Transformation of the Industrial Market in a Sustainable Economy: A Transitological Paradigm

Natalya Yaroshevich*

Ural State University of Economics, Yekaterinburg, Russia
**Corresponding author. Email: iarnat@mail.ru*

ABSTRACT
The development of a sustainable economy takes place in the conditions of transformation of the established classical, theoretical positions. The principles and mechanisms of functioning of markets are changing. The price instruments of market regulation are being replaced by consultative coordination, interaction, and knowledge exchange. The purpose of the presented article is the theoretical substantiation and construction of a transiological paradigm of the industrial market. The methodology of the study of the transformation of the industrial market within the framework of a sustainable economy is based on a collaboration of paradigmatic and transitive approaches. Based on the identification of the transformation of the basic parameters of the industrial market, the causes and consequences of the changes are determined and the industrial market is defined as a hybrid form of interaction aimed at forming a stable model of the production chain of technological innovation development. In the course of the study, a model of the transiological paradigm of the industrial market is visualized, the following mechanisms of transformation of the industrial market are identified: initiative, contractual, revolutionary. At the same time, the presented paradigm reflects the strategic mechanism for the development of the industrial market in a sustainable economy.

Keywords: *transformation, industrial market, transitology, paradigm, sustainable economy.*

1. INTRODUCTION

A sustainable economy is an economy that provides a good quality of life for everyone. The global challenges facing humanity increase the role of country governments in shaping public welfare [1]. The growth of social welfare is a complementary task, which includes not only the creation of the necessary volume and quality of social benefits, but also the creation of an effective economic system that meets all the requirements of sustainable development. This non-trivial task requires the governments of the countries to make quick strategic decisions, develop adaptive and breakthrough industrial policies.

Economics and sociology are rich in theories describing the patterns and practices of ongoing processes, but many scientists note the lack of a unified methodology, practical tools and approaches [2,3,4].

At the same time, the formation of industrial policy should be based on modern economic theory and methodology reflecting and predicting the further development of productive forces and industrial relations.

There is an objective need to develop modern methodological tools for the transformation and development of industrial markets in a sustainable economy.

The purpose of this study is the theoretical substantiation and description of the traziological paradigm of the industrial market.

The goal is realized through the solution of the following tasks:

1) To identify the parameters of the transformation of the industrial market in the context of the development of a sustainable economy;

2) Determine the features of supply and demand in the industrial market;

3) Justify the choice of a transitive paradigm to describe the transformation of the industrial market;

4) To present a transitive paradigm of the industrial market.

The appeal to the industrial market as an object of research is due to the high importance of industrial

production in the structure of the Russian economy. Where more than 80% of economic entities are industrial enterprises that enter and make up complex production chains.

1.1. Parameters of Transformation of the Industrial Market

The growth of requirements for the quality and environmental friendliness of production, consumption and disposal by society within the framework of the development of a sustainable economy leads to a significant increase in the technological complexity of products and their production. This, in turn, leads to an increase in the number of participants in the innovation process, the need to have a large amount of information and knowledge, and institutions for their exchange.

This is how "open innovations" appear [5]. Which involve the formation of cooperative relations between participants in the innovation process not only within a separate company (even if it is multinational), but also with suppliers, consumers, and other stakeholders associated with the processes of generation, storage, use and absorption of knowledge. The significance and transaction cost of such relationships increases significantly. Thus, it is not a separate enterprise that becomes a participant in the innovation process, but the industrial market - as a complex integrated structure with established cooperative ties that creates an innovative product ("open networks" according to [6], where both horizontal and vertical connections are present).

The appearance of such a component as "relations" in the production process significantly transforms, it would seem, the basic characteristics and parameters of the market.

Thus, the mechanism of market coordination itself is changing. The priority is not the choice of the minimum delivery price, but the "agreed"/ "appropriate" technological requirements, innovative development, established trusting relationships. Accordingly, they become a coordination mechanism in the industrial market for the release of innovative products.

Cooperative relationships within the framework of innovative production value chains are formed, maintained, and developed by people. Accordingly, the level of their effectiveness will be determined by the degree of trust, unity of principles and priorities, organizational cultures. The growth of social factors in production complicates the processes of managing the industrial market, on the one hand. On the other hand, it makes it even more relevant for analysis within the framework of a sustainable economy, since achieving a high level of quality of life is impossible without moral satisfaction received from the process and the result of work.

The development of coordination forms forms explicit (legally fixed) and implicit integrated forms of management (hybrid forms and networks). The configuration of such structures will be determined by the "level of ownership" - mutual participation in the ownership of companies operating within the same industrial chain of product creation (value).

Sustainability of development, competitiveness of the company in the modern industrial market is determined by two parameters: stability in conditions of uncertainty and the speed of creation and implementation of innovations. Both also occur through consultative, cooperative forms of interaction.

The definition of a market leader is being transformed. In modern conditions, it is either a company with the maximum level of ownership, or a holder of a core innovative technology, or a company with a brand [7]. The formation of a leader is the result of internal competition at the level of managerial competencies in the field of marketing, branding, strategic management.

With the growth of high-tech production, differentiation and specialization are becoming increasingly important as factors of structuring the industrial market.

We will compare the parameters of the transformation of the industrial market and their consequences in Table 1.

Thus, it becomes possible to formulate the definition of the industrial market as a hybrid form of interaction aimed at forming a stable model of the production chain of technological innovation development

1.2. Features of Supply and Demand in the Industrial Market

Describing the transformation of the industrial market in a stable economy, it is impossible to rely only on the reasons for this transformation. An urgent task is to consider the specifics of supply and demand in this market.

The theoretical basis for this research is the theory of industrial marketing and the theory of industry markets.

The analysis of sources [8,9,10,11,12] allows us to identify the following characteristic features of demand in the industrial market:

- the demand is of a production nature, i.e. the purchase is made by professional specialists, consciously, making strict requirements for quality, technological compatibility, maintainability, etc.;

- demand is inelastic, because it has a limited nature. The number of consumers in the market is small, but the importance of each is high. Every consumer can have a

Table 1. The causes and consequences of industrial market transformation

Causes	Consequences
Increasing requirements for quality, environmental friendliness of consuption and disposal	Technical coplexity of product and production
Technical complexity of production	An increase in the number of participants in the innovation process, an increasing need for constant exchange of information and knowledge Market leadership is a consequence of internal competition.
Development "open innovations"	Formation of cooperative relations related to the processes of generation, storage, use and absorption of knowledge
The presence of established cooperative ties	The subject of the innovation process is not a separate enterprise, but an industrial market
	Changes in the mechanism of market coordination
Development of coordination forms of interaction	The industrial market is a hybrid form of the market determined by the "level of ownership"
	Market leadership is a consequence of internal competition. A leader is either a company with the highest level of ownership, or a holder of a core innovative technology, or a company with a brand
The growth of high-tech production	Differentiation and specialization are factors in the structuring of the industrial market.

significant impact on the activities of the manufacturing company;

- a significant amount of individual consumption. In

the industrial market, the Pareto rule works, according to which 20% of consumers determine 80% of the demand of an individual firm;

- demand is stable over time and conservative. A small number of market participants, many limiting production factors form a system of long-term, close and even personal relationships;

- there is an "acceleration effect" according to which a small change in demand in the consumer market leads to a significant change in industrial demand;

- demand is coherent, which is determined by the processes of creating a value chain.

- demand is dynamic, and changes faster than consumer demand. This is due to technological innovations, the source of which may be the production enterprise itself.

The main parameters of the offer on the industrial market are laid down in the production technologies for creating the final product. It is possible to describe the technological features of the offer based on the provisions of the theory of industry markets, within the framework of the classical paradigm "structure-behavior- result".

For the industrial market, it is the supply factors that will be significant, since the identified demand factors are largely dependent and are only a consequence.

The fundamental factor of the offer is technology, the rest will be of a production nature.

It is the technology of production that underlies the social division of labor, product differentiation, forming the conditions for the emergence of new industries, sub-sectors of the economy, determining the configuration of the established production chains.

- the level of industry specialization is a parameter that determines the degree of depth of the social division of labor, where specialization is perceived as a form of production organization. The technologies used in production determine not only the economy of an individual enterprise, but often the entire production chain;

- the raw material factor is also determined by the technological features of production used;

- the service life of industrial products is also a technological supply factor. The technological parameters that determine the service life of industrial products include the duration of the life cycle and the speed of the innovation process. It is the one that will determine the period of use in the consumption of this product, and the speed of innovative changes – the rate of obsolescence;

the existence of an industry scale effect. The size and its direction determines the volume of supply to the industry as a whole. A positive or negative industry effect is defined as a variation in the output of the industry as a whole, manifested in a fall or increase in the long-term average costs of all enterprises included in it;

- the influence of trade unions determines the level of importance of human resources in the production process, which, in turn, depends on: the life cycle of technology, the use of innovations and the duration of contractual relations; the cost of labor resources within this particular technology.

The theoretical analysis of the features of supply and demand in the industrial market allows us to identify two significant parameters in the following logical sequence: this is a technology and the corresponding

forms of cooperative interaction within the framework of the formation of the production chain.

2. MATERIALS AND METHODS

The methodology of the study of the transformation of the industrial market within the framework of a sustainable economy is based on a collaboration of paradigmatic and transitive approaches.

The paradigm as a method of scientific cognition has been used since the time of Plato. Plato's paradigm is a pattern that determines the structure and shape of material things[13]. According to T.Kuhn, this is "a model of problem formulation and samples of their solution" [14]. Y. Habermas states that a paradigm is a set of research interests, in Y.V. Yakovets it is the dominant idea or theory, vision of the world [15].

The use of the paradigmatic approach lies in the comparability of its methodology and the task of describing and structuring the processes taking place.

At the same time, the use of a transitive approach is a natural complement.

The thrasiological approach is connected with the consideration of the changes taking place through the prism of two concepts: dynamics and the changes taking place in society, society. Most often, this term is used in political science to describe the ongoing processes of transformation of democratic regimes of power. In economics, according to E. Gaidar's definition, transiology describes the problems of economic transformation that occur as a result of the transition from one state of the socio-economic system to a qualitatively different state [16].

Economic transitology speaks about the vertical and horizontal expansion of the object of study, about the development in depth [17,18,19]. It is the transformation of an object into a complex economic system that arouses the interest of the researcher. Within the framework of the technological approach, the movement from the old to the new content of the nodal concepts of the economic system is described. Economic phraseology justifies the change of the object of research: the transition from an individual household (classical microeconomics) to meso- (industries, industrial complex, technological platforms, networks, etc.) and macro-level (country economies, multinational networks, global, global markets). At the same time, the study of the ongoing processes takes place in other (different from classical) conditions: probabilities and uncertainties, nonlinearity, evolution, political and economic liberalism.

Thus, the research task of the collaboration of these two approaches allows us to visualize the ongoing processes of transformation and change of the object of research, its complications, the transition to the meso-level.

Projecting the causes and consequences of transformation on the features of supply and demand in the industrial market, we describe the main methodological provisions of its transitive paradigm.

The object is the industrial market as a hybrid form, the structural component of which depends on the technology used and the form of cooperation corresponding to it. Which corresponds to the meso-level of complex economic systems.

This condition is a consequence of the existence of the following development features inherent in the industrial market:

- acceleration of scientific and technological progress, development of digitalization, etc.;

- further development of the provisions of the concept of new competition within the framework of the implementation of various forms of consultative coordination in the process of forming industrial chains;

- the transformational nature of demand, which implies the formation of a projection of consumer demand into production;

- acceleration effect.

The transiology of the dynamic processes of the industrial market is a reaction to the technological features of supply and demand, as well as to the institutional impact of state policy implemented both with a "plus" sign, for example, supporting mechanisms, and with a "minus" sign - the fiasco of the state. Influencing the formation of the industrial chain and further its transitology into a hybrid form of the industry market, designed to ensure economic efficiency, competitiveness and a new round of technological development.

At the same time, the forms and mechanisms of the formation of the industrial market, at the initial stage, are determined by a combination of technological and institutional conditions (In this case, by institutional conditions we mean not only the existing explicit and implicit contracts within the framework of business practice, rules and norms of advisory coordination, but also institutions of state policy that meet (or do not meet) the requirements of the current stage of development.) development in a specific period of the existence of an industry (industry market) – in the transiological paradigm, these conditions are "procedural". Further, the process of industrial market development leads to the formation of the existing structure ("structural parameters"), which allows using the entire methodological arsenal of structural (industry - in a broad interpretation, focusing on the theory of adjacent markets, quasi-markets, etc.) analysis to

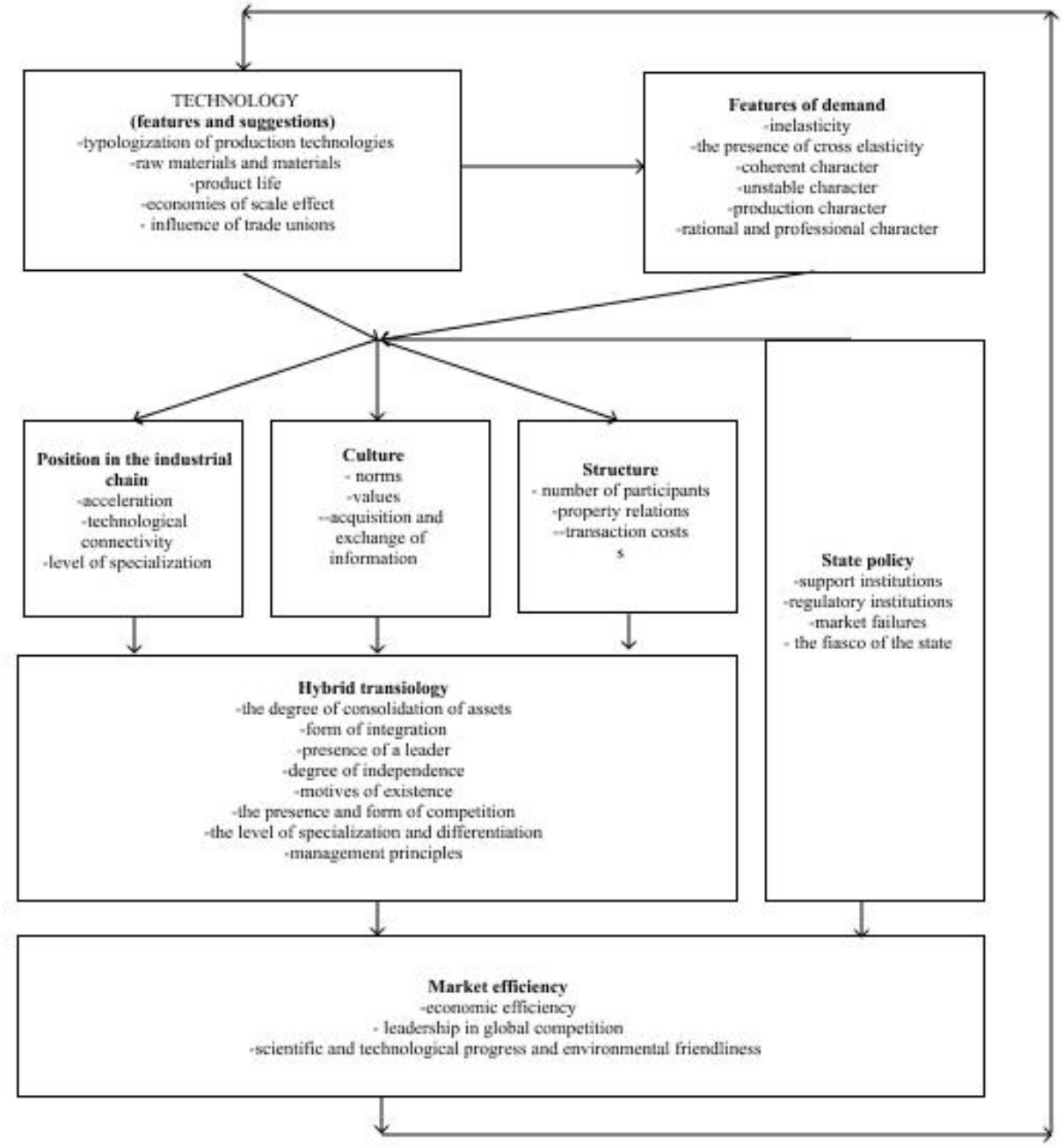

Figure 1 Trasiological paradigm of the industrial market.

describe the process, determine its boundaries, systematize and classify the resulting hybrid forms.

3. RESULTS AND DISCUSSION

Let's imagine the visualization of the traziological paradigm of the industrial market in Fig.1.

Based on the work [20], the following forms of transiological transformation of the industrial market can be distinguished: initiative, contractual, revolutionary.

The option of proactive transformation of the industrial market is a consequence of state policy aimed at both consolidation (and more often nationalization) of priority industries, and unbundling (and denationalization). For example, the formation of large state corporations. Such a transformation occurs relatively quickly, and always leads to ambiguous consequences, the main implementation problem is the

development of working (motivating to industry, dynamic efficiency) rules of work and interaction. At the same time, such rules are imposed, which leads to the development of various opportunistic forms of behavior within the entire industrial chain.

The variant of contractual transformation is the result of the evolution of consultative coordination, interaction, and the development of cooperative behavior. This process becomes a natural (market) reaction to the ongoing processes in the development of the world, country economies, institutional transformation taking place at different stages of the historical (temporary) development of economic relations (largely reflecting both market failures and the fiasco of the state). All contracting parties are interested in the ongoing changes, which makes this process as open and honest as possible.

The revolutionary transformation is a consequence of the emergence of a fundamentally new technology, leading to significant changes in the industrial chain. The higher the level of its innovation, and the demand is as close as possible to the final consumer, the faster and more "revolutionary" the transformation of the industrial market will take place.

4. CONCLUSION

The presented paradigm integrates the transformation and development of the industrial market in a sustainable economy. Competitive behavior in the classical paradigm of market relations is replaced by consultative coordination, represented in this case by the positioning of the company within the production chain, the formation of common norms and rules of the culture of interaction and described by structural parameters. Competitive behavior is transformed into a transitology of determining the existence of a hybrid form of the industrial market. The result of this process is economic efficiency, competitiveness and acceleration of scientific and technological progress. At the same time, the development and implementation of a strategy by a separate industrial enterprise within the framework of the proposed paradigm does not make sense. The paradigm itself is a strategic mechanism that is implemented at the level of formation and development of a hybrid form of the industrial market, within the framework of industry strategizing.

REFERENCES

[1] OECD Beyod Growth: Towards a New Economic Approah, New Approaches to Economic Challengts, OECD Publishing, Paris, 2020. DOI: https://doi.org/10.1787/33a25ba3-en/

[2] J. H. Spangenberg, ‘Economic sustainability of the economy: concepts and indicators’, Int. J. Sustainable Development, 8(½) (2005) pp. 47–64. DOI: https://doi.org/:10.1504/IJSD.2005.007374.

[3] J. Ramos-Martin, ‘Empiricism in ecological economics: a perspective from complex systems theory’, Ecological Economics, 46(3) (2003) pp. 387–398. DOI: ttps://doi.org/**:**10.1016/S0921-8009(03)00191-5.

[4] C. Rammel, M. Staudinger, ‘Evolution, variability and sustainable development’, Int. J. of Sustainable Development and World Ecology, 9(4) (2002) pp. 301–313. DOI: https://doi.org/10.1080/13504500209470126.

[5] D. Castellani, A. Zanfei, Internationalisation, Innovation and Productivity: How Do Firms Differ in Italy?, The World Economy, 30 (2007). DOI: https://doi.org/10.1111/j.1467-9701.2007.00875.x.

[6] H. Chesbrough, Open Innovation. Cambridge, Massasuchetts: Harvard Business School Press, 2006.

[7] G. D. Penna, B. Intrigila, I. Melatti, E. Tronci, M.V. Zilli, Bounded probabilistic model checking with the muralpha verifier, in: A.J. Hu, A.K. Martin (Eds.), Proceedings of the Formal Methods in Computer-Aided Design, Springer, Berlin, Heidelberg, 2004, pp. 214–229. DOI: https://doi.org/10.1007/978-3-540-30494-4_16

[8] G. Gereffi. International trade and industrial upgrading in the apparel commodity chain//Journal of International Economics, 48 (1999) pp. 37-70. DOI: https://doi.org/10.1016/S0022-1996(98)00075-0.

[9] P. R. Cateora, International Marketing. 8th ed., Richard D. IRWIN, Inc., Homewood, 1993, pp. 839.

[10] W. R. Dillon, T. J. Madden, N. H. Firtle, Marketing Research in a Marketing. Environment. 3th ed. — Chicago, McGrawHill, Inc, 1994, pp. 760.

[11] W. L. Moore, E. A. Pessemier, Product Planning and Management. — McGraw Hill, 1993, pp. 542.

[12] R. R. Reeder, E. G. Brierty, B. H. Reeder, Industrial Marketing. Analysis, Planning, and Control. Prenfice Hall, Inc., Englewood Cliffs, New Jersey. 1987, pp. 654.

[13] L. Stankovic, S. Djukic, Research Industrial Buyer Behavior — Key Factor of Strategic Positioning. Facta Universitatis, Series: Economics and Organization, 1(8) (2000) pp. 17–25.

[14] Philosophical Encyclopedic Dictionary. M.: Council. encyl., 1989, pp. 460.

[15] T. Kuhn, The structure of scientific revolutions, 1977, pp. 300.

[16] Yu. V. Yakovets, Formation of the post-industrial paradigm: origins and prospects, Vopr. Philosophy, 1 (1997) pp. 3.

[17] E. T. Gaidar, Economy of the transition period, Financial and credit encyclopedic dictionary. M., 2002.

[18] G. S. Becker, Human behavior. An economic approach. M., 2003.

[19] V. I. Mayevsky, Introduction to evolutionary macroeconomics. M., 1997.

[20] R. G. Grinberg, A. Ya. Rubinstein, Economic sociodynamics. M., 2000.

[21] N. V. Shishkina, Content and types of economic transit. Izvestiya Vuzov. North Caucasian region. Social Sciences. Appendix, 11 (2003) pp. 100-105