

5.3 Leveling financial exclusion: the metabolism of socio-economic systems

It is well known that the purpose of life is to move forward, while overcoming certain obstacles. But the question is what exactly a person should fight for. If her life consists only of the struggle for food, shelter and warmth, will she not be in danger of losing her humanity? At the same time, the society of more prosperous people, according to the laws of a complex socio-economic system, pushes a person out of its comfortable environment, perceiving it as a contender for public goods and a competitor in their consumption.

Therefore, among the current problems of socio-economic development of the country as a whole now is the problem of human rejection, rejection of the employee, his subordination to the products of only material activities. The general socio-economic condition of the country currently creates such conditions that only material products and the general prevailing desire for consumption find a dominant position among workers.

Given the limited natural resources, increased competition in the markets of raw materials and finished products, the development of the economy on the basis of innovative approach is currently a circumstance that constantly increases the relevance of deepening theoretical positions and forming new approaches to management, implementation and dissemination of innovations. One of the possible tools for ensuring the sustainable development of the country's economy can be considered the phenomenon of diffusion of innovations in general and the diffusion of the results of innovative activities of enterprises in particular. Diffusion of innovations should be considered at the macro level as a means to ensure sustainable economic development and at the same time as a means of commercialization of scientific and technical developments at the micro level. Because sustainable development is ensured by gradual qualitative and quantitative changes in the productivity of the economy at the national level, which in turn can be provided by various innovations. Based on the limited resources within an individual economy, the speed of innovation will determine the duration of the cycle of sustainable development.

Globalization, as a global trend, has brought the phenomenon of rejection in the field of labor outside the subject-object relations, namely at the level of world socio-economic relations [360]. This substantiates the reason to recognize the evolution of the category of rejection as a socio-economic phenomenon of all times with different forms of manifestation and actualization of a new stage in its study.

Metabolism is a means of interaction of a complex socio-economic system with the external environment and the interconnection of individual elements. Metabolism is the exchange of matter, energy and information of the system with the external environment, as well as its individual parts [361]. Due to metabolism, the enterprise, as a complex socio-economic system, extracts energy or energy-enriched substances from the environment and dumps, in contrast, the waste of its own activities) energy-depleted substances. In addition, due to this property of the enterprise as a complex system, already within the enterprise (between its units) is the transformation of a certain kind of information and its transformation into a finished product / service. The emergence and spread of rejection in the enterprise is the result of an imbalance of such flows, the negative diffusion of innovations and the violation of the energy properties of exchange (Figure 1).

Interpreting abstract categories of systems theory to specific functioning complex systems (enterprise), we believe that the term "quasi-energy" is correct to use in the interpretation of enterprise capital, which performs the function of energy to implement the processes of movement in the socio-economic system. Indeed, in different types of capital of the enterprise only physical energy is accumulated, which is connected with the processes of their formation [362]. To obtain quasi-energy, which is able to intensify economic processes, specific assets can only in the implementation of economic relations, with certain prerequisites. Thus, the quasi-energy of the enterprise is the commodity-money relations of the enterprise. A certain indicator of the measurement of quasi-energy is the cost of transformation of one type of capital of the enterprise (commodity, money, production, human, social, etc.) in another.

In the presence of excess, unrealized quasi-energy is the release of its part into the external environment, the process of rejection of part of capital in various forms of its manifestation.

Thus, maintaining metabolism as a socio-economic property of the enterprise can affect the balancing of inflow and outflow of quasi-energy and maintain the level of innovation and staff satisfaction, as an indicator of team involvement in the production process of the enterprise.

The next factor, due to the use of which it is possible to level the rejection of the diffusion of innovations in the socio-economic system, is the ever-increasing entropy. Entropy is a measure of irreversible energy dissipation, which determines the transformation of all its species with subsequent distribution [363].

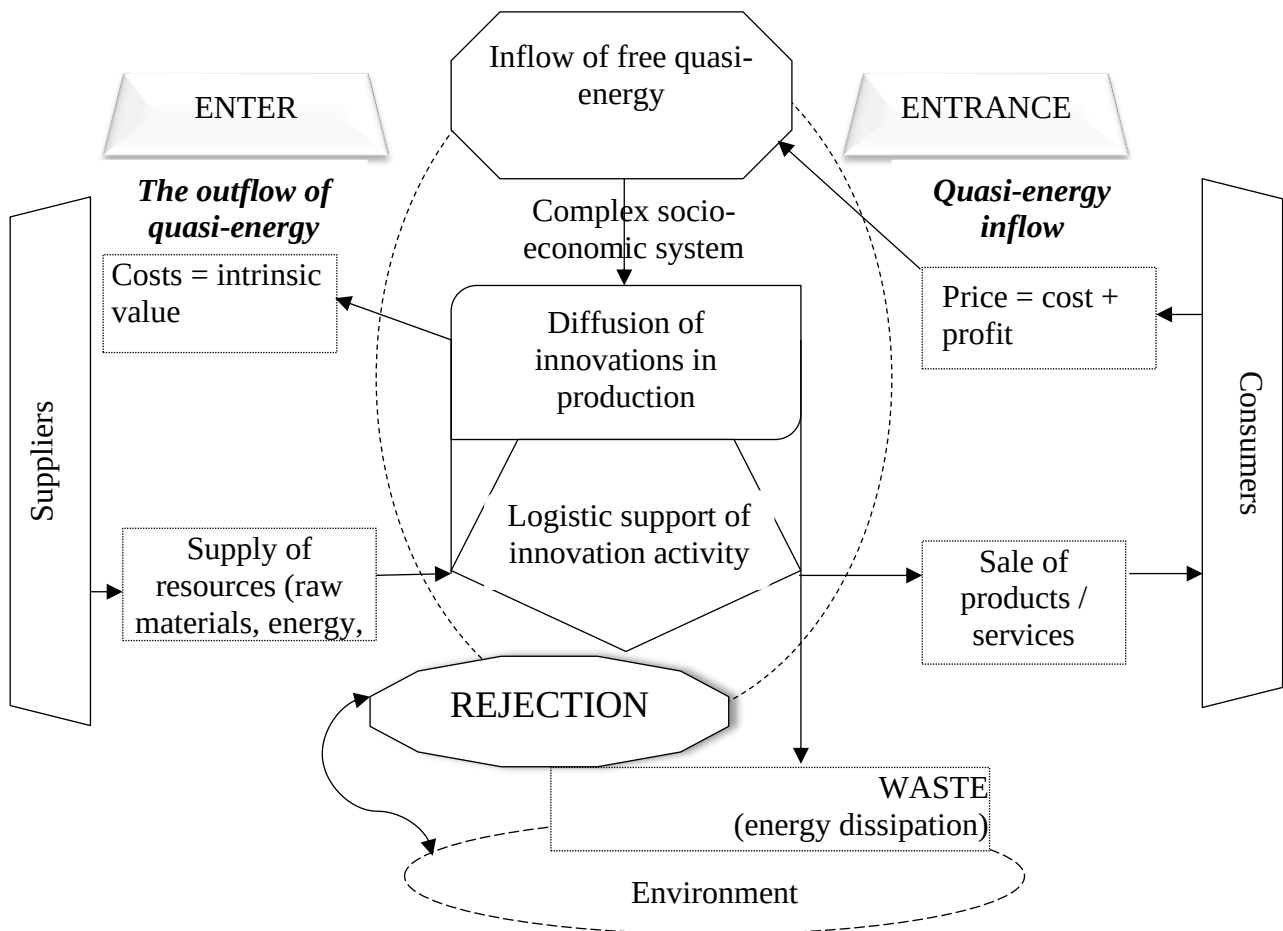


Figure 1. Schematic representation of metabolism in leveling the rejection of diffusion of innovations

Source: compiled by the author

The reason for the irreversible increase in entropy, in other words the self-destruction of the system, is the constant and irreversible dissipation (dissipation) of energy.

In enterprises, the formation and increase in the level of entropy is associated with physical wear and tear of tangible assets, reduced efficiency of information factors (aging), disruption of intra-system and external system connections. To carry out its activities (purchase of raw materials, production and sale of goods and services), the company spends daily own resources (energy). Even a company that temporarily does not produce products has to bear certain costs: to maintain the capacity of production facilities, to pay rent, tax, insurance and other mandatory payments [364]. However, enterprises are not limited to the current costs of entropy formation. Enterprises are also forced to bear part of the non-production costs - the cost of quasi-energy: the loss of commodity conditions of products, the impossibility of selling its volumes or forced sale at reduced prices, taxes, sponsorship fees and more.

Lost energy is an impetus to reduce order and initiate socio-economic rejection, which is formed and quickly spreads where there are arrears of wages, lack of funds to repair production facilities, for their maintenance, and so on.

Overcoming the growing rejection of the diffusion of innovations in the socio-economic system is possible only through purposeful activities to restore order. This is possible only by attracting free energy from the environment. That is, the ratio (balance) of the processes of entropy formation in the enterprise and its outflow (the formation of order) is the most obvious indicator of the quality of the enterprise and its current state.

Construction of the corresponding balance of the enterprise is based on the analysis of change of size of entropy of the enterprise. The change in the entropy of the enterprise consists of at least two components (1):

$$\Delta S = \Delta S_{IE} + \Delta S_{EC}, \quad (1)$$

where, ΔS – the total increase in the entropy of the enterprise;

ΔS_{IE} – increase in entropy, which is formed within the enterprise, which is due to the processes of involuntary elimination of the order of the enterprise (wear

processes, deterioration of the quality of functions performed, disruption of connections, etc.); and is always a positive value ($\Delta S_{IE} \geq 0$);

ΔS_{EC} – entropy change associated with energy-information exchange between the enterprise and the external environment.

Thus, the state of the enterprise depends on two factors: entropy, which is formed within the enterprise due to the diffusion of innovations and entropy, which is due to external exchange (Figure 2).

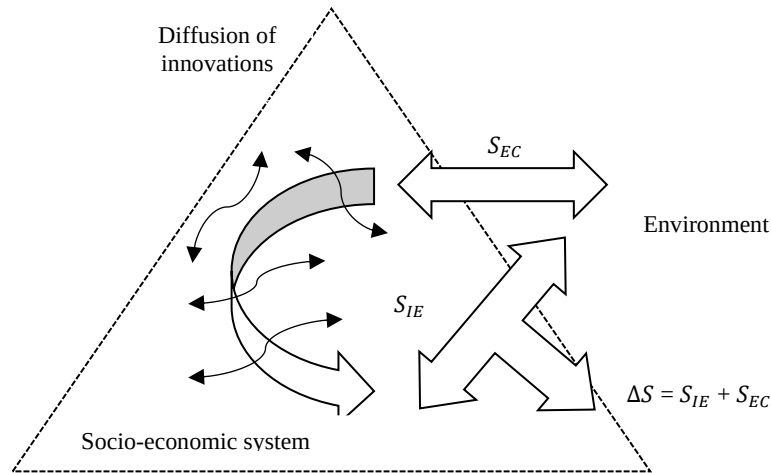


Figure 2. The scheme of entropy formation in the socio-economic system due to the diffusion of innovations

Source: compiled by the author

Elimination of entropy at the enterprise will occur only when the outflow of entropy will exceed its formation within the system, the ordering (2) or (3):

$$\Delta S_{EC} < 0, \text{ but } |\Delta S_{EC}| > |\Delta S_{IE}|, \quad \text{or} \quad (2)$$

$$\Delta S_{IE} + \Delta S_{EC} < 0. \quad (3)$$

However, these conditions are only necessary prerequisites for the company to be in the appropriate states of stationary or progressive development. In turn, the prerequisites for the progressive development of the enterprise are the fulfillment of conditions (4):

$$\frac{dS}{dt} < 0 \text{ а6o } \frac{dS_{IE}}{dt} + \frac{dS_{EC}}{dt} < 0. \quad (4)$$

The above requires attention to the forms of motivation of antientropic activity, leveling the negative impact of diffusion of innovations and rejection of innovations in

the enterprise [365]. In other words, it is necessary to stimulate the executor not for the volume of work performed aimed at reducing entropy, but for the end result: a supported process of leaving the accumulated entropy from the enterprise. That is, it is necessary to stimulate employees not for the elimination of crisis moments in the activities of the enterprise, but for the ability to anticipate them and prevent them.

Adequate balancing of entropy the enterprise is able to achieve when at each of the moments of a certain period of time the formation of internal entropy will be accompanied by a decrease in entropy due to metabolic processes with the external environment.

Hence, for the formation of an appropriate balance of entropy levels, and hence the regulation of socio-economic rejection in enterprises, an important factor is to take into account the time factor. Thus, it is possible to form the necessary and sufficient prerequisites to ensure the regulation of socio-economic exclusion in enterprises. This state of the enterprise can be achieved if for a certain period of time will meet condition (5):

$$\frac{dS}{dt} \leq 0 \text{ or } \frac{dS_{IE}}{dt} + \frac{dS_{EC}}{dt} = 0 , \quad (5)$$

where dt – infinitesimal increase in time.

Along with the time factor, which should be taken into account and coordinated in order to level the rejection of the diffusion of socio-economic innovations in enterprises, it is also necessary to coordinate the space factor in which the complex socio-economic system is located. Space - this is what any system exists, including socio-economic - the enterprise, and what fills its internal content. According to the classics of systems theory [366], socio-economic systems form their own space, which is able to influence the further state of the system that forms it. The basic characteristics of such a concept are space and time. In addition, G. Kleiner proposes an approach according to which the country's macroeconomics is a socio-economic space in which smaller-scale socio-economic systems (enterprises) are formed, function and are liquidated [367]. In other words, one socio-economic system is both an element and a factor in the formation of another socio-economic system.

Based on this, the factor of the influence of space on the spread or elimination of the manifestation of the rejection of the diffusion of innovations should be interpreted through the prism of the principle of subordination. Subordination indicates that the lower level is a link in the upper level of the organization, which in turn is a node of a more general design (Figure 3).

Visually, this principle of subordination demonstrates socio-economic relations: from the node of an individual enterprise to the node of the world economy. Moreover, all these nodes and links, each of which is a hierarchical level, are formed in terms of free cooperation and self-organization on the terms of mutual benefit, complementarity and interdependence.

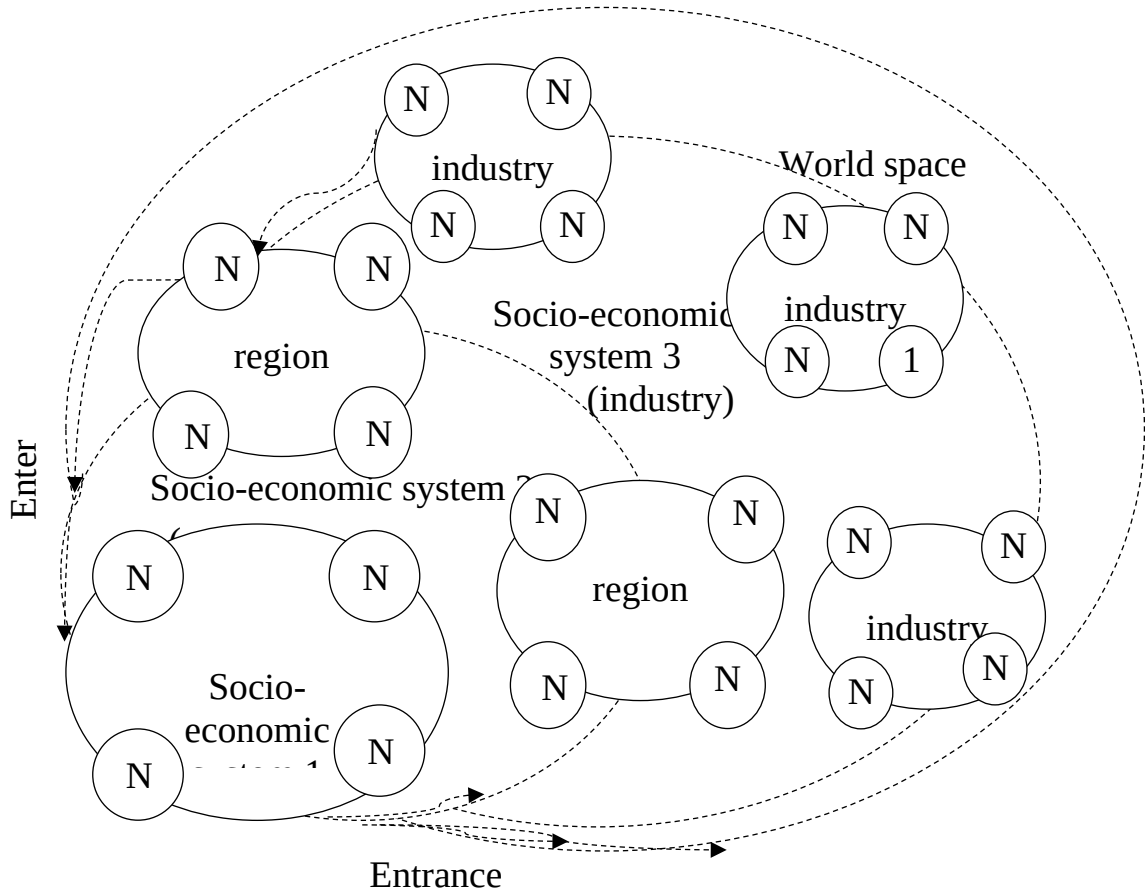


Figure 3. Hierarchical space as a factor in leveling the rejection of diffusions of innovation in the socio-economic system

Source: compiled by the author

Socio-economic systems of the grassroots level (enterprise node) (socio-economic system 1) - are formed as a result of a symbiosis of socio-economic and psychological factors that determine the motivation of employees to work and unite in

teams [368]. Due to the "input" and "output" of each of these systems interacts with the "input" and "output" of other systems of the next higher level: node industry (socio-economic system 2) → node region (socio-economic system 3) and so on further to the level of the world economic system. Thus, a node interacting with another node forms a single functioning open complex system. In other words, every producer who meets the needs of consumers becomes a leading player in the socio-economic system. Hence, we can state the existence of the principle of biocentrism in the socio-economic system, when the center of the world economy is its highest node - the company and the consumer of its products, which ultimately determines the sources of material flows, vectors and directions of dynamics and development as a whole.

Thus, due to the neutralization of the rejection of diffusion of innovations in the enterprise due to these factors of its regulation and the achievement of a certain level of order, it is possible to expect several types of effects (Figure 4).

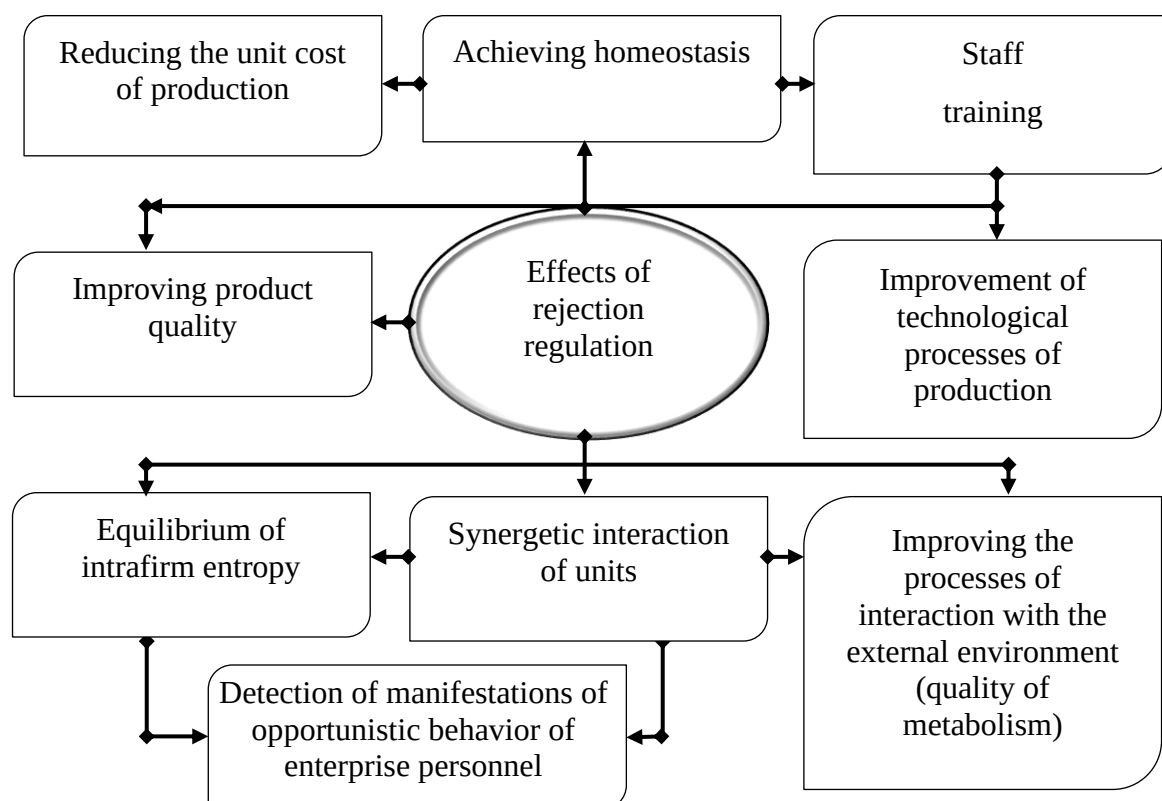


Figure 4. Types of effects arising in the socio-economic system due to the leveling of the rejection of diffusion of innovations

Source: compiled by the author

It is necessary to break the vicious circle of rejection of diffusions of innovations at all possible levels of its emergence and to provide favorable conditions for the implementation of measures of socio-economic involvement of employees and the enterprise as a whole to a new level of evolutionary development. Focusing only on reducing the costs of the enterprise or, conversely, on increasing revenues will not help solve the problem of rejecting the diffusion of innovation in the enterprise. The latest production, information, energy requirements of the time require new flexible forms of organizational setup, rely on self-organizing levers as processes that can ensure the functioning and development of the enterprise, as determine its order in space and time.

Based on the above, it should be emphasized that socio-economic rejection hinders the receipt of important social goods and services due to economic barriers at the institutional, social and personal levels (as a result of intentional discrimination or lack of ability), reduces human capacity to accept their own management decisions, and thus becomes a barrier to the introduction and dissemination of innovative socio-economic diffusion.

The main emphasis in the study was placed on the fundamental determinants of innovation promotion: the role of education and organizational training, the formation of innovation infrastructure, the development of innovation potential of enterprises at all levels of innovation.

The scientific novelty of the study can be considered the proposed holistic and systemic approach to the formation of the concept of diffusionism of innovation in the socio-economic system, which by identifying intrasystemic factors of opportunism allows to eliminate denial and rejection of innovation by enterprises.

The practical value of the study lies in the possibility of using the gradual universalization of the diffusion of innovative activity of enterprise personnel to eliminate the factors of rejection and opportunistic behavior of staff, in order to ensure transparent tactics of management decisions and their consequences.

To sum up, the study of rejection of socio-economic innovation diffusions involves first mastering the axiology of transformation of innovation diffusions in the context of socio-economic rejection by gradually universalizing the diffusion of innovation

activity in socio-economic systems and the final leveling. The presented holistic-system approach and the concept of diffusionism of innovations in the socio-economic system reflect the intrasystemic factors of elimination of the phenomenon of innovation rejection.