
Process Approach to Modeling of National and Global Securities Market Operation

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Abstract:

Present study dwells on application of process approach to modeling of national and global securities market operation. Authors select securities market functioning as an object of the study. A subject of research is applicability of the process approach to modeling of securities market functioning in order to improve the processes taking place in the securities market.

Authors describe existing securities market models in the study. The study contains a description of new securities market model in terms of process approach. The given model gives the possibility to improve the processes of stock market functioning as well as provides the market with the opportunity to reach the higher competitive level.

According to the results of the study, authors conclude that the presented model can be adapted to any type of both national and global securities market and so that to improve the processes taking place in the securities market.

Keywords: stock market, securities market, modeling, market models, process, process approach, quality management

JEL Classification Codes: F15, F47, G20

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1. Introduction

The securities market plays an important part in the development of business processes and national economics as well. Organized securities market has a complex structure and consists of a large number of different financial institutions and organizations. In most countries, this structure is similar in its institutions (Liapis *et al.*, 2013; Thalassinos and Liapis, 2014; Allegret *et al.*, 2016).

Being the main institution of the securities market, stock exchange interacts with all bidders and institutions that facilitate the organization of securities market operation. The main aim of this article is to research applicability of the process approach to modeling of securities market functioning in order to improve the processes of securities market functioning and to provide the market with the opportunity to reach the higher competitive level.

In order to achieve the stated objective the study will be structured in a certain way. First, present models of securities market will be briefly described. Then we will construct a model of securities market functioning based on the process approach and describe it in details.

The last part of the analysis contains the conclusion that shows that it is possible to apply the process approach to modeling of securities market functioning in order to improve the processes taking place in the securities market.

2. Theoretical, Informational and Empirical, and Methodological Grounds of the Research

There are several models of the securities market functioning in the world (Thalassinos *et al.*, 2015; 2012; Thalassinos and Liapis, 2014; Vovchenko *et al.*, 2017; Kosinova *et al.*, 2016; Glavina, 2015; Radionova *et al.*, 2015; Bondarenko *et al.*, 2017; Vasin *et al.*, 2017). Russia national securities market as well as the Customs Union and the former Soviet republics markets have low indexes of competitiveness. During the last world economic forum 2016 it was noted that in the rating of global competitiveness Russian Federation currently ranks 43rd, having risen by 2 positions in comparison with the previous rating. 140 states took part in the study. The results of the study are reflected in the report "Global Competitiveness Index 2016 - 2017", prepared in the framework of the World Economic Forum (WEF).

There are several basic models of the securities market, based on the securities market institution, which determines the composition of its participants. Each of these models is characterized by its specific types of securities, infrastructure, intermediaries and the interaction of institutions. There are three models of the securities market functioning: American or stock market model, German or banking model and mixed model. The first model of the securities market emerged in the US

and is called stock market or non-banking. Nowadays more than 40% of countries apply this securities market model. This model is called stock market model, due to the fact that only investment banks have access to the stock market.

Bidding for other participants is carried out and supervised by brokerage companies. This measure was undertaken in the conditions of the world economic crisis of the 30s of the XX century. The country's leadership has come to the conclusion that it is unacceptable to concentrate in one hand the issue of securities and credit and deposit operations. The Central Committee coordinating the activities of the US stock market was the Commission on the Securities Market.

The second securities market model, banking model, originated in Germany. It provides for admission to the securities market of various banks and commercial organizations. The banking model is less spread all over the world. Only 10% of countries apply this model in its securities market, it is wide spread mostly in EU countries. Banking model emerged during the Second World War, when the recovery of the participating countries' economies was carried out through the support of the banking system. The Central Bank and the Ministry of Finance accomplish management activities in the securities market.

The other half of the countries use a mixed model of the securities market functioning. It combines the advantages of both of the above systems. Commercial banks and investment institutions operate simultaneously in the securities market. The share of participation of commercial banks in the market depends to a certain extent on the policy of state regulation and the specifics of the economics. Such countries include, for example, Russia and Japan.

Existing models represent the functioning of the stock market, based on their composition of market participants, the structure of property rights and the structure of financing the economy, however not illustrating the interactions that occur during transactions in the market. The work of the stock market institutions needs to be monitored and refined in order to improve the indicator of the financial market development. The process approach is widely known in the sphere of quality management. Studies have shown that the process approach was not previously applied to the securities market functioning.

Before proceeding to the description of existing and building new securities market models, it is necessary to pay attention to the fact that there are several ways of modeling. The goal of any modelling is the acquisition, processing, presentation and use of information about objects that interact with each other and with the external environment.

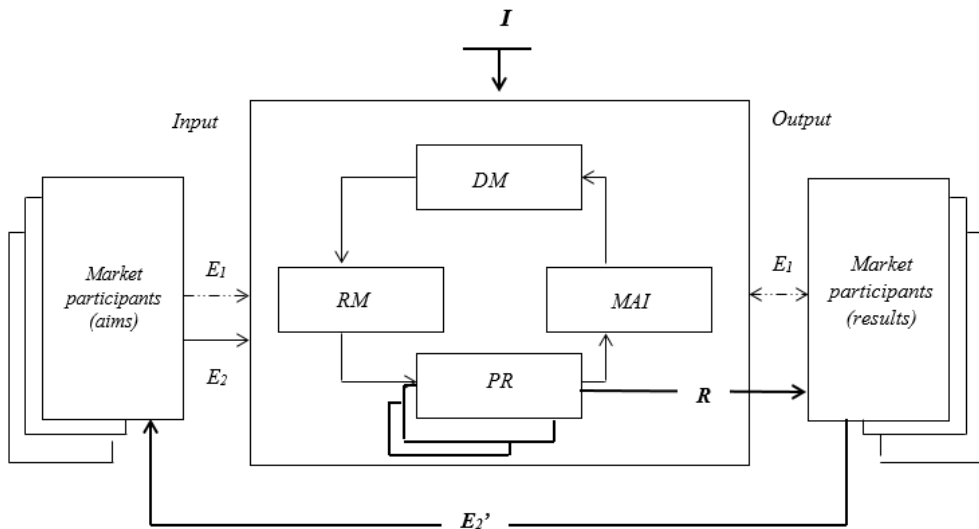
The universal type of modelling is mathematical modeling, which allows constructing a structural graphic model. This type of tangible model represents a

certain physical embodiment of the original and is confined in the representation of the original object by means of conventional notation (Adler *et al.*, 1976). The model is also based on establishing links between the object elements with each other and with the so-called elements of the supersystem. It necessarily includes the reflection of the identified links. Established links are characterized by comments on the model, explaining the essence of each connection.

3. Results

It is expedient to examine the model of the securities market functioning from the point of view of the process approach (Figure 1). This model provides an opportunity to demonstrate the securities market functioning, as well as improves the processes occurring on it. The concept of the process approach is based on the fact that the desired result is achieved more effectively when the relevant activities and resources are managed as processes. The main point of the process approach is that the performance of each work is viewed as a process, and the organization's functioning is viewed as a chain of interrelated processes necessary for the production of products or services. Creation, provision and management of interrelated processes system significantly increases efficiency and effectiveness of the organization's activities, and provides consumers with more guarantees to meet the requirements. The advantage of the process approach is also the continuity of management, which this approach provides at the interface between the individual processes.

Figure 1. Model of the securities market functioning



E1 - information; *E2* - finances; *E2'* - reinvested finances; *I* - external influence; *MAI* - monitoring, analysis, improvement; *DM* - quality management of top management; *RM* - resource management; *PR* - the processes of the stock market; *R* - financial result.

As participants in the process, the following groups can be distinguished:

- Issuers - a state or a legal entity that issues securities.
- Investors - individuals and legal entities that make long-term investments in securities, as well as short-term transactions.
- Organizational structures - institutions of the securities market, which are necessary for making transactions. These structures include stock exchanges, depositories, registrars, clearing houses; securities market control and regulation agencies, as well as brokers, dealers, management companies.

Each of market participants pursues its goals, on which the outcome of the trading depends. Participants of the process play an important part, because they define the aims, characteristics and conditions for services in the market. Any process has inputs and outputs. Considering the stock market as a process, we can distinguish two inputs:

- E1 - information that facilitates the decision-making on the bargaining. It can be news tapes, analytical materials, expert opinions, etc.
- E2 - capitals, i.e. the assets of participants participating in purchase and sale transactions on the stock market.

These flows enter the process of the securities market functioning at the input from market participants. Both external and internal factors *I* influence on the processes taking place on the securities market. External factors can not be changed or eliminated; they can only be accounted for. These factors include economic, political, social processes and events all over the world, which may not relate to the stock market. Internal factors include the level of management, resource management, the quality of monitoring processes and management activities.

From the given model, it is obvious that there is a continuous interconnection of processes, starting from the process organization, quality management of top management, resource management, and direct processes in the stock market to monitoring, analysis and improvement of the services provided.

The process itself always has an object manager and an object of control. In this case, activities in the stock market are the object of management, i.e. actions of stock market participants aimed at circulating securities, attracting additional investments, making profits, etc. Object managers are persons and organizations that control the functioning of the process. These regulators are the departments of the market regulator responsible for the supervision and control of stock market activities, stock exchange divisions that ensure the smooth running of trades, depositories and registrars that carry out accompanying operations in trading on the stock exchange, such as timely recording of securities on customers' accounts, Register of securities, etc.

Any process that takes place on the securities market must be monitored, analyzed and constantly improved, whether it is technical aspect of concluding a multibillion-dollar deal or simply signing an agreement for opening an account. Each process has an owner responsible for implementing a particular process in the overall system of the organization's functioning. The owner of the process must necessarily control the process and identify its strengths and weaknesses. Each process needs to be optimized, minimizing costs and improving the quality of the service.

For example, a person responsible for the software and hardware of exchange trades must control rate at which stock quotes are received directly from trading in market participant's trading systems and in case of a temporary lag, delay in receipt of quotations, take measures to eliminate this error, and also strive for to reduce this time interval more, thereby improving the speed of bidding. Application of quality management principles allows to make improvements, the implementation of which means the establishment of aims for managing and monitoring the continuous improvement; Evaluation, recognition and confirmation of improvements; Providing employees with training opportunities for methods and tools for continuous improvement, and finally turning the processes of continuous improvement of products or services into the goal of each employee. Achievement of the principles forms the need for constant improvement of the quality of the provided service for each employee.

In order to stimulate the above process block, management should also participate in it, set specific tasks, allocate the necessary resources to carry out tasks and recognize the improvements achieved.

Top managers of financial institutions should determine the purpose of processes and sub-processes, set goals for process owners, approve targets that reflect the effectiveness of each process, receive regular information, report on the progress of a process, and bear joint responsibility for the functioning of the relevant process in order to ensure their smooth and competitive operation.

Certain resources are needed to ensure operation of a process. In our case, resources are employees of the stock market institutions, equipment for trading, software, communications, premises, etc. It is important for market participants to receive information about quotes without delays, it is important to exclude presence of failures in the operation of trading systems, as well as in the work of communication with trade intermediaries. For the trading organizer, comfortable premises are needed to provide workplaces to employees. Software and hardware tools that facilitate the smooth running of trading on the market are also very important. Of course, well-trained staff is important. Competent resources management is essential for optimal use of all available resources. Management, top managers of responsible market institutions provide direct influence on the qualitative performance of this

activity, being regulators, supervisors of this process, which is reflected in the given model.

In the proposed model, resources enter the block of securities market processes *PR* - the processes of the stock market. It is necessary to remind that there are several types of activities on the market; each of these activities is characterized by its processes and operations. The main process is unconditionally trade in securities, which is divided into many sub-processes, etc. In addition, there are also auxiliary processes, such as maintaining the register of shareholders, recording ownership of securities, monitoring compliance with laws, and many others. As an example, even a process of signing an agreement to open an account with a brokerage company is already a process.

In addition to the above components, any process must have aims, results, or in other words outputs. The financial result of the *R* processes is achieved directly with the functioning of the securities market as a single process. As for the securities market, it is impossible to clearly distinguish the outputs of the process, characteristic for all participants, because each category of participants pursues its goals when trading in the securities market. For example, issuers of securities as a result of the process expect to attract additional investments for certain purposes, for example, to finance new business projects or expand existing businesses. Financial intermediaries, broker companies, also make a profit, but this profit appears from commissions for giving investors the opportunity to enter the stock market. The main purpose of participation in trading for investors and speculators is to obtain profit, either as exchange differences in the sale of securities or as passive income from longer-term investments.

What is typical for this category of participants, is that the financial result, or profit, is often reinvested in the stock market in whole or in part, without going out of trade in case of the successful achievement of the goals set for trading in the stock market, as well as in favorable external circumstances not dependent on the processes on the market. This aspect is reflected in Figure 1 using the index $E2'$. It is necessary to note that $E2'$, reinvested finances, is a variable, depending on the interests of market participants.

4. Conclusion

Thus, the presented model clearly demonstrates the interrelation and cyclicity of the securities market functioning. It allows, using various tools, to improve the processes taking place in the securities market, which makes it possible to bring the market to a higher competitive level. The model is applicable to all types of securities markets and can be adapted for the models described above (Sycheva, 2015).

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