

Sustainable Supply Chain Management in City Logistics Solutions

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Abstract-The strategic supply chain processes that influences on the city management. The sustainable logistics and transportation studies constitute a primordial research axis in the enterprises' governance. The aim of this paper arises on a reflection about the sustainable supply chain management by digitalization and smart technologies. These include product development, customers, manufacturing, vendors, and logistics. The main global introduction of digital technologies in all spheres of human and the state life continues, motivating the creation of new approaches and technological solutions. Public administration through information technologies is currently particularly relevant. The main tool of informatization and digitalization of state and municipal services are the technologies of "electronic government", in this regard, the article focuses on issues of assessing the quality and degree of functioning of electronic government.

Keywords; public services, digitalization, Supply chain management, information technologies, digital instruments.

1. Introduction

The development of modern society is accompanied by an increase in the level of informatization in all areas of activity and has a significant impact on the socio-economic development of the state. So the information management in the supply chain strategy has been attained more attention in previous years [1-5]. As a term, informatization is multifaceted and includes a large number of concepts and meanings, such as telecommunication systems and informational resources, which is the basis of the value of informatization, both in the apparatus of public administration and in the society as a whole. Revealing the term of Informatization, an important aspect of attention is the concept of information, information in General, both a resource and the development engine of information society and the development resource of many economic sectors. The

issues of Informatization and digitalization of state and municipal services are widely discussed in the modern literature. The issues of necessity of using the information technologies and the organization of interdepartmental interaction are presented in works of such authors as [6]. The processes of functioning of electronic government and multifunctional centers were studied in the works of [7]. Organizational and legal aspects of the provision of state and municipal services are enshrined in various legal acts of the Russian Federation.

A Digital Supply Chain (DSC) is a smart, value-driven, efficient process to generate new forms of revenue and business value for organizations and leverage new approaches with novel technological and analytical methods. DSC is not about whether goods and services are digital or physical; it is about how supply chain processes are managed with a wide variety of innovative technologies, e.g. unmanned aerial vehicles, cloud computing, and Internet of Things, among others. Until recently, supply chains have been largely systems where participants are closely linked by contractual relations. However, as supply chains undergo digital transformation, we are going to witness more flexible processes, new business models and supply ecosystems facilitated by network effects.

2. Research Method

City logistics solutions are in general studied and conceptualized to be developed by the public authorities or with a strong support from this type of stakeholders. However, the main organizational aspects of these solutions are closer to those of many logistics operators, and a city logistics solution need to be considered in a global supply chain management point of view, integrated in the global chain(s) of the delivered products. For this reason, a Sustainable SCM point of view has to be followed, in order to make a strong link between a city logistics solution and the supply chain(s) it is related to

From the literature in logistics, and more precisely on SCM, we can retain that SCM must be considered by the definition done by CSCMP (Council of Supply Chain Management Professionals): "Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, Supply Chain Management integrates

Supply and demand management within and cross companies [5]. In general, SCM can be examined on the basis of three types of prerequisites: co-operation, human resources and performance.

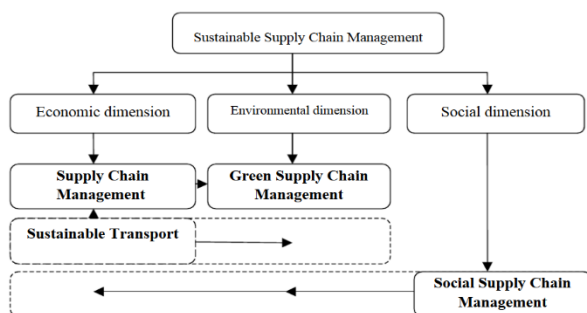


Figure 1: sustainable SCM in city logistics

3. Results and discussion

The primary and overriding goal of any supply chain is to make sure a company is delivering the orders its customers want when its customers want those orders—and accomplish this by spending as little money as possible. Only by lowering costs and improving performance can a supply chain be truly optimized. The main strategic document, defining the main directions of Informatization and digitalization of public services, is the Strategy for the development of the information society in the Russian Federation for 2017-2030, the main purpose of which is to establish the terms, determine the ways, form the order and ensure the conditions for Russia's transition to a new form of "information society" [8].

In order to ensure the openness of Executive power activity, and the organization of transfer to rendering state services in electronic form, it is important to develop the access network. It is also necessary to place the information about services of different levels, such as Federal, regional and municipal functions on the portals of public services. This network will allow to place various forms of documents that can be used by citizens in obtaining public services on the regional portal.

Informatization and digital transformation of public administration are one of the main aspects of the formation of a single digital market, that ensure the openness and efficiency of public services to all citizens and businesses at all levels of government.

Modernization of public administration using the information and analytical communications is carried out

through the use of key opportunities for the creation of digital public services (figure 1), such as electronic identification, electronic documents, authentic sources and single sign-on, which ensure the transformation of public services towards the orientation on user.



Figure 2. Key digital tools of modernization of public administration using information and analytical communications.

Public authorities and local governments widely use the information and communication technologies in the implementation of the functions of state and municipal administration, in providing citizens with state and municipal services, access to reliable official information, to interact with each other, with the population, business and civil society institutions, as well as to improve the efficiency and transparency of public administration through the introduction of "electronic government" [9].

The term "electronic-government" can be defined as the use of information and communication technologies by public authorities to provide services to citizens, businesses and authorities.

"Electronic-government" implies a system of public administration in which the official agencies activities are recorded on electronic media, and all organizational and administrative documentation is published on the Internet and becomes available to users [10].

The formation of "electronic-government" and the transition to the provision of public services in electronic form is one of the priorities, allowing to ensure a new level of quality of public administration and the provision of services to citizens and businesses on the basis of information and communication technologies. Electronic government is a new version of electronic commerce, which is actively supported by the private sector, which allows to provide services to citizens, enterprises and intergovernmental agencies in an acceptable form. The purpose of electronic government is to establish an interaction between the government and citizens who are the key government customers.

In accordance with global trends, the customer base of electronic government is divided into three key groups:

- government to government (G2G)
- government to citizens (G2C)
- government to business (G2B)

Table 1. government engagement with its key clients through information and communication technologies

| Government to citizens (G2C) | Government to government (G2G) | Government to business (G2B) |
|--|--|--|
| The purpose of this electronic government category is to provide the single online access to information and services for citizens | The goal of G2G is to enable authorities and local governments to improve the quality of their work for better service to citizens. To achieve this, the government should facilitate a cooperation between departments and local authorities, an exchange of information and implementation of performance measurement practices. | The main goals of G2B category are to reduce cumbersome processes and procedures for business by providing unified access to information and providing digital communication through websites. |

City logistics mostly operates over a specific space characterized by different jurisdictions, uses and densities. Last, SCM focuses on efficiency through an approach that seeks to maximize profits and minimize costs. The degree of electronic government development is assessed by the electronic government development index (EGDI) [11], which is based on an expert survey commissioned by the UN to assess the implementation of information and communication technologies in government for the provision of basic public services.

Mathematically, the EGDI is an average value of normalized estimates for the three most important elements of electronic government, namely: telecommunication infrastructure, online services, human capital, and electronic participation as a sub-indicator.

In 2018, according to the UN assessment presented in the report, Russia is among the group with a very high level of electronic government development and ranks 32nd among 193 UN member states.

Table 2. Changes in Russian electronic-government rating

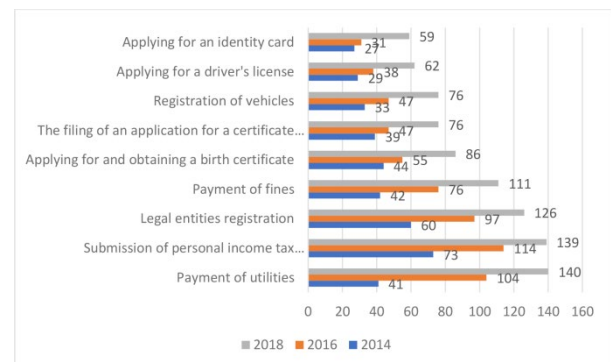
| OSI | HCI | TII | EGDI 2016 | Rating 2016 | Rating 2018 | Group change |
|--------|--------|--------|-----------|-------------|-------------|---------------|
| 0.9167 | 0.8522 | 0.6219 | 0.7969 | 35 | 32 | from V to VOV |

Compared to 2016, Russia's rating on the quality of public services in electronic form rose by three positions.

In Russia, as in all 193 member states, there are state portals and service systems for automating basic administrative tasks that provide increased accessibility and transparency of public services. While not all countries provide transactional online service, coverage and availability in countries where it is provided increased from 18 percent to 47 percent in all service categories compared to 2016. The three most commonly used online services in 2018 were utility payments (140 countries), income tax filing (139 countries), and new business registration (126 countries) (figure 3).

Administrative portals analysis is an important way to assess the development of electronic government. This assessment helps public sector organizations determine their online strategies, operate effectively and implement flexible and sustainable tools, and inform agencies about their level of performance from a citizen's perspective. Evaluation and comparison of different agencies performance is the main tool for determining the status of existing electronic government, monitoring the achievement of goals, confirming the effectiveness of applicable policies, identifying advantages and disadvantages, developing new measures and finding new models.

Thus, on the basis of the EGDI the efficiency and degree of work of the electronic government, which has to be able to provide electronic services in full and quality to consumers, is estimated.

**Figure 3.** Online transactional service trends

The most significant component of the EGDI is the online services index (OSI), which is a composite measure of the use of information and communication technologies by states in the provision of public services. It is determined by the results of a comprehensive study of the online presence of all 193 participating countries. This indicator evaluates the technical characteristics of public websites, as well as electronic government policies and strategies applied in the course of services in general and in specific sectors. The extent of implementation of electronic government technologies. The extent of implementation of electronic government technologies, which provide the increase of this indicator depends on the readiness and availability of basic conditions such as infrastructure, the degree of online activity of industry

participants and the use of digital technologies. The degree of use of these factors is estimated by a number of indicators, among which are the proportion of organizations using broadband Internet, the proportion of organizations using cloud services, the proportion of households with access to broadband Internet, the proportion of the population using e-commerce, the proportion of the population using the Internet to obtain public and municipal services (figure 4).

The presented data allow us to assess the prospects of the regional digital environment and decide on the launch of information and communication channels, and additional detail of the level of penetration of broadband and mobile Internet is aimed at identifying the level of technology in the practice of content consumption.

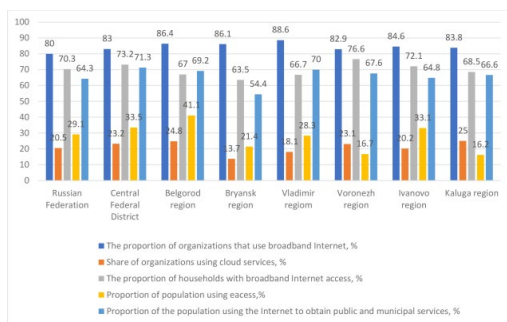


Figure 4. Key indicators of readiness for digitalization by regions of the Central Federal district

The efficiency of the use of network resources largely determines the availability of high-quality, high-speed access to the Internet (figure 5).

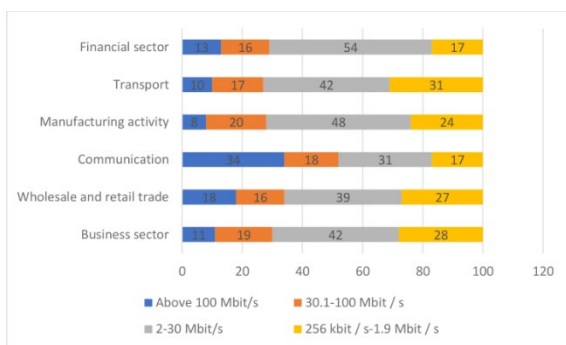


Figure 5. Organizations distribution by Internet access speed

In Russia, 79% of business and 89% of financial sectors used broadband Internet in 2015. The level of broadband Internet distribution in Russia is 15-20% lower than in countries with developed information and communication infrastructure.

Given the scale of manifestation of the impact of Informatization on economic system, it is important to ensure topology management actions of strategic character features of the digital economy and to determine the direction using information as a resource in the strategic development of an economic system.

Conducted since 2010, monitoring of information society development in the regions, we will analyze the willingness of state authorities and local governments for use of information and communication technologies for the implementation of management functions and provision of public services (figure 6).

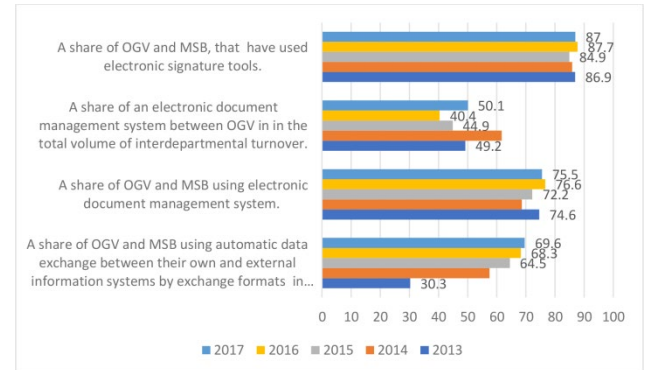


Figure 6. Public authorities and local government's assessment of readiness to use information and communication technologies

When a supply chain is managed at the operational, tactical and strategic levels—it has the best chance of helping its company reach its goals. Over the past few years, there has been a positive trend in the automatic exchange of data between public authorities and local authorities between their own and external information systems in exchange formats, but the share of electronic document flow between public authorities in the total volume of interdepartmental document flow in 2017 decreased even compared to 2016.

At the same time, the population has increased its demand for state and municipal services using the Internet, as evidenced by the increase in the proportion of the population that used the Internet to obtain state and municipal services in the total population that received these services.

As can be seen from the monitoring data (figure 7), the proportion of the population interacting with state and local authorities with the help of the Internet is growing. At the same time, the share of the population using official websites and portals of state and municipal services via the Internet with the help of computers and mobile devices, as well as through terminals has increased significantly.

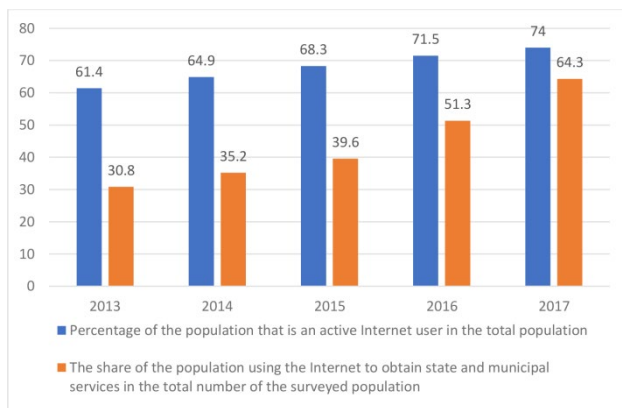


Figure 7. Dynamics of the share of the population interacting with state and local authorities

The priority goal of the formation of electronic government is to improve the quality of public administration, which is expressed in reducing the time, organizational and financial costs for citizens and organizations in obtaining state and municipal services, reducing administrative barriers and excessive regulation for business entities, reducing budget expenditures on the activities of executive authorities, increasing the efficiency of these expenditures, as well as increasing the transparency of the activities of federal and regional authorities.

3. Conclusions and recommendations

Sustainable SCM constitutes, in our opinion, an important investigation key for each stakeholder of the supply chain. When the strategic supply chain is optimized, a company is delivering what its customers want, when its customers want it—and spending as little money as possible getting that done. Summing up the analysis of development of Informatization, and also the analysis of development of information society in General, it is necessary to note the fact of development of management of Informatization of public authorities, both at regional, and at the Federal level, which is characterized by priorities in formation of infrastructure of information and communication telecommunications, creation of modern information society, and also in ensuring reliable information security. Despite the fact that a large number of targeted state programs for the development of regional Informatization are being implemented, the insufficient level of financing of this sphere has a very influential factor that makes this process extremely difficult.

Regional Informatization is carried out in several directions, one of the main of which is the development of Informatization management of public authorities. Based on the analysis, it can be argued that the regions of the Russian Federation have the potential to improve the main indicators of regional Informatization, and, consequently, opportunities to improve their positions in the final ranking of the level of development of the information society.

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