Quality and safety of consumer goods: digital transformation of information resources

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Abstract. The article is devoted to the formation of commodity information space in the framework of control and supervision activities in the domestic consumer goods market. The domestic and foreign practices of using information resources in the framework of the monitoring procedure for the quality and safety of consumer goods, digital labeling and traceability are analyzed. The possibility of using these resources by control and supervisory authorities and consumers is considered.

1. Introduction
According to the Boston Consulting Group, the share of the digital economy in global GDP is 5.5%. In the Eurasian Economic Union, the share of the digital economy in GDP is about 2.8%, or $ 85 billion.

One of the areas of digital transformation of the EAEU economy may be the creation of a single digital trade space.

The basis of the general trade (commodity) information space within the EAEU are as follows:

- the formation and introduction of a system for identifying labels on a number of groups of industrial goods transported across the customs border of the EAEU;
- the formation of databases on producers, a description of industrial goods;
- development of a package of services for business and end consumers [1].

As a result, it would be possible to solve the following issues: the problem of traceability of goods from production to sales on the territory of the EAEU; control over the quality and safety of goods; identification of counterfeit goods.

2. Materials and methods
Currently, a number of projects are being implemented in the Russian Federation that are in the digital economy and are aimed at creating a digital space. These include:
• Development of a mechanism for monitoring product traceability. The project is being implemented as part of the customs regulation procedure in the EAEU through the introduction of an "electronic invoice" in domestic and foreign trade.

• Identification and labeling of certain types of goods.

As part of the implementation of the Strategy of the state policy of the Russian Federation in the field of consumer protection, considerable attention is paid to the creation of information resources that help the consumer to make a rational choice of goods. Including, informing him about the characteristics of the goods, cases of falsification and counterfeiting, possible risks to health and safety, labeling.

The purpose of the study is to analyze the practice of introducing information resources into control and supervision activities over the quality, safety and traceability of goods and the possibility of their use for the consumer.

The information basis of the study included as follows:

• websites of Russian organizations that carry out the functions of supervisory activity and monitoring the quality and safety of consumer goods (Rospotrebnadzor, Roskachestvo, Roskontrol);
• European Rapex Database;
• scientific and methodological materials on labeling and traceability of goods.

3. Results and discussion

Control and supervision activities in the consumer goods market are carried out as part of monitoring compliance with the Technical Regulations of the Customs Union (CU TR) requirements, combating illegal trafficking in industrial products and quality and safety monitoring procedures. The main emphasis is placed on a risk-based approach, intersectoral interaction and the active use of information resources.

3.1. Monitoring of the consumer goods market by quality and safety issues

Creating conditions for ensuring the safety of consumers of goods and services are key tasks of state regulation of the national economy, which are widely declared by the President and the Government of the Russian Federation.

The regional structures of Rosstandart and Rospotrebnadzor, independent expert and public organizations are increasingly trying to influence the consumer market by examining and monitoring the quality of goods, identifying products with different levels of safety and utility for consumers.

It should be noted that the independent organizations involved in the monitoring of the consumer market (Roskontrol, the Russian quality system) have quite informative electronic resources on which the consumer can familiarize themselves with information on the results of studies and a rating rating, black list of hazardous products, and selection recommendations goods.

In the framework of official monitoring or examination, special attention is paid to the procedure of consumer testing of goods. The method of consumer testing allows you to evaluate the image attractiveness of the product, a set of functional, ergonomic and aesthetic properties, the veracity of the advertising message, and competitive advantages.

In Krasnoyarsk, such a resource is represented in the person of the Prodnadzor project, which is supervised by the Krasnoyarsk Centre for Standardization and Metrology. As part of the rating assessment, the consumer testing method was tested on the example of such groups of goods as crockpots, women's tights, children's clothing, leather goods, Christmas trees, sledges, figure skates and hockey games [2,3].

3.2. Control and supervisory activities in the field of consumer protection

In world practice, a system for informing on the safety and quality of goods is an effective instrument of state control (supervision) of the market.
In accordance with Decree of the Government of the Russian Federation dated February 16, 2013 No. 129, the Federal Service for Supervision of Consumer Rights Protection and Human Well-being is the Board authorized to form and maintain a state information resource in the field of consumer protection.

The main objectives of the formation of this information resource are as follows:

- distribution of reliable information on consumer protection, quality and safety of goods, including in the field of compliance with technical regulations;
- ensuring free access for all interested parties (citizens, state bodies, public organizations) to information on the quality and safety of goods.

Consumers can get acquainted with the information on the participation of Rospotrebnadzor in the judicial protection of consumer rights (module "Judicial Practice"), with the results of inspections (module "Results of inspections"). The relevant sections contain informational and analytical materials, information about products that do not meet mandatory requirements. The “Consumer Handbook” module contains samples of statements of claim, claims against business entities, memos for consumers, answers to frequently asked questions in this area and other relevant information.

In our opinion, the module “Products that do not meet mandatory requirements” is not sufficiently informative. There is only information about the type of product and the group of violations. Information about the manufacturer, the trade organization in which the low-quality/hazardous products are detected is not disclosed, and the types of danger are not detailed. In this regard, it is advisable to use the experience of the European Union, where at the interstate level Rapid Exchange of Information System (RAPEX) has been introduced.

RAPEX quick information exchange system has been operating in the European Union market since 2003 and covers 31 countries.

The main goal of RAPEX is to prevent or limit the sale and use of non-food products that pose a serious threat to the health and safety of consumers.

With the publication of weekly reports on goods with violations, indicating the following information about the object:

- alert number;
- category; photo and description of the product sample;
- product name;
- trademark;
- type/model number;
- batch number/barcode;
- country of origin;
- type of risk (risk description, European standard number);
- measures taken by economic operators;
- measures prescribed by state authorities (for example, import is rejected at the border, product recall from end users, product withdrawal from the market).

The effectiveness of the system is assessed through a statistical analysis of notifications about unsafe products in the quick alert system, the structure of identified risks, and response measures from the supervisory authorities. Analysis of the posted information allows us to correlate between the applicable conformity assessment procedure and non-conforming products [4], analyze the situation in the markets of specific countries by product groups and types of violations [5,6], and adjust the list of control and supervision measures.
For example, in 2018, 2,257 alerts on potentially harmful products were distributed through RAPEX. The greatest number of security risks was identified for the following products: toys (31%), vehicles (19%), clothing and textiles (10%), household goods (8%) and cosmetics (7%).

Among the most common potential risks are exposure to harmful chemicals, injuries and injuries (25%), accidental asphyxiation (19%), electric shock (10%), fire hazard (8%).

At the national level, the largest number of retired products was recorded in Germany (362), France (249) and Poland (139). The largest number of potentially dangerous products comes from China (64% of bans). On average, European products account for up to 14%, Turkey - 3%, and 7% of goods that are banned do not indicate the country of origin [7].

Since 2010, RAPEX has also monitored environmental risks (the threat of pollution of water bodies, air, soil, negative impact on flora and fauna). The supervisory authorities of the EU states are obliged to check the national markets for the presence of potentially dangerous goods from the alert and, if necessary, take measures to remove them from the market.

It should be noted that the database of the European warning system is open not only to supervisory authorities, but also to all Internet users.

The increase in sales volumes on Internet portals required the development of additional monitoring tools for online offers. Web screening teams have been set up to identify dangerous products. In 2018, 16% of alerts sent to the RAPEX portal were related to online sales.

In this regard, the European Commission has signed an agreement with leading online platforms (Amazon, Alibaba, Ebay and Rakuten France) to withdraw dangerous consumer goods from sales within two business days from the date of receipt of a notification from the national authorities of the EU countries.

In the territory of the Eurasian Economic Union, such a format is implemented in the form of a pilot project to create a product information system that does not meet the requirements of the EAEU technical regulations.

At the first stage, it is planned to work out cases of product non-compliance with the requirements for six technical regulations: “On the safety of low-voltage equipment” (TR TS 004/2011), “On the safety of products intended for children and adolescents” (TR TS 007/2011), “O toy safety ” (TR TS 008/2011), “On the safety of wheeled vehicles ” (TR TS 018/2011), “On the safety of milk and dairy products ” (TR TS 033/2013), “On the safety of meat and meat products ” (TR TS 034/2013). In the future, it is planned to extend the project to other EAEU technical regulations.

Based on the results of the project, an interdepartmental information resource will be created to inform about detected cases of unsafe products circulation with the subsequent provision of this information to any interested parties.

The list of information posted on the information resource will include information:

- on the results of state supervision measures;
- on measures to eliminate the negative consequences of identified violations;
- on cases of sale of goods subject to mandatory assessment of compliance with the requirements of the EAEU technical regulations, without documents on such an assessment.
For hazardous products that do not meet the requirements of the unified technical regulations identified in a particular member state, the state control bodies will take appropriate measures, up to their withdrawal from circulation throughout the Union territory.

Thus, a single information system will allow consumers, manufacturers, regulators and all interested parties to quickly receive accurate information about dangerous goods and measures taken by state control authorities in relation to such products.

3.3. Countering the illicit trafficking of industrial products

The Strategy adopted by the Government of the Russian Federation to combat illegal trafficking in industrial products in the Russian Federation until 2025 provides for the use of a digital marking and traceability system as an effective tool for identifying illegal goods.

Mandatory product labeling is the process of applying a unique identifier to a product, through which the state monitors the entire turnover of this product through an information system until it is sold.

It is proposed to use marking codes in machine-readable form as a means of identification - a barcode CODE39 or CODE128, a radio frequency RFID tag, a two-dimensional matrix code, for example, a QR code or Data Matrix. The marking code includes a unique product identifier and a verification code using cryptographic technologies.

Currently, fur and shoe products are subject to mandatory labeling. From December 1, 2019, compulsory marking will be introduced for such groups of products as perfumes and toilet water, knitted blouses, coats and short coats, raincoats and jackets, wincheaters and sweatshirts, bedding, tableware, toilet and kitchen linen, cameras and flashlights, tires and pneumatic tires. By 2024, it is planned to introduce a unified system for marking goods for all product categories.

Within the framework of a unified system of digital marking and traceability of goods in circulation on the territory of Russia and the EAEU, a unified traceability information system and a digital platform National Catalog are being created.

The following verified information on marked products will be placed in the National Catalog - a description of the identification tool (product code) and its digital passport indicating the name, characteristics of the product and numbers of permits.

In the Unified goods traceability information system being created, the product description, SGTIN codes, events in the distribution network, and information on the sales base will be reflected.

A traceability system based on blockchain technology will allow for identification and traceability at the stages of production, distribution and sale of goods, and to limit counterfeit goods turnover [8]. For example, Kazan startup DDS Soft in 2016 launched the project “Digital Product Passport” for authentication, tracking the movement of goods, as well as recognizing the owners of goods using a service based on blockchain technology.

Another direction is the creation and development of mobile applications for reading and presenting data from an RFID tag or a two-dimensional code, combining services for checking the labeling of goods [9].

For example, the Federal Tax Service of Russia has launched the mobile app “Checking the labeling of goods”. The application reads the QR code from the chip and shows information with the result of the verification and description of the goods.

Since 2019, the “Honest Sign” application has been operating for authentication of goods. Using it, the buyer can check information on the name and origin of the goods, composition, consumer characteristics, seller, availability of a certificate / declaration of conformity, current status, and report any violations.

Modern labeling technologies using smart radio-frequency identification tags also allow checking information on the quality and shelf life of the product [10].
Technologies are being developed for identifying falsified and counterfeit products presented online sites using an image of an object [11].

4. Conclusions
Thus, the creation of common information resources in the field of quality, safety, labeling and traceability of goods will allow to do the following:

- ensure quality and safety control at all stages of the supply of goods;
- ensure the legality of the circulation of goods by reducing the share of counterfeit and counterfeit products;
- use these resources as an instrument of public control and consumer protection.

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