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CONDITIONS FOR SUSTAINABILITY OF BUSINESS ASSOCIATIONS

Abstract. *The development of business associations at the present stage requires sustainability in a rapidly changing external environment. Business associations belong to economic systems that are advisable to consider from the standpoint of the general theory of systems to identify their immanent qualities. This approach expands the possibilities of controllability and sustainability of such economic systems, especially since this issue is the most urgent today. The article analyzed a number of system properties and formulated the necessary conditions for the stability of business associations. This allows you to build further the management of such socio-economic systems more efficiently.*

JEL Classifiction: L31, O16

Introduction.

Public organizations in the world are becoming increasingly common and play an increasingly significant role. Their format is changing, new approaches to management appear. Even in the midst of a monopoly, business owners face difficulties and obstacles. One can overcome them only when the business community unites its efforts. The essence of a business association is to help business owners overcome problems that they cannot overcome alone. Moreover, in addition to the benefits for members of business associations, the work of associations has a key multiplicative effect on the improvement of commercial, state and economic institutions in a particular country. The importance of the role that associations play in the modern economy and society cannot be underestimated. Therefore, the issue of managing business associations is a very important and urgent task for modern conditions of their development.

The object of the research is the business association, as a socio-economic system.

For a long time, economists have used a systematic approach in their reasoning. This became the norm in the arguments about the functioning of socio-economic systems of various kinds. When it comes to applying a systems approach to the analysis of economic phenomena, we consider the system as a unity of goals, resources and structure (in general). Objectively, a person investigates economic processes that occur with a sufficient degree of uncertainty, i.e. the economic world exists by its own rules and laws - it is a living mechanism, as a part of the self-organizing systems of the noosphere. Scientists are exploring this world postfactum: exploring historical data.

The created theories allow to characterize, but not always explain, certain aspects of objectively existing economic processes. Since people are in some way the creators of objective reality, they assume, on a subconscious level, about methods of coordinated actions at one or another stage of the economic relations development. The economic life of economic entities must comply with laws that are universal (i.e. operate outside of our consciousness) and are manifested in all aspects of human existence. People gradually, as they evolve, begin to understand and substantiate certain categories characteristic of a given period of development, give them names, try to systematize them and combine them into knowledge systems (theories). Building economic models, economic theory is designed to reduce the degree of uncertainty of events (increasing the degree of information content) that occur in economic activity in order to increase the ability to predict the future with a greater degree of confidence.

1. Business association as a system.

Today the management of business associations is not paid enough attention by scientists and practitioners. Justin Greenwood [1] studies the manageability of business associations to increase their relevance in the business environment based on interviews with 49 EU business associations and 151 members and non-members, which makes this study the most comprehensive analysis of EU business associations over the entire history. Greenwood considers business associations from the perspective of 28 factors. Among them, for example, the degree of specialization in the product chain, membership density, interaction with inter-sectoral organizations, the threat of issue, etc. K. Ronit [2] considers the development of global associations in his research book: [2] which outlines their economic, social and political functions. Their historical origins are outlined, including the spread of global associations in the twentieth and twenty-first centuries.

Scientists: Palgrave M., Bennett, R.J. [3], M. Boléat, M. [4], Bennett, R.J. [5,6,7], Ramsden, [8], M Dawley, D.D, Stephens, R.D. and Stephens [8], Didenko O.V. [9], A. Boguslavskiy [10], Bikovets V. [11], Kinah A. [12], etc. deal with the issues of the of business associations development. Recently, a project was implemented in Ukraine (2015-2018), the goal of which was to accelerate the development of the small and medium business sector in Ukraine by strengthening the potential of business associations that are involved in enhancing the dialogue between the private and public sectors. Partners in the implementation were the Ministry of Economic Development and Trade of Ukraine and the United Nations Development Program in Ukraine (UNDP) with the financial support of the Government of Switzerland [13]. As part of this project, management training was conducted for the managers of business associations in the Kiev-Mohyla Business School. At the same time, a business approach was applied to building management in business associations; a number of textbooks on specialized disciplines were written. The author of the article also participated in the implementation of this project, and taught a course on corporate finance [14].

However, neither foreign nor domestic scientists consider business associations from the position of management as a system. In the process of economic analysis of its vital activity, it is advisable to consider a business association as a system. The concept of a system first appeared and spread in a technique when individual machines (hardware) and their interconnections became too complex for one person to monitor simultaneously their functioning. Therefore, the concept of a system was introduced, which is a collection of elements that form a unity (synergistic effect) for performing a specific task.

Each socio-economic system (in our case, a business association), is a kind of unique entity that has qualities that other systems do not have similar. Nevertheless, scientists find common qualities for all kinds of systems, including socio-economic systems, which are defined as their properties. The proper properties of the systems help them identify and study their behavior. The purpose of the article is to study the system properties of a business association in the process of its management and development and to determine the necessary conditions for the sustainability of this economic system. Our life in a linear dimension arises in time, therefore, economic systems are classified as dynamic, and "whose elements are capable of moving, regrouping, and transforming under the impact of external and internal influences. The system does not collapse"[15, p.19]. In addition, we can assign economic systems to a class of evolutionary systems that are characterized by the irreversibility of processes in time. Business association, as a socio-economic system, refers to complex, dissipative, open, living systems and has the properties of dynamic stability, adaptability, self-organization and evolution, communication with the environment, informatization, integrity, hierarchy and diversity. We will show this in our further discussion.

2. Properties of business association, as a system.

2.1. System integrity.

"A system is an entity that, as a result of the interaction of its parts, can maintain its existence and function as a single whole" [16, p.28], "The basic quality of the organization of a system (integrity) consists in the irreducibility of its properties to the properties of elements and vice versa" [17, p.8]. Separate parts (elements) of the system were isolated mentally or actually from the outside world and united according to a common feature. Here an important role is played by the understanding that the behavior of the system depends on how these parts are interconnected. In other words, the system has qualities that its parts do not have. In a general sense, systems are part of larger systems. The economic system-business association is part of larger systems: business society, markets, economy of the country as a whole. Obviously, this results in a large number of connections between systems and elements of systems of different levels, which allows us to speak about the complexity of the element-wise, visible (this is a property of the systems, in which the external manifestation seems to be rather complicated, but in fact is interpreted by simple laws) the property of systems in which, as a result of the simultaneous action of feedback loops, a small change in the initial parameters can radically change the behavior of these systems) [16, p.250].

At the same time, “it is more natural or at least ambiguous to talk about complex behavior, rather than about complex systems” [18, p.12]. We consider how the economic system behaves (reacts to any external disturbances), how the market behaves, how society reacts to changes in laws, etc. The magnitude of the impact on the system is determined by the type and strength of the impact (internal and external). Typical impacts include internal effects that can disrupt the operation and interaction of individual elements of the system and lead to a change in structure, which contributes to the loss of a steady state (prerequisite to the destruction of the system). For example, a system can be destroyed, unregulated relations between members of an association: each of them may have different views on its development and they cannot come to agreed decisions on plans for the development of a business association. Even with a stable internal structure, external influences can have a significant effect on the system, in particular, an economic or political crisis, unstable political and economic relations between countries in the region, fluctuations in the market environment, significant industry changes, such as industry consolidation.

It is necessary to add one more essential condition for the sustainability of the economic system - the presence of intellectual cooperative thinking, which should ensure strict conditions for the selection of system elements. This is a necessary condition for any progressive evolution, i.e. ability to further develop.

2.2. Communication with the environment.

Any relationships that carry out the elements of the system with objects that are not included in the structure of the business association will be considered as a link with the environment. The principle of sustainability of the homeostatic system or the pattern, expressed in the desire to maintain equilibrium with the environment, formulated A.L. Le Chatelier: with an external impact on a system that is in an equilibrium state, processes arise in the system that are aimed at counteracting a change. The system response time must be less than or equal to the frequency of external disturbances. The economic system, as well as any system consisting of living organisms, has complex feedback mechanisms that play the role of new selection principles, narrowing the system’s behavior within a single synergistic process.

Any reaction to external influences on the system is feedback to the environment. Feedback can have both positive and negative effects on system stability. When the feedback loop balances the system, it becomes stable. If the feedback changes significantly the parameters of the system, then it can go out of equilibrium. The reinforcing loop can be so strong that it can even cause a resonant effect, which can bring the system into an auto-oscillatory mode, i.e. external influences are ineffective (transition to a chaotic state). If the system reaches the bifurcation point, then there may be two variants of the development of events: the process of frustration or the realization of one of the new ways of development. Any feedback loop is a causal time chain. At the same time, the time interval between events may be different (hours, months, years). In order to control the magnitude of the feedback, it is necessary to understand that it will simultaneously be the cause of future events in the same system.

The system consists of a set of elements that interact with each other through feedback loops. Positive feedbacks are reinforcing and negative feedbacks are balancing. "System dynamics emphasizes the learning nature of the interaction in the form of feedback loops" [19, p.126]. Feedback loops are necessary elements of adaptation of a dynamic system, since they contribute to its dynamic stability.

2.3. Dynamic stability.

For the physical systems in which such natural sciences as math, physics, chemistry, biology, etc. are involved, the use of certain patterns from one area to another is normal. For social systems, where the main character is a person, a direct transfer of physical laws is unacceptable. The general theory of systems (hereinafter referred to as GTS) considers the general laws of biological, physical, and social systems. The theory of stability of the general theory of systems currently asymptotically approaches the interpretation of the real state of affairs. The general theory of systems (hereinafter referred to as GTS) considers the general laws of biological, physical, and social systems. The theory of stability of the general theory of systems currently approaches asymptotically the interpretation of the real state of affairs. The concept of sustainability in GTS is sufficiently studied and defined, although the generally accepted concept of sustainability does not exist. When defining the concept of sustainability for self-organizing (synergistic) systems, a special case of which are socio-economic systems, the main characteristics will be the objective function and feedback.

V.V. Artyuhov in the GTSU (General Theory of Systems by Urmantseva), based on the synthesis of many definitions of sustainability, adopted in different fields of science and technology, as well as the definition of systemic stability, Yu.A.Urmantseva gives a synthetic definition that states: “Sustainability is a property of system “S” to coincide on the grounds of “P” before and after the changes of “C”, caused by the action of factors “F” [19, p.97].

The stability of economic systems is one of the main characteristics of its condition. When an external impact occurs, the system is in a certain area of stability and is determined by such a development vector over the time, which allows the system to achieve the objective function without significant reconfiguration of the system if it is economically stable. Compliance with these requirements allows avoiding reducing the effectiveness or frustration of the system.

Dynamic stability allows the system to evolve smoothly, without jerks. If you do not manage the stability of the system, you can lose its effectiveness (time, financial and other resources, etc.) or even lose this system if it is destroyed. It is necessary to introduce mechanisms for managing the dynamic sustainability of a business association and develop recommendations for their participants, including developing indicators characterizing sustainability, linked to the risk management system, which will lead inevitably to an increase in the economic effect in the system.

2.4. Self-organization.

The system must have the ability to self-organization, which is expressed in the presence of flexibility and minimal response time to external disturbances. It is appropriate to quote the words of Corresponding Member of the USSR Academy of Sciences S. P. Kurdyumov: “A person, knowing the mechanisms of self-organization, can consciously introduce a corresponding fluctuation into the environment — if you can put it that way, prick the environment in the right places and thereby direct its movement. But to direct, again, not anywhere, but in accordance with the potential possibilities of the environment itself. There is freedom of choice, but the choice itself is limited by the capabilities of the object ...” [20, p. 55]. In fact, it is precisely the directed energy flows that the business association is unable to accept without consequences for itself, without rebuilding itself, cause its non-equilibrium states. “For the existence and development, the open system has more opportunities, which attracts more energy, substances, information from other systems or from the environment, and uses them more effectively” [21, p.55]. If you do not take measures to restore energy flows, the system comes to destruction.

Business association is a complex system and in the process of evolutionary transformations is characterized by such a concept as “self-organization”, which is understood as the process of establishing order in the system, which occurs due to cooperative interaction and connections of its components. Since the system has a memory, in fact, the presence or occurrence of orderliness in the economic system is the result of cooperation and non-linear behavior of elements of the previous level of organization. The term “self-organization” was first used by W. R. Ashby in 1947 when describing the behavior of cybernetic systems, considering it as an increase in the connectivity of these systems [22]. The general concept explaining the phenomenon of self-organization of systems at the suggestion of G. Haken was called “synergetic”, and means the coordinated interaction of parts in the formation of the structure as a whole [23, p.2]. The self-organizing system is always open, and the processes taking place in it are cooperative and consistent. There are two types of such systems: new elements do not appear they are recombined; new items are introduced.

2.5. Evolution.

In practice, a business association is in a constant process of change over time. Some insight into the concept of system development is set forth in the definition: Yu. N. Lapyigina: “Development is a characteristic of a system, which is a collection of related and directed changes in the properties and processes of a system” [24]. The development process takes place constantly along with the development of the environment: every day the system communicates with the environment, exchanges data, forms an information block of memory (“object portrait” - an idea of it as an object of communication, interaction results, etc.), which means , is trained (or not trained), adapts / or does not adapt (reacts) in a continuous mode. The development process takes place constantly along with the development of the environment: every day the system communicates with the environment, exchanges data, forms an information block of memory (“object portrait” - an idea of it as

an object of communication, interaction results, etc.), which means , is trained (or not trained), adapts / or does not adapt (reacts) in a continuous mode. Each new step in the time of the system activity is the acquisition of experience to harmonize a clearer interaction of the elements of the system and adjust the necessary time for its response to internal and external disturbances that ensure the dynamic stability of a given economic system.

Development can be evolutional and involutional. During evolutional development, the system acquires new qualitative characteristics, with involutional ones; the system loses some of the previously acquired characteristics and begins to degrade. "The more progressive the system, the greater the variety it possesses, which is manifested, in particular, in the diversity of its relations with the external environment" [24]. When a business association interacts with the environment, the processes of convergence and divergence occur depending on the interaction of the elements of the system with the external environment. The following cases of relationship are possible business-association-environment:

1) The system evolves, the environment is in involution (this is possible in the case of: the economic crisis in the country, but the business association is stable, evolving, divergence occurs;

2) The system evolves with the environment. Business integration, as well as the environment from the interaction (the result of positive feedback) receives an additional impetus to the development;

3) The system degrades, the environment evolves - this option is possible only if the oscillation frequency of the system and the environment do not match, then the process of divergence is under way;

4) The system is degrading, the environment is degrading. There is a problem with the survival of the system.

The development of the system can occur both in the mode of gradual (evolutionary development) and during the accumulation of necessary prerequisites, stepwise. Here, the law of the dialectic of the transition of quantity into quality is traced in an explicit form, since with the accumulation of certain changes, the system can dramatically move to a new qualitative level. This may be a new higher level of the development, or a fall to a lower level. Qualitative jumps of the system change significantly its properties. These jumps are observed after the system reaches the bifurcation points - the points at which a change in the former way of evolution occurs.

2.6. Adaptability.

The organization of the system should be optimized, i.e. for any significant external impact; the system must have a high level of adaptability, which allows it to evolve. That is, with minor fluctuations (external disturbances), the system either restores quickly its basic parameters (system parameters, which determine the system development vector to achieve the objective function), in the case of significant disturbances, goes into a new stability state, i.e. the system develops, evolves. In other words, the system should be adaptive, i.e. one that in the course of its evolution demonstrates purposeful and adaptable behavior in a complex external environment.

The system should have such a degree of adaptability, such a set of parameters that retain the set values within the stability corridor in the direction of achieving the goal in a dynamic aspect. With a significant external impact, the system must be able to transition to another stable state, i.e. passing through the bifurcation point, would move to a new round of the spiral. In the event of a nonstandard situation in the external environment, the created mechanism for rapid response in the business association should work. In this case, it is necessary to provide for the system to work in advance, i.e. the rapid response mechanism involved the identification of the first signs of so-called unpredictable events and corrective actions were taken in the business association.

The mechanism of rapid response of a business association, as a system, will be understood as a set of special actions that allow predicting future events with a high degree of certainty and building up the behavior of the system in a turbulent environment.

To build a response mechanism, we turn to the concept of reaction. In medicine in relation to the human body, "The reaction is the action of the system to obtain the result of action necessary for its survival in response to an external influence, that is, it is a function of the system. The reaction is always specific. A living organism and its internal systems must always respond to certain external influences, and their reaction must be of the quality and volume that correspond to this effect" [25, p.52]. A business association is a living system, so this definition of reaction can be considered appropriate for reactions to external disturbances can be divided into two classes depending on the response force of the economic system: Normal; Insufficient; Complex.

A normal reaction is a reaction in which the reaction force exactly corresponds to the force of an external impact. In case of insufficient reaction of forces, the system is not enough to compensate for external influence. The reason for this reaction may be the lack of the necessary unit in the system (for example, an analytical function) or its poor quality work. Such a reaction is pathological for a system-business association. A complex reaction can be considered as one in which an unexpected, rather than expected, reaction appears. The presence of such types of reactions is a consequence of the fact that a complex dynamic system that develops is constantly on the verge of order and chaos.

The response process itself can be represented as follows. Until the reaction has become a habit (that is, the system has not learned and mastered this particular reaction), the process may look like this (Figure 1.). Some time passes between the beginning of the event and the beginning of the analysis process - this is the period of excitation (the action of the disturbing influence) of the system. It lasts until the system begins to take some kind of response. Denote this time t1. At some point in time (point O in Figure 1.), the system begins its response actions. Either the analysis process begins (the intervention of the controlling agent occurs) or the system self-organizes (without intervention). If the system is not able to go into the stage of self-organization, it can go into self-oscillatory mode or starts moving towards destruction.

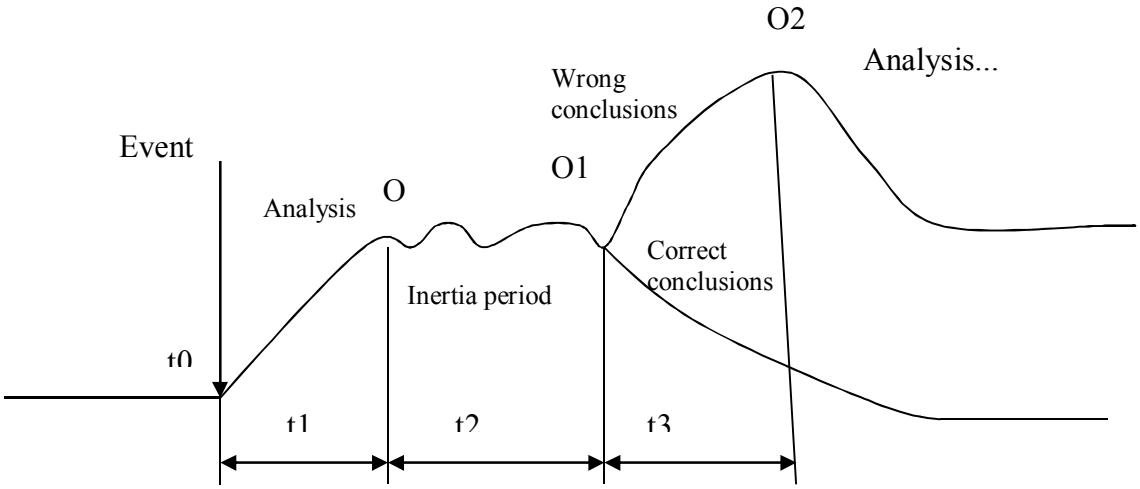

Fig. 1. A typical system response to a disturbance

Some inertial period (braking of the reaction) lasts after the start of the analysis process (in Fig. 1. from point O1 to point O2). If the system makes correct conclusions (responded correctly), then the system returns to its original state (trend) if the reaction was incorrect, then the system continues to move towards deteriorating conditions (p. O2 in Fig. 1.) and the analysis needs to be resumed again. In the general case, the whole response period t1 + t2 + t3 must be less than or equal to the time of excitation of the system and the amplitude of oscillation (period from t0 to t3) must be less than the amplitude of the disturbing influence. In Fig.1. The general reaction scheme of disturbances is presented. Each individual's reaction to the same event differs both in time and degree of impact. A similar situation is added up in business associations (hereinafter, BA): the time and degree of reaction varies in different BA, depending on what the collective response of a particular BA may be and how the response mechanism functions (or not). A collective response implies a generalized response from a group of people participating in the assessment of any event. Adaptation mechanisms are characterized by a set of parameters that are monitored in BA. For each parameter, certain limits are set (stability range). Specialists in the course of their activities carry out the analysis of these indicators with a given periodicity and in case of danger of their negative impact on the sustainability of the system; mechanisms to eliminate problems are created that led to critical values of a particular indicator.

BA as a self-organizing system capable to cognition through feedback with the external environment introduces information (new knowledge) into its structure. Therefore, the cognition and learning processes are continuous. If the system did not record the type of disturbance, the nature of the impact on the system and did not find adaptation mechanisms, then such disturbances will comprehend the system again and again until it learns. The process of making certain decisions for the timely management of adaptation mechanisms should be carried out in real time, i.e. given the speed of decision making.

2.7. Informatization.

In practice, the BA system itself determines the degree of its openness (closure). Depending on the degree of openness of the system, we can talk about different degrees of adaptability and ability to develop. As it is known, the degree of freedom of a system is determined by its entropy. The number of freedom degrees determines the ability of a system to develop, evolve (in general). Entropy is maximal at a uniform probability distribution of the system states and is equal to [26, p. 473]:

$$H_{\max}(X) = \log n. \quad (1)$$

Achieving the maximum of entropy is a fairly conventional value, since any system has limitations that prevent the infinite growth of entropy. There are a lot of such restrictions, but more often, for economic systems, restrictions on resources are considered - U (xi) [27, p.26]:

$$U(x\ i) = \sum p(x_i)\ U(x) \leq const. \quad (2)$$

This value determines the degree of closure of the system, since limits the growth of entropy in the system. The economic system develops thanks to its constant exchange with the environment of information, i.e. information counteracts the growth of entropy. And it is necessary for this that the information be received and processed by the system in the shortest period of time, with the least level of interference, was presented in the form that is optimal for perception. In accordance with the formula proposed by Claude Shannon [27, p.30]: "the information that the event (object, condition) **y** contains about the event (object, condition) x is equal to:

$$I(x,y) = \log p(x/y)/p(x) \quad (3)$$

Where, p (x) is the probability of an event x before the onset of the event y (unconditional probability); p (x / y) is the probability of an event **x** under the condition that the event **y** occurs (conditional probability).

Under the events **x** and **y**, we will understand the stimulus and reaction, the input and output, the values of two different variables that characterize the state of the system".

If we imagine the entropies of some variable of the system X - H (X) and the entropy of the variable Y of the same system - H (Y) in the form of circles, then the greater the entropy, the greater the area of the circles. If the correlation coefficient between these variables is 0 (there are no connections between the variables), then the circles do not overlap. Then the total entropy is equal to the sum of the entropies of these variables 9 (the sum of the areas of these circles). If the correlation coefficient is greater than 0 (there is a connection), then the circles will intersect and mutual information I (X, Y) will take place, which will act as a measure of such an intersection. Obviously, in this case, the entropy of two variables will decrease by the amount of information "known" to both variables [27, p.31]:

$$H(X, Y) = H(X) + H(Y) - I(X, Y), \quad (4)$$

The more mutual information, the closer the connection, the lower the entropy H (X, Y). In order for the system to evolve, it is necessary that the amount of processed information be more than entropy, "The dynamics of information processing must suppress the entropic environment of the system" [27, p.35]. Information is discrete, i.e. does not flow continuously. It can be concluded that a maximum of information will be obtained by a system that is able to adapt to changes in the external environment in a timely manner, maintaining internal consistency, or a system that adequately and timely reacts to changes due to advanced development and changes in the internal state.

Similar to entropy, maximum information is also impossible to achieve in the real world, as it is also limited by the same factors as entropy (for example, resources).

Thus, in order for the BA system to adapt the best to disturbances of an internal and external nature and develop, it is necessary to find the optimal relationship between entropy, as a degree of uncertainty (chaos), and system awareness, as an indicator of its orderliness.

Let's consider two diametrically opposed cases to illustrate this. The first one is the system:

1. cannot cope with the growth of entropy;
2. has a lot of levels of freedom;
3. has minimal resource limits;
4. There is a lot of information and the system does not have time to process it (the efficiency of information processing is low).

For this case, there is an obvious low level of adaptation: the system cannot adapt to the environment and perishes. And the second case:

1. the system is strictly limited in many ways;
2. entropy grows weakly;
3. it is not enough of information.

There is clearly a high degree of adaptability, but there is no development at all (evolution), since there is no incentive to fight for survival. Obviously, these cases demonstrate a low system efficiency. Thus: "restrictions on resources, on the one hand, should ensure the vitality and sustainability of the system, on the other hand, they should not allow perfect adaptation to the environment. The regime of intense and effective search for a way out of changing situations, the optimally balanced amount of incoming information, its processing and implementation should be provided [27, p.40]. All properties of systems are interconnected, i.e. one property of a system can both strengthen and reduce its influence on other properties of systems. Therefore, we consider the socio-economic BA-system in the interdependence of all properties immanent to the system. Since the subject of study is the stability of the system, then consideration of this property is impossible without taking into account the influence of the properties of the system. Possible options for mutual influence in the formation of the stability conditions of the socio – economic system are presented in Fig.2.

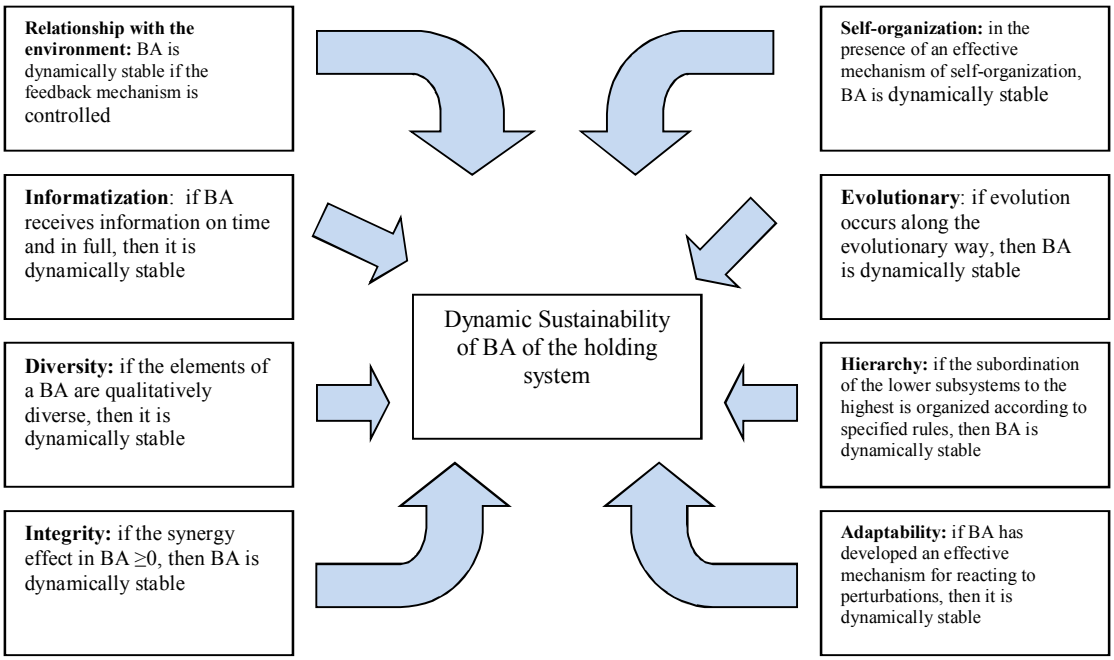

Fig. 2. The influence of the properties of the system on its stability.

From Figure 2 it can be seen that each separately taken property of the system is a necessary, but not a sufficient condition for its stability. However, if we consider all the properties together, then this will be a sufficient condition for the stability of the system. The properties of the system form the factors that influence the stability condition.

Conclusions.

Based on the above, we formulate the necessary conditions for the stability of the economic system - business associations:

1. The system is stable if the system's interactions with the environment related to the exchange of resources (material, financial, human) are in the form of treaties (contracts) limiting the opportunistic behavior of the partners of the relationship.
2. The system is stable if it maintains its integrity due to the presence of positive synergistic effects and cooperative thinking. In addition, its internal organization is subject to a number of rules, institutions that limit the opportunistic behavior of subsystems and employees.
3. The system is stable when there are a variety of elements in it. Diversity can be classified as a variety of quantity, diversity of quality, diversity of relationships between the elements of the system.
4. The system is stable when it has effectively organized internal information flows between its elements, as well as flows of interaction of the system with the environment (information comes in time, in the right place, in the required volume, with the required level of confidence).
5. The system is stable when it has a hierarchically correctly built structure with unconditional subordination of the lower elements to the highest. Each element (member of

the BA) is given a certain amount of creative freedom. The principle is implemented: a system for a man. Each person, as an element of the system, has the opportunity of not only material, but also a spiritual growth in the system.

6. The system is stable if it has sufficient ability to self-organizing. The principle of self-organization underlies the conditions for the existence of dynamic deterministic systems, a class of which includes real systems, including socio-economic ones.

7. A system is stable if it follows an evolutionary way. Here, the evolutionary way of development implies the choice of the optimal ways for the development of the system, the presence of an ensemble of adequate responses to internal and external disturbances.

8. The system is stable if it has developed and implemented an adaptation management mechanism.

9. The system should be redundant, i.e. have an archive of memory (information support), sufficient energy and material resources.

10. The system is stable if the response time of adaptive management mechanisms occurs in real time.

The conditions of stability, formulated on the basis of the initial premise of the relationship of all properties of the system, determine these conditions of stability as a state of the BA system.

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