

# The Order of Organization of Supply Chain Management of Medical Industry Activity in the Republic of Tatarstan

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**Abstract**—Supply chain management is a key mechanism to increase the efficiency of a medical industry activity. Purpose of this article is to examine the current state of supply chain management in healthcare institutions and offer instructions on supply chain management service organization in medical institutions. The author assesses current status of the supply chain management of activities of medical institutions by interviewing the owners, management, employees of individual healthcare institutions. The author identifies weaknesses in organization of the supply chain management in medical institutions and gives recommendations concerning the order of organization, principles, and fundamental rules as the basis for effective functioning of the supply chain management service in medical institutions. Organization of supply chain management becomes mandatory for many companies of the financial sector, including healthcare sector

**Keywords**— supply chain management, medical institutions, management technologies, Russia, medical industry activity.

## 1. Introduction

Medical service market of Russia provides great opportunities for Russian and foreign investors. It confirms the growth of paid medical services rendered to the population in Russia, which is presented in fig. According to statistics 47% of Russians are active users of services of commercial medical centers [1]. The market of paid medical services in the Russian Federation has increased to 1,2 % in 2019 in relation to 2018 [2]. The volume of paid medical services realization in public and private medical institutions in the Republic of Tatarstan has increased almost fourfold since 2002 [3]. The represented data confirms - data control concerning effectiveness of organization activity as a whole.

Thus, an supply chain management of a commercial medical institution allows to bring out the reserves for further development, substantiate the most

that competition between private and public medical institutions in the segment of paid medical care will continue growing. Timely preparation for rendering new services, transition to a higher level of medical business processes organization and carrying out consecutive measures to improve activity efficiency is the most important condition for sustainable development of commercial medical organization in contemporary political and economic realities of Russia.



Fig.1 Volume of paid medical services to the population in Russia, billion rub. [4].

It is necessary to search for new and effective ways of medical organization management to improve the quality of medical services. Basic objective of the supply chain management of activities of commercial medical institutions is estimation of internal control system, risk management and corporate management in general [5]. Supply chain management activities of a medical institution includes:

- estimation of functioning success of individual subdivisions of the institution,
- fulfillment of stated business objectives,
- utilization of resources from a perspective of economic efficiency,

optimal directions of activities, i.e. significantly increase the efficiency of the medical institution activity and give it competitive advantages.

However, despite the growth of scientific recognition of the importance of supply chain management of commercial medical institutions activities, little research has been directed to the factors, ensuring the quality of the supply chain management of medical institutions activities [6,7]. Thus, there is no

methodological support of audit of activities of private medical companies.

As a strategic objective in research of issues of supply chain management organization of commercial medical institutions activities we propose to study the current state of the supply chain management of private medical institutions activities of the Republic of Tatarstan and development of strategy of the supply chain management organization of medical institutions activities.

Hypothesis 1: it is necessary to search for new and effective ways to manage the medical organization to improve the quality of medical services.

At the present moment medical staff acquired the opportunity to organize their own business in the Russian Federation. Small forms of medical business in the sphere of dentistry, plastic surgery and gynecology received an impetus to development. Annual growth of private healthcare market is 20-22% [3]. Modern medical institution is a high technology company, complicated in management. Departments of different fields function in it, that constantly interact both with each other and with external specialized institutions. Sometimes business starts to decline because of reasons non-obvious to the owner of commercial clinics: customers go to competitors, skilled specialists quit the job, acute shortage of financial resources comes up. From a quarter to a third part of small healthcare companies become insolvent within the first three years of their existence.

Supply chain management of effectiveness of medical institutions activities allows to find solution of functioning problems on the market of medical services in Russia [8, 9, 10, 11]. Since "supply chain management is the activity on provision of independent and objective guarantees and consultations aimed at improvement of institutions activities, supply chain management helps the institution to accomplish the stated objectives, using a systematic and consecutive approach to the estimation and improvement of process efficiency of risk management, control and corporate management" [5].

However, despite the growth of scientific recognition of the importance of supply chain management of commercial medical institutions activities, little research has been directed to the factors, ensuring qualitative functioning of the supply chain management [6, 7].

Hypothesis 2: there is no methodical support of supply chain management of private medical companies activities.

Issues of the role of supply chain management in medical institutions, peculiarities of its subordination and necessity of its creation are previously examined in detail [12, 13]. For commercial medical institutions a specialized supply chain management is required, taking into consideration peculiarities of their activities, specificity of interaction with bodies of state government, social conditions of entrepreneurship in Russia

## 2. Method

To confirm the suggested hypotheses in 2019 we conducted the review of commercial medical institutions in one of the regions of the Russian Federation - Republic of Tatarstan.

By means of interviewing the owners, executive managers and chief accountants on the theme "Supply chain management in practices of medical institution management" we have indicated that it is one of the most effective ways of medical institution management for improvement of medical services quality. Over 50 representatives of 20 leading commercial medical institutions of the Republic of Tatarstan were involved in the research. On figures 2, 3, 4 a "portrait" of research participants is given.

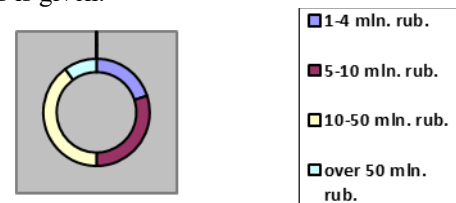


Fig. 2 Distribution of commercial medical institutions by volume of investments into medical equipment for the last 3 years, mln. Rub

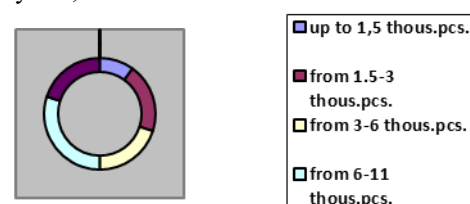


Fig. 3 Distribution of commercial medical institutions by quantity of patient visits in the last quarter, thous.pcs.

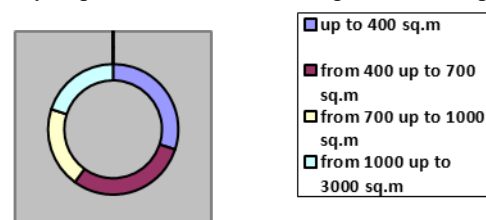


Fig. 4 Distribution of organizations by volume of occupied space, sq.m

Review of medical clinics of the Republic of Tatarstan and methods of supply chain management organization was used by us for the development of complex

technology of supply chain management organization of medical institutions activities.

In table 1 we have grouped the basic information about medical institutions of the Republic of

Tatarstan, which were chosen as participants in our research and which are offered to implement supply chain management into the activities of their business.

Table 1 General information about commercial medical companies

Indicator name	KORL Medical Centre	Bars-Med Medical Centre	Garmoniya Medical Centre	Spasenie Medical Centre
1	2	3	4	5
Legal form of organization	Limited Liability Company	Limited Liability Company	Limited Liability Company	Closed Joint-Stock Company
Business status	medium	small	medium	medium
Taxation system	general	simplified	simplified	simplified
Place of location	Kazan city	Kazan city	Nizhnekamsk city	Kazan city
Availability of branch network	absent	present	absent	absent
Opening day	03.06.2008	09.02.2011	27.10.2010	2007
Average headcount of medical staff, people	83	7	40	62
Activity directions	Multi-faceted	Magnetic resonance imaging	Laboratory investigations, ultrasound diagnostics, consultations of specialists, dentistry	Multi-faceted centre
Character of rendered help	in-patient, out-patient	diagnostic	out-patient	out-patient
Average check amount (average income from one patient), rub.	3600.00	2500. 00	1150.00	No data

### 3. Result

Currently, owners, executive managers, employees of economic services in the area of large entrepreneurship already have an idea of the supply chain management. In the Republic of Tatarstan supply chain management is just being implemented into the activities of commercial medical institutions. As it is proved by our research, the owners, executive managers of commercial medical centers have many questions. Among them: what is the supply chain management, what is its role in the institution activity, what are the functions of supply chain management, how to optimally and efficiently organize the supply chain management service, how to correctly choose the staff of the supply chain management service.

We propose to consider research results in the context of the following key areas:

- subdivision positioning of the supply chain management;
- staff assistance of functioning of the supply chain management and order of its organization in medical institutions.

Positioning of the supply chain management.

We have received the following results according to

the data of the conducted interview: 1) only 20% of medical companies implement supply chain management function close to the modern requirements, financial control of 60% of medical institutions is carried out traditionally in the form of inspection and control mainly in the structural and functional form. The supply chain management service is absent in 20% of the surveyed institutions, among which 70% of companies plan to introduce the practice of supply chain management of their activities in the near future. Respondents not having established supply chain management service, refer to the following reasons concerning the existing situation:

- medical centre is too small;
- structure of economic operations is too simple.

It makes sense to recommend the medical companies to assess the possibility of implementation of at least the supply chain management in a single person instead of the supply chain management subdivision.

Answers and reviews of respondents to our survey allowed to clarify the role of supply chain management in the business of medical institutions. So, the majority of those, who were interviewed (85%) believe that it consists in independent assessment of adequacy and efficiency of internal control, as well as in estimation of

compliance of medical activity with the established standards, procedures, laws and regulations. Such understanding shows the importance of internal control and compliance with the requirements of the legislation. At the same time, not all owners of private medical centres believe that supply chain management is aimed at resolving their doubts about business risks and efficiency of company work as a whole.

The research, conducted by us, indicated that in every second medical company the owners are willing to spend no more than 1% of the earned income on the functioning of the supply chain management. In most medical companies, where supply chain management service functions, its headcount is represented by one or two specialists. However proper organization of the supply chain management in commercial medical institutions will require additional costs for its maintenance. For this reason, the question of the method of supply chain management organization sharply comes up.

Staffing of the supply chain management function and the order for its organization in medical institutions.

There is no single approach to the organization of supply chain management. In each medical institution a way of creation, service structure, headcount of supply chain management should be determined individually as it is not easy to calculate the existence value of the supply chain management in a particular organizational form.

In the studied private medical centres of the Republic of Tatarstan supply chain management was introduced in all organizational forms: its own supply chain management service, outsourcing and co-sourcing.

Shaping the supply chain management function in commercial medical institutions, we will focus on the stages of its organization. Method of supply chain management organization, presented further, fully meets the modern needs of medical institutions, as it allows to normalize the processes of implementation and application of the supply chain management function. First of all, it is referred to specifying the organizational and functional content of supply chain management in medical institutions.

Big medical centres (Spasenie MC, Medel MC, Korl MC) and centres with the branch network (Zdorovaya semya MC, Medel MC), comprising 71% of institutions under study, are exposed to huge impact of various risks. Low degree of exposure to risks is typical for diagnostic medical institutions and dental clinics, comprising 29% of centres under study (Bars-

Med MC).

Mature control environment is noted in small medical institutions, offices. Share of such medical institutions comprises 42% (Bars-Med MC, Maxillo-Facial Surgery MC). Other medical companies demonstrate weak internal control. Thus, for organizations, experiencing high degree of risk impact and having immature control environment, we recommend to establish the supply chain management function on the basis of its own service. Otherwise, as well as for small diagnostic centres and dental clinics, we propose to use outsourcing. Methods of determining the method of supply chain management service organization was considered by us earlier [13]. Based on the proposed scheme it is possible to determine an appropriate method of supply chain management organization in specific commercial medical institutions.

Ethical principles - rules of conduct of supply chain management are set out in the Code of Ethics of Supply chain management, as well as identified by Internal Professional Standards of Supply chain management 1100 "Independence and objectivity", 1120 "Individual objectivity", 1200 "Professionalism and professional attitude to work", 1210 "Professionalism", 1230 "continuous professional development". As a result of analysis of ethical principles, set out in national and international regulatory documents, it is possible to make a conclusion that most of them are similar [14].

Greatest attention should be given to ethical principles of independence of the supply chain management. It is particularly important to implement this principle during establishment of the supply chain management service in the medical institution. In this case it is necessary to establish strict forms of subordination within the organizational system of a medical company.

Interview results demonstrated that in the issue of subordination, most of our respondents (73%) mistakenly believe that supply chain management service is needed only to assist the executive management in carrying out its functions. However, if the supply chain management will be accountable only to the head, in this case it will lose its independence and objectivity.

Committee of Sponsoring Organizations of the Treadway Commission in its "Conceptual framework of organizations risk management" emphasized that "supply chain management unit shall be so arranged as to ensure its objectivity in the estimation of organization's activities and have unrestricted access to senior management and audit committee of the Board of Directors and the level of subordination of the Auditor General within the organization should allow the supply chain management unit to effectively execute its

functions" [15].

According to survey data of Russian companies, which is held in cooperation with the Russian Institute of Supply chain management (IIA) and Russian branch of the Association of Audit and Control of Information Systems (ISACA) in 2018, about 38% of the heads of supply chain management services of Russian companies are in subordination to the board of directors [11].

Thus, an increase of the number of companies is observed, in which the supply chain management is functionally subordinate to the board of directors.

According to International Professional Standards of Supply chain management, more specifically quality characteristics standard in 1100, "Independence and objectivity" presence of direct and free access of the supply chain management to the senior management and the Board is necessary, which can be achieved by setting the accountability to the two sides. Practical guidance to IPSIA 1111-1 "Cooperation with the Board" under direct communication and free access to the Board indicates the "regular presence and participation of the head of supply chain management in the meetings of the Board related to the issues of audit, financial reporting, corporate management and internal control." It allows the head of the supply chain management to be aware of the strategic and current plans of the institution, as well as to exchange information about the supply chain management plans. Practical guidance 1111-1 "Cooperation with the Board" specify the concept of functional and administrative accountability. Thus, functional accountability is understood as follows: "The Board approves the Regulations on the supply chain management; results of risk assessment and corresponding plan of works; all decisions regarding the activity results estimation, appointment or removal of the supply chain management head; remuneration amount and salary correction of the head of supply chain management; as well as receives information about the results of supply chain management and confirmation of the organizational independence of the supply chain management from the head of supply chain management." In its turn, under "administrative" the accountability within the management structure of the organization is understood, ensuring the ongoing activities of the supply chain management.

Analysis of data acquired in the course of our interview, tendencies, IPSIA and practical guidelines to them, views of experts in the field of supply chain management regarding its affiliation allows us to give the following recommendations concerning

formation of the supply chain management function in commercial medical institutions.

For commercial medical institutions organizing supply chain management function in their activities, absence of such body as the Board of Directors in management structure is typical. In a majority, all medical institutions of private ownership belong to one or several owners. On the basis of commercial medical institutions study of Kazan city in 2018, we have given the statistics, based on data about the composition of the founders, as a confirmation of this conclusion: 66% are medical institutions established by private individuals and 44% - by legal entities.

The abovementioned allows us to suggest the following. To effectively fulfill the tasks of the supply chain management, it makes sense to subordinate its services to the owner of the company. In this case, the guarantee of supply chain management service independence will be understanding of the role and importance of supply chain management by the owner. However, such a subordination of the supply chain management service has a number of drawbacks: executive management negatively perceives this service and is not inclined to build effective working relationships with it; supply chain management service becomes a sufficiently independent body and is less controlled by the executive management. In this regard, we consider it necessary to stick to the position expressed in the practical guidelines to the ISIA concerning constructiveness of dual subordination and recommend to administratively subordinate the supply chain management service to the senior officer of the medical institution. At the same time, decisions concerning structure and budget of the supply chain management service, rewards and punishments of employees, conditions of employment contracts are approved by the owner, not by the management staff of a medical institution. This recommendation will allow to optimally organize a supply chain management service and improve the efficiency of its operation.

#### 4. Conclusions

Hospital supply chains are responsible for several economic inefficiencies, negative environmental impacts, and social concerns. For research and analysis of current tendencies in the development of the supply chain management of commercial medical institutions activities we recommended to conduct questionnaire. A generalized analysis of questionnaire results of more than 50 representatives of 20 leading commercial medical institutions of the Republic of Tatarstan allowed to estimate existing tendencies of supply chain management of commercial medical institutions

activities: understanding the role, functions, principles of supply chain management by the owners and executive management of a medical institution, develop their ideas concerning improvement of its function.

Effective activity of commercial medical institutions to a great extent is conditioned by the systematization of risk management processes, control and corporate management as a whole. Finding opportunities for realization of these conditions allows us to make a conclusion about the necessity to create subdivisions (services) of supply chain management (IAS) based on regulatory rules common to all branches of the economic activities, but taking into consideration peculiarities of the medical field.

To ensure the independence principle of supply chain managers we recommend the functioning order of supply chain management subdivision adapted for medical commercial institutions by means of optimization of its organization form and subordination in commercial medical institutions.

As a part of the article the approbation of the suggested method of the supply chain management service organization in medical institutions in Kazan city: "Clinic of otolaryngology" LLC, "Bars-Med" LLC, Zakamye Trading and Servicing Association "Medtechnika" LLC, "MegaDentKazan" LLC.

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