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IS THE FINANCE OF NOONOMY A PARADOX OR A RESULT OF EVOLUTION?

Abstract: the article considers the theoretical and methodological prerequisites for the functioning of the financial system in the context of noonomy, justifies the need for finance as an institution in a noonomy society, researches theoretical and practical alternative models of finance, such as Gesel's free money and the system of Islamic finance. From systemic positions the prerequisites for the transition to digital financial models based on the analysis of interconnected factors are determined.
Keywords: noonomy, finance, financial models, loan interest, free money.

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智慧经济社会的金融是进化的悖论还是结果？

摘要：本文研究了金融系统在智慧经济中发挥作用的理论和方法论方面的前提条件，论证了把金融视为智慧经济社会制度组成部分的必要性，研究了金融系统在理论和实践上的替代模式，如格塞尔自由货币和伊斯兰金融体系。基于对相互关联因素的分析，阐述了向数字金融模式过渡的宏观上的先决条件。
关键字：智慧经济、金融、金融模型、贷款利息、自由资本。

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The modern world is going through a complex transformation caused by a root shift of the social paradigm within the context of relationships between the private and the social. Today the

Collective West offers a new value-based frame built on the univocal priority of private goals and interests over the interests of the society. A relatively long period of sustainable welfare permitted to form a generation having new principles of consumption and establishing new game rules. Traditional selling technology doesn't work in relation to consumers which adhere to the "green ideology", which are ready to voluntary changing of accumulation model with replacing the accumulation of material values with the accumulation of non-material values. It has become a result of global economic processes which were caused by a scientific and technical progress in all the sectors of social production as well as by the growth of production capacity of labor based on quick development of automation of production processes and simultaneous emotional and moral depletion on the background of material repletion in the countries of the "Golden Billion". The reaction to the inquiry formed by the society became the concept of "sustainable development" and "reasonable consumption" as its component. The significant contribution to the formation of this concept accounts for the information-and-knowledge processes which finally helped to state that the formation of knowledge-based societies and economy for industrial and post-Industrial countries has become a historical fact.

The forecasts of possible evolution of world social and political and economic order under the influence of information and knowledge processes allowed the emergence of several concepts and theories, one of which is the theory of noonomy. The father of this theory S.D. Bodrunov states: "Noonomy is a new stage of society development on the whole, in which the man will be displaced from the material production, which will give an opportunity to every person to develop freely his creative powers." [Bodrunov, 2018].

Criticizing of the postindustrial theory of Daniel Bell lead to that S.D. Bodrunov created the concept of "new industrial society 2.0" and "post-industrial economy 2.0 – noonomy" [Bodrunov, 2019].

When discussing the evolution of economy into noonomy, one shouldn't forget that the economy is above all the science of rational distribution of limited resources. Regardless of the stage of the society development and level of awareness of all its key processes the main task of the economy as a science remains relevant. The noosphere is the condition for optimal governance. The declared abandonment of economic rationality in favor of social needs is, to a certain extent, an artificial problem. It is enough to change the target function and the system of priorities in establishing of the hierarchy of goals, and we will see that all the economic, analytical and prognostic tools can be used in the interests of the noonomy.

Let us consider the use of information technology as part of the socio-economic model of financial and economic interaction of the subjects of society in the traditional economy. Semantic system is based on the use of graphical diagrams, which have their own attributes and include diverse components. The model has the properties of emergence and synergy. This means that each of its elements has its own independence, while its change entails the transformation of the system as a whole. The system is also capable of coming to equilibrium over time and generating more energy, which is expressed in economic growth, greater than the life of the elements separately.

To determine the relationships between the elements, one should analyze the system of needs and opportunities for the application of financial information technology, combined according to comparable criteria from the digitalization index: "population", "enterprises", "state" (table 1).

Table 1

Parameters of elementary management objects in the context of applyinginformation technology

Need	Opportunity
“Population”	
Need for a high-speed Internet connection	The opportunity of the population to have personal access to the Internet
Need to inform the population about current news, events in the life of society	Opportunity to obtain relevant information available to the public (mobile devices)
Need to buy goods and services	The opportunity to use e-commerce for goods and services
Need for financial advice	Technical opportunity to process information to make financial decisions online
The population’s need for distance learning	The population’s opportunity to access educational resources
Need for cybersecurity	Opportunity to use encryption keys to protect data
Need for electronic document management	Opportunity to submit applications electronically
The population’s need to participate in the political agenda (law-making)	Opportunity to access to e-platforms for participation in public life
The population’s need to carry out bank transfers	Technical opportunity of population to use payment systems
“State”	
Need for budgeting at the state, municipal and local levels	The ability to use information and communication technology (ICT) tools to balance indicators
Need to seek alternatives for the competitive selection of public contracts	Opportunity to use blockchain technology for a transparent tendering process
Need to optimize the activities of administrative bodies	Opportunity to implement online services to simplify bureaucratic procedures
Need for economic stimulus	Opportunity to encourage small and medium-sized businesses to implement innovations
Need of the financial market to lend to the population	Opportunity to lend to the public online
Need for an effective tax system	Opportunity for the government to improve payment discipline through transparency of payments, control through ICT
Need for solid waste disposal and recycling in line with international environmental standards	Opportunity to use modern technologies for waste disposal and raw material processing
Need to establish the procedure for elections to the public legislative body	Opportunity to establish election procedures using so-called e-voting
“Enterprises”	
Need for businesses to upgrade their operations to reduce costs	Opportunity to use technical means for upgrade
Need for businesses to attract investment for capital expenditures	Opportunity for businesses to attract investment for capital expenditures
Need for businesses to generate operational activity through public contracts	Opportunity for businesses and organizations to participate in public tenders on e-platforms

Need	Opportunity
Need to use the Internet to interact with contractors	Opportunity to exchange information quickly via e-platforms (e-mail, electronic document management, telephone, Internet)
Need to use video-conferencing for business negotiations	Opportunity to have technical equipment and headsets for connection to a video conference
Need for businesses to hire staff	Opportunity to use technology to hire employees
Need to create numerically controlled (NC) machines, automatic lines, industrial robots	Opportunity to attract governmental support for investments
Need for information security	Opportunity to use encryption keys

There are not only connections between the elements of system control objects, but also dilemmas that generate problem situations. James Bryant in his research highlights the following six positional elements of conflict: cooperation and trust; positioning and persuasion; threat and rejection [Bryant, 2007].

The dilemma of cooperation and trust arises when one hesitates to accept a common, mutually beneficial position or to choose to improve one's position unilaterally. Other sources also refer to this dilemma as the "Prisoner's dilemma", according to which the parties to a conflict will not always be able to act rationally (and therefore more effectively for everyone) and cooperate with each other. The opponent of the conflict has a *credibility problem*, where one either has to agree to promises or has to assume possible betrayal.

The positioning and persuasion dilemma arises when one side has declared its beliefs and adheres to its chosen strategy, while the arguments of the other side seem to be more realistic and practical. The duality is due to the fact that the subject cannot abandon his intentions. *The persuasion dilemma* occurs when one's own arguments do not seem convincing enough and another's «bluffing» captures the subject's mind with its confident argumentation. The effect is one of manipulation of consciousness.

The dilemma of threat and rejection can be characterized by the game "Hawks and Doves" from game theory, describing competitive relations and the development of a particular strategy.

Hawks are strong, they fight till the last breath and retreat only if they suffer serious damage. Doves are weaker by nature, so they limit themselves to threats and displays of aggression, try to psychologically influence their opponent, but retreat when there is an open clash of interests. The duality lies in the doubt and nature of the opponent's threats, whether he will actually be able to act on his statements or be discredited.

Let us consider the relationship of the elements through the prism of dilemmas and definitions of problem situations in the application of information technology to financial management. For example, the dilemma of cooperation and trust manifests itself in the Central Bank's intention to introduce the digital ruble into money circulation. On the one hand, such technology will close the need in fast and cheap payment systems and will make it possible to reduce the acuteness of some problems, connected with the disconnection of Russia from SWIFT. On the other hand, the population and businesses may distrust the little-known phenomenon, which is fraught with the threat of loss of liquidity, the inability to exchange it for other currencies and the depreciation of money [Zhu, 2019]. Can we trust the new crypto currency if the government is trying to control it, although it was originally created for unhindered exchange, bypassing banks and governments, but has acquired a strong volatility and fame of a source of easy profit-making?

The next dilemma is the one of positioning and persuasion manifests itself in the sale of information technology to consumers and the need for their real application. Let us consider it with the example of robo-advisers, virtual advisors who, using software algorithms based on big data, select the most appropriate options for the formation of each client's investment portfolio [D'Acunto, Prabhala, Rossi, 2018]. The main interaction between consumers takes place on mobile devices – this behavior is becoming the culture of modern social life. This causes the transformation of habits – the new psychology is the possibility to get both detachment and personal counseling at the same time in the same minute[1].

Some of the main advantages of the digital assistant are: relatively short time to find an investment decision; customer focus; diversification; consideration of aggregated personalized and navigated experiences [D'Acunto, Prabhala, Rossi, 2018]. The disadvantages are: Relatively high cost; unproven reliability of decisions made; little experience of use; and, as a consequence, insufficient research on positive experiences of the technology application. The market lives by beliefs that are tested over time and may not meet expectations about the profitability and sustainability of the selected robo-advisers' strategies.

The dilemma of threat and rejection can be found in the competitive strategies of high-tech firms, where large corporations take over small startups at off-market prices [Porter, 2005]. Other examples are: stricter regulation of government information policy; application of restrictive measures on storage and use of user information by providers; attempts to restrict Internet traffic; failure to always follow one's own instructions.

Let us consider the use of information technology as part of the socio-economic model of interaction between subjects of society. Semantic system is based on the use of graphical diagrams, which have their own attributes and include diverse components. The model has the properties of emergence and synergy. This means that each of its elements has its own independence, while its change entails the transformation of the system as a whole. The system is also capable of coming to equilibrium over time and generating more energy, which is expressed in economic growth, compared to the state in the life of the elements separately.

The financial model of the current economy is the result of a distorted view of the essence of the finance function. The financial sector is disconnected from the needs and problems of the real economy. According to a number of experts, the total value of all derivative financial instruments exceeds US$1.2 quadrillion, which is 11 times more than the entire global GDP. The possibility of a non-productive way of capital increase (financial rents) has never before led to such a significant imbalance. Financial transactions are made not for the sake of financing real projects, creating real businesses, distributing capital and property, but for the sake of financial transactions themselves.

F. Bacon warned of the dangers of this kind four hundred years ago: "Wealth is very good when it serves us, and very bad when it commands us" (see: [Bacon, 2015]).

The prerequisites of the modern distorted financial model are contained in the very nature of loan capital and the fact that financial rents exist in the form of lending interest rate. This approach has allowed financial structures to dominate all countries with a developed financial market. The real usefulness of this model in terms of economic growth is offset by cyclic manifestations of systemic financial crisis.

[1] Future of Digital Financial Advice. Heidrick & Struggles. 2016. URL: https://centerforfinancialplanning.org/wp-content/uploads/2016/12/Future-of-Digital-Financial-Advice.pdf.

Let us turn to alternative financial models, such as "S. Gesell's concept of free money". According to Gesell's theory of the natural economic order, "money is merely a means of exchange and nothing more. Its function is to facilitate the exchange of goods, destroying the problems of barter trade. Barter was unreliable, expensive, troublesome, and very often stopped at all. Money, which replaces barter, provides reliability, increases and cheapens the exchange of goods." [Gesell, 2015]. In fact, it is about negative interest rate for any money, both cash and non-cash.

Is this approach a panacea? No. Europe has been living with negative interest rates in the interbank market for the past few years (Table 2). Has this situation led to an acceleration of financial turnover and economic growth?

Table 2

Annual Euribor rates (2014–2023)[1]

Date	Rate, %
1/2/2023	3.316
1/3/2022	–0.499
1/4/2021	–0.502
1/2/2020	–0.248
1/2/2019	–0.121
1/2/2018	–0.186
1/2/2017	–0.083
1/4/2016	0.058
1/2/2015	0.323
1/2/2014	0.555

Obviously, negative interest rates have not stimulated rapid economic growth – data on the growth rate of Eurozone GDP for the relevant period show in most cases about zero values (Table 3).

Is the practical implementation of the principles of the "free economy of Gesell" possible? The world economy, including the Russian economy, knows examples of the introduction of local currencies, which cannot be used as a means of accumulation or investment, can only be exchanged for goods only in the territory of one settlement. In particular, a farm located in the village of Shaimuratovo (Republic of Bashkiriya), in an acute shortage of liquidity has introduced the so-called "shaimuratiks" – goods coupons, which can be used to pay for goods and services in the territory of the village. At the same time it is a legitimate means of payment on the territory of this settlement: "The Supreme Court of Bashkiriya allowed the residents of the village of Shaimuratovo to pay with "shaimuratiks". The introduction of its domestic currency allowed not only the farming enterprise itself to survive, but also set in motion the entire village economy. For the first time in many years, the turnover grew by a factor of 12.[2]

As an alternative to the financial model based on lending interest rate, we can consider the *system of Islamic finance*.

[1] URL: https://www.euribor-rates.eu/en/current-euribor-rates/4/euribor-rate-12-months/.
[2] URL: https://www.vesti.ru/finance/article/1949359.

Table 3
Trends in Euro area GDP growth (2014-2022[1]

Period	Value, %	Period	Value, %
QIII'2022	0.2	QIV'2017	0.6
QII'2022	0.6	QIII'2017	0.6
QI'2022	0.3	QII'2017	0.6
QIV'2021	0.3	QI'2017	0.5
QIII'2021	2.2	QIV'2016	0.4
QII'2021	2.0	QIII'2016	0.3
QI'2021	–0.6	QII'2016	0.3
QIV'2021	–0.6	QI'2016	0.5
QIV'2019	0.1	QIV'2015	0.3
QIII'2019	0.2	QIII'2015	0.3
QII'2019	0.2	QII'2015	0.3
QI'2019	0.4	QI'2015	0.4
QIV'2018	0.2	QIV'2014	0.3
QIII'2018	0.2	QIII'2014	0.2
QII'2018	0.4	QII'2014	0.0
QI'2018	0.4	QI'2014	0.2

The Islamic finance model complies with the requirements of the Shariah. According to this approach, the system of Islamic finance strictly observes the prohibitions for:

– "speculative" behavior;

– unreasonable risk-taking;

– financial operations connected with trade of arms, alcohol, tobacco products, taking bribes and lending money at interest.

Islamic finance is oriented toward:

– the inviolability of contractual obligations;

– the parity distribution of risks;

– equitable distribution of income;

– balance and pursuit of social justice.

Investment model based on Islamic banking is a model of project financing, focused mainly on the real sector of the economy. The potential of the Islamic financial system is determined by the volumes of accumulated liquidity in Islamic countries (Figure 1).

Obviously, the volume of concentrated Islamic finance in Islamic banking, which has increased by 1.5 times over the past 5 years and reached $ 1.9 trillion by 2021, indicates the high efficiency of this model.

Will this approach become decisive in formation of financial processes in conditions of noonomy? It is evident that the basis of the noonomic financial model will be universal digital instru-

[1] URL: https://ec.europa.eu/eurostat/databrowser/view/NAMQ_10_GDP__custom_3761889/bookmark/table?lang=en&bookmarkId=4eef75c1-4ab8-4e39-865e-6301e3390d28.

ments, the basis for the formation of which, according to experts, may be energy or information units, rather than the gold equivalent. How easy will it be to introduce the corresponding informational financial technologies?

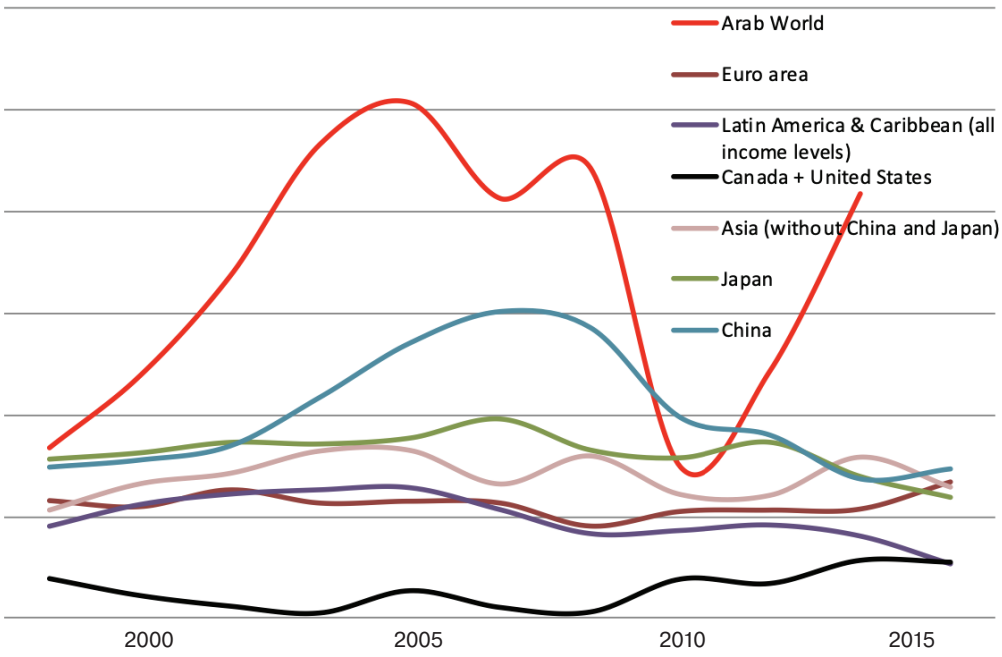

Figure 1. Indicators of the volume of liquid capital in Islamic countries, USD trillion[1]

Practices and frames from sociology, psychology, cybernetics and cognitive linguistics come to help. Next, let us consider several models that will help to form the criteria for evaluating the technologies themselves.

According to the *Theory of Reasoned Action* (TRA) [Fishbein and Ajzen, 1975], the human behavior is conditioned by one's intention to carry out an individual event. This *behavioral intention is collectively determined by the individual's attitude toward behavior and subjective norms*, and is a major factor in the use of the given system.

The Theory of Planned Behavior (TPB) [Ajzen, 1985] is based on the Theory of Reasoned Action (TRA), with one additional component: *behavioral control*. Consequently, TPB assumes three components: *behavioral control, attitude,* and *subjective norms*. Thus, behavioral intention determines a person's actual behavior [Goldstein, Jiang, Karolyi, 2019].

Fred Davis [Davis, 1986; 1989; 1993] used the Technology Acceptance Model (TAM) based on an adaptation of Martin Fishbein and Isek Eisen's theory of reasoned action (TRA). The Technology Acceptance Model (TAM) introduces two main components, *ease of use* and *perceived usefulness*. The main goal of TAM is to facilitate an information system (IS) based on the introduced criteria to choose the right behaviors. The model is also used to track the effect of external variables on attitudes, beliefs, and intentions (Figure 2).

Later V. Venkatesh and F.D. Davis [Venkatesh, Davis, 2000] presented an extended theory of TAM, including subjective norms for assessing the intention and ease of use of the system. To further develop and consolidate the TAM-related research, V. Venkatesh [Venkatesh et al., 2003] cre-

[1] According to data of the World Bank. URL: http://worldbank.org.

ated a predictive model known as *The Unified Theory of Acceptance and Use of Technology* (UTAUT). It includes four key components: *Expected Effort, Expected Performance, Social Impact, Favorable Conditions* used to determine user acceptance of the technology and whether there is an intention to use it.

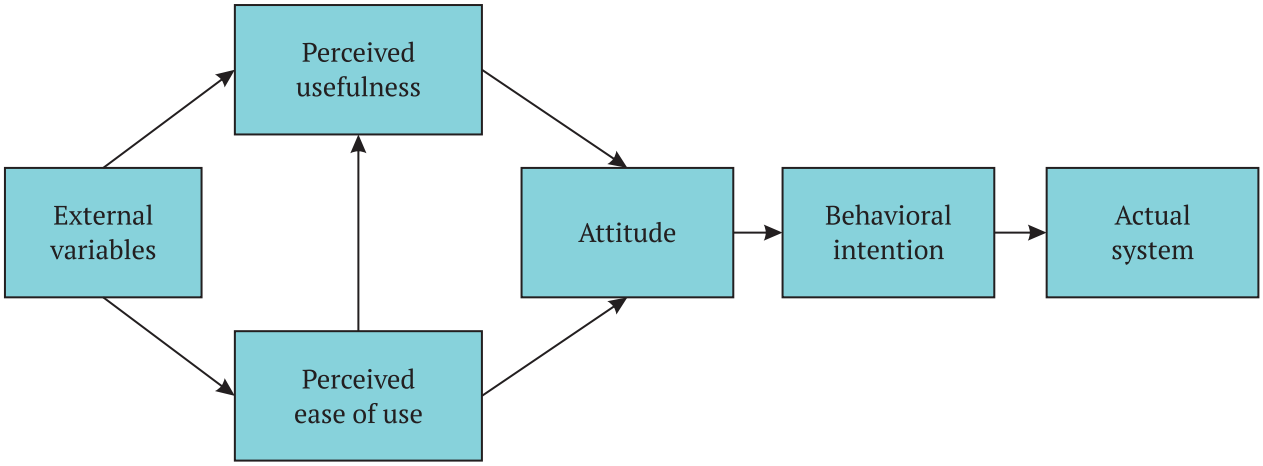

Figure 2. Technology acceptance model (TAM) [Ahmad, Basden, 2008]

There is the prospect of a broader comprehensive study of system success and IS user satisfaction. Delaunay and McLean (1992) revised and implemented a classification of various aspects of IS success based on six major categories: *Information Quality, System Quality, System Usage, User Satisfaction, Individual and Organizational Impact (see:* [Verhage, 2019]).

As part of this approach, later B. Wixom and P. Todd proposed to add *quality elements* to the existing classification [Wixom, Todd, 2005]. They developed an integrated model based on the technology of acceptance and user satisfaction. An important mechanism in this model is the relationship between object relations and behavioral beliefs.

D.L. Goodhue and R.L. Thompson [Goodhue, Thompson, 1995] developed a *Task-Technology Fit model* (TTF) that includes eight criteria: *quality, localizability, authorization, system reliability, ease of use/learning, timeliness, compatibility, and user relationships*, in order to determine the positive effect of a particular job through the ability to use the system through problem-matching.

Based on the analysis of models and theories such as Technology Acceptance Model (TAM), Advanced Technology Acceptance Model (TAM2), Unified Theory of Acceptance and Use of Technology (UTAUT), IS Success Model, Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Task-Technology Fit Theory (TTF), – it is possible in further research to select the technology relevant to the study, adoption, interaction and use in any element of the model of society, the target group, whether it is the government, education, business or population [Othman, Lam, 2012].

Thus, the issues of maturity of new system of relations, issues of readiness of the person to new model of relations and issues of trust in person-society coordinates will become the key factors of transition to new financial models in the conditions of deepening of noonomic processes in society.

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