzing algorithm especially for such threats to the city. Its results should also be used in defining directions of security activities by the city government (block 8 of the analyzing algorithm).

Content of analyzing development of the threat to the socio-economic system "city" according to stages of the suggested algorithm, its results and tasks of security activities by the city authorities that are caused by these results are considered in table 2 in a generalized form.

Table 2

Analyzing development of the threat to the socio-economic system «city»

Stages of threat development	Result of the analyzing stage (The point Tn on a S-shaped curve)	Tasks of security activities by the city authorities
1. Emergence of premises for the threat's formation	Point T1 Identification of stable processes and phenomena in external and internal environment of the system and conditions within the system under which identified processes and phenomena can turn into a threat to the city Probability assessments for transformation of stable processes and phenomena in external and internal environment of the system into a threat to the city Assessments of city authorities' power of influence on processes and phenomena in external and internal environment of the system, which can turn into a threat to the city under certain conditions Assessments of probability of eliminating conditions within the system, under which identified processes and phenomena can turn into a threat to the city	Dividing processes and phenomena in external and internal environment of the system and conditions that contribute to formation of threats to the city into controlled and uncontrolled Choosing means of influencing the controlled conditions within the system that contribute to forming threats to the city Organizing influence on controlled conditions within the system that contribute to forming threats to the city

2. Formation of threats	Point T2 Identification of real threats, their character, speed and intensity of implementation, evaluating consequences of implementation Forming a list of real threats, identifying their relationship and mutual influence, as well as consequences of simultaneous implementation Completing a map of threats to the system «city»	Identifying threats' character, assessing probability, speed and intensity of their implementation, interrelationship and mutual influence, forecasting dynamics of threats' joint development, determining consequences of threats' implementation Forming scenarios for inhibiting threats development and preventing consequences of their implementation
3. Implementation of threats		
3.1. first phase of implementation	Point T3 Isolated and non-systemic negative changes in some elements of the socio-economic system «city» have already become obvious Forecasting consequences of implementation of both singe threats separately and their aggregate in total	Developing and implementing actions to eliminate individual and non-systemic negative changes in some elements of the socio-economic system "city", including with the aim of counteracting their avalanche-like and chain nature
3.2 second phase of implementation	Point T4 Identified and systematized multiple negative changes in one or more elements of the socio-economic system "city" Description (quantitative or qualitative) of deteriorating the socio-economic system "city"	Developing, implementing and controlling program (plan) of actions to eliminate multiple negative changes in one or more elements of the socio-economic system «city» with the aim of returning its state to the previous one (as a minimum task) or improving its state (as a maximum task)
4. Institutionalization of the threat	Point T5 Identified negative changes in the socio-economic system "city" types of behavior Identified new informal or formal institutions, kinds of behavior of the system elements and new relations between them that are determined by these institutions Evaluations of decreasing the ability of the socio-economic system "city" to perform functions with the aim to meet public needs of the city, which determine purpose of the system	Assessing performance of functions to meet public needs of the city by the system «city» Identifying weaknesses and gaps in performing mentioned functions Developing scenarios for improving state of the socio-economic system «city» Choosing the scenario that meets conditions within the city and in its external environment mostly

Developed by authors based on [6]

To generalize and to formalize results of analyzing development of threats to the socio-economic system "city", it is advisable to draw up a map of threats at a certain moment of time with its periodic revision, additions and clarifications.

The map of threats to the socio-economic system "city" is not only a way to summarize results of analyzing development of threats, such map allows getting a view concerning the complex of threats to the city that are relevant at a specific moment of time. Combining considered threats in the map of threats to the socio-economic system "city" provides an opportunity to build a systematic view on them, to define threats that have been already a danger to the city, to assess the consequences of threats' development. All of mentioned implications allow defining the main directions of security activities by the city authorities and resources that are necessary for their implementation.

4. Conclusions

There are no universal threats, which are actual for every city. Threats to any specific city are unique. Threats to the specific city depend on its status, size, previous development dynamics, kind and "age" of the city, its development economic basis and its orientation, ecological situation.

Today, the set of characteristics to describe the city is expanded with its location on the map of Ukraine and the measure of destruction during the resistance to russian aggression.

Consequences of threat implementation to the city are, in fact, those negative changes in the socio-economic system "city", the presence of which interferes with full performing functions of the system "city" at the first stages of threats' implementation, and contributes to the transformation of the system "city" and its transition to a lower quality state at later stages of threats' implementation.

The suggested toolkit for analyzing development of threats to the socio-economic system "city" is based on principles of the process approach. That is because threats to the socio-economic system "city" do not occur suddenly, immediately and unexpectedly. Any threat to the socio-economic system "city" first occurs under certain conditions, further it can be identified, then it is implemented and, if there is no security activity in the city, such threat is institutionalized.

The complete technology of using the process approach in studying any phenomenon in social relations just as the appropriate algorithm, which implements such technology, do not exist. That fact necessitated forming the framework concerning the technology of using the process approach in analyzing development of threats to the socio-economic system "city", and justifying expediency of choosing appropriate tools. It is considered that mentioned tools include a set of methodological techniques and analytical operations that objectify approaches of economic security studies and special methods, which are adopted from other scientific systems and are combined into algorithms of analytical actions.

A S-shaped curve is chosen as the tool for analyzing development of threats to the socio-economic system "city". It is shown that the S-shaped curve has some advantages over other tools of the process approach. Using the S-shaped curve while analyzing development of the threat to the socio-economic system "city" required structuring of the process of the threat development, describing content and symptoms of each stage. Signs of each stage of threat development are considered as a threat localization tool in the researching process, despite the fact that they have qualitative character.

The sequence of analyzing development of threats to the socio-economic system "city" using the S-shaped curve should be carried out according to the developed algorithm, the actions for each block of which are described in detail. It is suggested to generalize and to formalize results of analyzing development of threats to the socio-economic system "city" in the form of a map of threats. Such map is drawn at a certain moment of time. In the future it will be revised, supplemented and clarified periodically. The map of threats is not only a way to summarize results of analyzing threats' development, it allows making a view concerning the complex of threats to the city, which are relevant at a specific moment in time.

If one analyzes development of a single threat with the suggested algorithm, it is not difficult to perform actions of all the algorithm blocks for a sufficiently qualified specialist. But one of the problems in analyzing development of threats to the city is taking into account simultaneous development of several threats that are at different stages of their development and which have different characteristics. As a rule, a single threat to the socio-economic system exists only theoretically, as an object of research. Usually, several threats do not only exist, but they are also implemented simultaneously.

The problem is exacerbated by the ambiguity of relationship between threats' development. The interaction character for threats to the socio-economic system "city" is variable: for example, development of some threat can accelerate development of another one, lead to increasing the number of negative changes in the system and their size. But for some other threat its development can, on the contrary, inhibit development of another threat and reduce the number and scale of negative changes in the system. In the same way, individual threats to the system "city" can develop completely autonomously, in other words in the absence of connection with other threats' development.

Joint development of threats to the socio-economic system "city" has a chaotic form, it is characterized by complexity, nonlinearity, stochasticity and chaos nature, thus, it is described using terminology of synergetic.

A set of threats to the socio-economic system "city", each of which is at a certain stage in its development, forms a system that functions according to principles of self-organization. That is manifested in a constant uncontrolled shift of such system from its current state to another one due to permanent dynamics of threats' development.

It is shown that development processes for each threat to the socio-economic system "city" are non-linear, unstable, in some cases they are irreversible. There are constant regular and irregular fluctuations observed in their development. Therefore, there are reasons to assert that while analyzing the whole set of threats to the socio-economic system "city" one should use a synergistic approach. Such approach is widely used in studying systems of any origin that function according to the principles of self-organization, "the essence of which explains the self-sufficient shift of the system from a less ordered state to a more ordered one" [8].

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