understanding the advantages of ordering in this particular pharmacy network; understanding delivery and payment methods. In addition, they were evaluated according to specific criteria related to the behavior scenario. After going through all the scenarios in 6 pharmacy chains, we determined the most frequent errors on the sites.

The most critical errors, in which the interface does not answer the important questions of users, and on which the purchase decision depends, are analyzed. Problems and points of growth on the sites of sites of pharmacies were analyzed.

General recommendations for pharmacies are provided: show concern for users; bring the most popular products to the main page; give comprehensive information about delivery options; offer online consultation and home delivery. Thus, evaluation of growth points on the sites of pharmacy chains was conducted.

Innovative aspects of global pharmaceutical and biotechnological companies

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In the conditions of modern trends in the development of the world economy, including the global economic recession, in 2020-2021 there was an investments increase in scientific research and development, as well as the number of submitted applications for intellectual property. Research and development spending increased by more than 11% in 2020 and by nearly 10% in 2021, primarily driven by four industries, including pharmaceuticals and biotechnology. It was established that the total investments in healthcare technologies in 2020 amounted to 51 billion USD and increased by 47%.

If we compare the pace of innovation development in pharmaceuticals and biotechnology on the example of EU countries and the USA, EU companies' pharmaceutical scientific research has a slightly higher pace than that of American companies, but their overall level remains much lower. In biotechnology, the growth

of scientific research by US companies compared to the EU was significantly higher: in 2020, there were 11 times more investments, and the number of companies was 166.

The world's leading companies offer biotechnological drugs for the treatment of oncological, ophthalmological and autoimmune diseases, severe viral infections and disorders of the central nervous system. Genentech, Novartis International AG, Merck & Co, Pfizer, Sanofi, Perrigo are among the world's innovative companies engaged in the development of biotechnology.

Virtual and augmented reality technologies (AR/VR technologies), artificial intelligence, additive manufacturing, which contribute to improving clinical care and personal health of patients, accelerate the research and development process, create personalized products, etc., are quickly developing. In-silico technologies are being developed on the basis of molecular databases and virtual simulations, which allow to determine potential active molecules for a specific target or to establish the biological activity and application of individual compounds.

The growing use of artificial intelligence is an important trend in the pharmacy. The size of the global healthcare market with artificial intelligence is forecast to grow from 4.9 billion USD in 2020 to 31.3 billion USD in 2025 and up to 45.2 billion USD in 2026. Pharmaceutical and biotech companies are using artificial intelligence to develop vaccines or drugs against COVID-19.

Additive technologies (3D printing) make it possible to create imitations of natural human tissues and organs, which react to drugs in a similar way to the human body, thanks to which it is possible to check the toxicity of the drug in a certain dosage, model diseases and test various treatment procedures. The use of 3D-printed organs reduces the costs associated with clinical trials and shortens the time needed to approve new drugs. It should be noted that the additive production of tablets will contribute to the increase in accuracy of dosing and creating individual medicinal products with an active substance content of up to 1000 mg.

The global market for monoclonal antibodies, which are the basis of the dominant segment of biologics in the pharmaceutical market, especially for the

treatment of cancer and rheumatoid arthritis, is estimated at $39.1 billion USD and can reach 50.6 billion USD by 2026.

Mergers and acquisitions are a characteristic trend for innovation in pharmaceuticals, among which the value of the ten largest deals in 2022 was about $65 billion USD. The largest deal worth 27.8 billion dollars in 2022 was a transaction between Amgen and the biopharmaceutical company Horizon Therapeutics, which specializes in the development of drugs for the treatment of rare, autoimmune, severe inflammatory diseases. China has seen an intensive development of CROs, or contract research organizations, which are the main generator of new drug research worldwide.

An urgent direction is the digitalization processes, which have intensified the spread of digital solutions in pharmaceutical marketing, advertising and customer engagement, which has affected the competitive environment, formed new demand models, and also opened access to large independent sources of information (bigdata) about medicines and health.

Prospects for the use of monoclonal antibodies to bovine immunoglobulins

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Monoclonal antibodies (mAbs) and bovine immunoglobulins (Igs) are both important tools in the fields of diagnostics, therapeutics, and research. While both have been used successfully in a variety of applications, there are some key differences between these two types of molecules.

Both mAbs and Igs have different benefits and drawbacks depending on the intended use and application. First, mAbs can be used to target very specific molecules or cells, while bovine antibodies may be less precise in their targeting. That is possible due to the high specificity of mAbs which could recognize a single antigenic epitope, they are produced by a single clone of cells and are therefore