

Outlines of digitalization of the clothing industry

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Abstract. The article is devoted to current problems and trends in the development of the clothing industry in the context of increasing digitalization. The key parameters of the state of the industry at various levels were examined: global, all-Russian, interregional and micro-level (online store of designer clothes). Scientific research made it possible to identify a number of features of the development of business organizations operating in this market in the Internet space, through the practice of using digitalization triggers. It should be noted that social networks have a huge impact on the analyzed sector. The largest of the existing ones attract a huge audience of more than 4 billion of inhabitants of the planet with completely different interests, confessional beliefs, behavioral attitudes. However, marketing tools based on direct-action contextual advertising, designed to promote through classical messaging, stop attracting new customers. Today, there is a growing demand for a unique experience of wearing clothes, building partnerships between customers and brands, and customization of light industry products according to the DoItYourself principle. All this becomes possible largely due to a significant reduction in the transaction costs of establishing communications in digital reality.

1 Introduction

The rapid expansion of digital technologies into all areas of our life is becoming a global trend of our time. The proliferation of e-commerce innovations is leading to the changes of behavior models in various consumer groups, as well as to the emergence of completely new hybrid models of business activity. On the contrary, the industry leaders are the companies that most widely use digitalization triggers not only to capture new markets, but also with the increasing needs to optimize the commercial activities of enterprises in connection with increasing global competition. It is quite obvious that in the current conditions of the transition from the analogue world to the digital, a number of senile industries of the national economy will demonstrate a low level of adaptability to turbulent changes manifested throughout the world. On the contrary, the companies that are most widely using digitalization triggers are becoming industry leaders, not only with the aim of capturing new markets, but also with the increasing need to optimize the business of enterprises in connection with the increasing global competition.

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2 Target setting

In our opinion, digitalization triggers should mean the hardware and software complex of telecommunications and technical means that allow you to create or integrate an existing company into the network space, which ensures an increase in the level of trust, security and protection of contractual relationship in business exchange. Triggers help to reduce the level of uncertainty, serve as the basis for strengthening cross-loyalty between consumers and manufacturers in the fashion world.

It is worth noting that the acceleration of the transformation of modern society under the influence of digitalization occurs against the background of a significant deterioration in the international epidemiological situation caused by the emergence and spread of various infections. Despite the ongoing efforts of governments and a number of international organizations to eliminate the negative consequences of the pandemic, the observed changes have had a rather serious destructive impact, both on the civil sector and on many areas of business. The lack of a balance of interests in addressing the issues of organizing entrepreneurs' access to support programs prompted the search for alternatives associated with new approaches to improving the quality of public sector services, the prospects of the corporate sector in the context of the development of new information technologies. On the other hand, the phenomena described above have served as catalysts for apparel industry organizations to accelerate the development of digital immersion strategies. This is largely due to the processes of erosion of the competitive advantages of offline retail, the growth of the direct-to-customer segment, as well as the relatively low transaction costs of entering the electronic environment.

2.1 Research questions

According to experts, the clothing industry with all its elements is a significant part of the fashion sphere, as a complex socio-cultural phenomenon of society. The industry also creates new jobs every year, generates ideas for creating unique artifacts, signals the preferences of the elite, changes cultural habits, affects the positioning of countries in international trade rankings; thus, it makes a direct contribution to the indicators characterizing the socio-economic state of territorial entities.

Nevertheless, the challenges of modernity associated with the strengthening of the economies of some countries of the Asian continent, the escalation of geopolitical conflicts, the active development of technological innovations in the production and distribution of clothing, apparently, will accelerate the lag of developing economies behind the captain of the industry.

For this reason, the search for ways to overcome the structural constraints of economies with the subsequent rethinking of the possibilities for designing the trajectories of intensive growth of the leading sectors and their satellites in the Internet space is becoming the leading imperative for the growth of developing countries in the current conditions.

At the same time, the digital revolution has opened up new opportunities for companies with a high level of sensitivity to mastering new e-commerce technologies.

At the end of 2019, the share of online clothing sales was a record 55% in the Middle Kingdom, 20% in the UK and 18% in Germany [9]. In 2021, in terms of the share of e-commerce in the total value of retail sales, China ranked first among the leaders with 27.3%, Great Britain - 19.9% in second and the United States with 16.2% in third places, respectively [9;10;11].

In this context, one of the most dynamically developing sectors of the economy is the clothing industry. Despite the unprecedented collapse in the period from 2019 to 2021 and high volatility, the total volume of the global apparel market is about 3% of global GDP.

According to the most daring estimates, the world apparel market will grow by 3-4% annually, reaching the pre-crisis level by 2025.

The adherents of the digital transformation of the fashion market pin their hopes on a quick recovery of the industry due to two factors:

- active application of the achievements of digitalization and, as a result, the growth of online retail;
- expanding omnichannel shopping programs on a global scale.

At the same time, it becomes obvious that the process of crowding out regional offline clothing stores from year to year will intensify as the most active participants master new niches of e-commerce.

From the point of view of global trends in the development of the clothing industry, Russia has been showing stagnation over the past years, which is due to low consumer demand of the population, a high level of loan debt of citizens, and the ineffectiveness of the tax system. However, the consolidated revenues of Russian online clothing operators reached 470 RUB bn in 2020, which is 40% higher than the value of the same parameter as of 2019 [1;2].

Despite the fact that domestic analogues of clothing are inferior in quality and range to world standards, the speed of mastering advanced technologies by digitalization drivers is at a very high level. Among the 11 main product categories, clothing and footwear accounts for about 13% of the revenue of the largest 1000 online stores, second only to electronics and home goods [1;4].

The modern Russian consumer makes new demands on the service of online stores represented in the domestic segment of the global network. Young people between the ages of 25 and 45 are eager to buy wardrobe items on the pages of sites that guarantee the safety of payments, prefer natural fabrics, participate in brand loyalty programs, and are focused on personalization trends.

2.2 Goal of research

The issues presented above have a direct impact on the dynamism of the electronic clothing market as an object of research. Since e-commerce involves the transfer of property through digital transactions, this type of activity requires a high degree of transparency in relationships that arise between a wide range of stakeholders. In this regard, the study of effective tools for promoting clothing stores in the global network is an urgent task of theory and practice.

Consequently, the problems of the article are aimed not only at the current analysis of the processes of digitalization of the selected sphere of the economy, but also interesting in the light of the enrichment of the concepts of post-industrial society on the basis of the massive introduction of cyber-physical systems.

2.3 Research methods

In the presented article, the following research methods were used: observation, graphical, comparison and analysis

3 Obtained data

With the growth of digitalization and the massive transition to online, Internet commerce has become a driver of key changes in the global economy. Access to purchases is now possible from any smart device. In 2021, according to forecasts, the number of online shoppers in the

world will reach 2.14 billion people. In 2019 there were 2.05 billion, and in 2018 - 1.79 billion.

In total, e-commerce in 2021 accounted for 18.1% of all retail sales in the world, and in 2023 - 22%. The volume of Internet sales in 2023 will amount to almost \$5 trillion [2]. Analyzing the market of Internet commerce in the world, one can single out the key markets (Table 1) [3].

Table 1. Comparison of markets by volume and growth of the largest markets.

Population, million people, 2019	GDP per capita, thousand USD	Final consumption of households, billion dollars, 2018	Internet penetration, %, 2019	Share of Internet commerce in GDP, %, 2020	The volume of B2C Internet commerce, billion dollars, 2020
China					
1398	10.2	5 350	54	6.7	955
USA					
328	65.2	14 000	87	1.7	374
UK					
67	42.3	1 850	95	4.7	133
Germany					
83	36.3	2 000	88	2.4	92
India					
1 366	2.1	1 750	34	1.5	44
Russia					
144	11.6	850	81	2.5	37.4
Brazil					
211	8.7	1 200	67	1.0	18

The rapid growth of online sales in recent years has allowed Russia to enter the Top 10 regional e-commerce markets, behind China, USA, UK, Germany and India. The largest regional markets remain China, the United States and the United Kingdom. According to Euromonitor estimates, the global e-commerce market exceeded \$2 trillion, having increased by 15.2% over the year. Despite the impressive growth of the Russian market in recent years, Russia lags behind not only the United States, Western Europe and China in terms of e-commerce volume, but also the countries of Asia. The volume of e-commerce sales is steadily absorbing the global retail market.

In the current environment, the Russian e-commerce market continues to grow dynamically - in 2019, sales grew by 18%, exceeding 2 trillion rubles. The main driver of growth is digitalization of e-commerce. And the clothing market becomes the dominant one in the total volume of electronic sales (37% in 2020 of the total volume of online sales, see Table 2) [4].

Table 2. Structure of Internet sales by category, RUB billion, 2015-2019.

Categories of goods	Period				
	2015	2016	2017	2018	2019
Internet commerce market, total	766	1 023	1 271	1 732	2 043
FMCG	1.9%	2.2%	2.0%	1.6%	1.6%
auto products	8.0%	6.7%	5.2%	4.3%	3.8%
books and disks	0.6%	0.6%	1.1%	2.1%	2.2%
beauty and health	1.5%	2.6%	2.9%	6.6%	6.4%

clothes, shoes and accessories	13.2%	20.5%	22.6%	35.1%	34.1%
sports and outdoor activities	3.2%	2.7%	2.1%	2.5%	2.2%
children products	0.8%	1.0%	1.0%	2.5%	3.6%
home products	8.0%	9.8%	8.4%	9.7%	10.0%
animals products	0.8%	1.0%	1.7%	1.4%	1.7%
general stores	17.1%	11.2%	10.6%	14.9%	13.0%
electronics and equipment	20.0 %	18.9%	21.6%	24.0%	24.7%

In 2019, sales of clothing and footwear in online stores increased by 34.1%, reaching 585 billion rubles, this market segment accounted for a third of the total turnover of internal Internet commerce [5].

The clothing market is the largest in the structure of online commerce. The clothing market in Russia grew in 2016-2017 by 4.7-16.7% per year, which was a consequence of the recovery in consumer demand after the crisis in 2014-2015. In 2018-2019 sales stabilized at the level of 420-433 mln units, which is slightly lower than the 2017 value.

At the end of 2020, clothing sales in the country decreased by 8.6% and amounted to 396 million units. On the sales were negatively affected by a decrease in the income of Russians, as well as the closure of offline stores amid an unfavorable epidemiological situation [8].

Despite the general drop in apparel sales, online sales during the pandemic began to grow globally, as even in the face of restrictive measures, many consumers needed to buy clothes on time. The share of electronic sales as a whole in 2020 increased by 15-30%. At the same time, in million cities, the number of offline stores selling clothes decreased in 2020 by 2-5%. In 2021, apparel sales in Russia are expected to decline by 2.7%. In the face of reduced incomes, consumers will revise their spending in favor of essential goods and services - food and utilities. However, the pent-up demand and the money saved from the lack of vacation travel and certain forms of entertainment will help keep the clothing market from falling further. According to BusinesStat forecasts, in 2022-2025 sales will begin to grow gradually by 0.9-3.4% per year, up to 538.8 million units by the end of the period (Figure 1) [6].

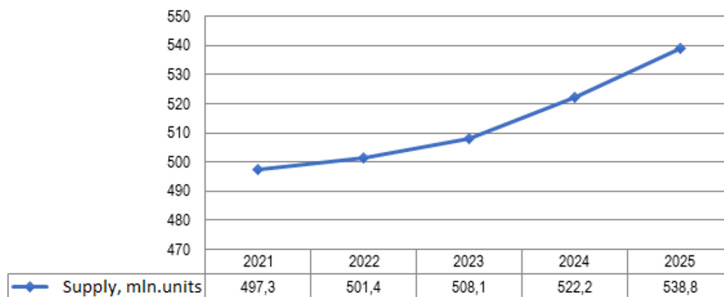


Fig. 1. Forecast of the volume of clothing supply in Russia.

A feature of the clothing market has become a trend towards the active development of their own online sales channels by many large traditional offline participants: Lady&Gentlemen City, Gloria Jeans, etc. Large global brands such as Nike, Adidas, H&M, Ostin, Zara, etc. have formed similar channels, which have created their own warehouses and local versions of sites in Russia to increase sales.

As studies of consumer sentiment in the EU and the US show, many buyers prefer to order clothes directly from manufacturers' brands rather than retailers, both because of the trust in the brand and the expectations of the best price offers, which creates a competitive advantage for their own sites of global brands and allows you to create an important sales channel and direct interaction with the consumer (for example, to study the preferences of different age groups, etc.).

Another feature of the online clothing market has become the fairly widespread distribution of relatively small online stores/showrooms that receive up to several dozen orders per day, and often do not have their own domain-platform, and use social networks to promote and receive orders (primarily Instagram and VK).

Given this growing momentum and uncertainty, brands, retailers and other apparel market players must act strategically to capitalize on digital opportunities, increase margins and ensure sustainability. As the boundaries between physical and digital are blurring, the main strategy for the apparel market is becoming an omnichannel strategy, which means that store formats must complement both the flagship and digital environments. According to global statistics in 2021, already 73% of buyers use multiple channels to make purchases.

The rapid growth of digitalization and the introduction of new technologies in the clothing market is characterized by the following data:

78% of companies plan to invest in the implementation of projects for the digitalization of processes;

81% of consumers are ready for a wide variety of digital technologies in physical stores (CITE Research, Dassault Systèmes)

76% of the respondents see the future of trade in stores without cashiers and confirmation of payment by recognizing the customer's appearance (CITE Research, Dassault Systèmes) [7].

Driving factors for online shopping for clothes:

- speed and simplicity in obtaining information and comparing offers 24/7;
- the opportunity to get a product review, useful advice, recommendation from other buyers;
- a more varied assortment of goods;
- high probability of purchasing a product at a discount, on sale or for a promotion;
- reduction of time and effort for making a purchase;
- the ability to get more diverse information about the product;
- wide geographic coverage.

In addition to the benefits to the buyer, online retailing provides many benefits to sellers. Each contact with a customer is important because it provides an opportunity to collect information about the customer into a whole story about the customer. Tracking all points of contact of the company's customers with a product or service before buying allows you to better inform the company about the effective promotion of products and optimally distribute the advertising budget.

3.1 Digitalization in the clothing market

Social networks have become one of the most popular channels for buying clothes. There is an increase in purchases through social networks due to their rapid development. Now social networks have become more than just promotion channels, and now people can conveniently and quickly purchase goods on the most popular platforms that they use on a daily basis. Such well-known social networks as Facebook, Instagram, Twitter, Pinterest have already implemented the ability to use product catalogs, which has significantly increased online sales. For example, Instagram launched a "shoppablepost" feature that allows businesses to tag products with shoppingtags in posts or stickers in stories.

Using CMS. This system is used to create, manage and edit site content. 63% of online clothing and footwear stores use their own CMS. 1C-Bitrix as a CMS is used by 21% online stores, 7% use WordPress, 9% use other CMS.

Emailing. A fairly popular way of using digital technologies is emailing. 60% of online clothing stores do not use newsletters. 17% use developed in-house emailing.

The remaining 23% use external services, the most popular of which are Bounce, Mindbox, SendSay.

Using the marketing services of online clothing stores. Statistics and analytics services Yandex.Metrica, Google Analytics, call tracking, tracking traffic and customer behavior on the site are actively used by online stores. The most popular is Google Analytics - 88%. Networks for placing advertisements on the pages of other members of the advertising network have become quite widespread. Among the most popular are DoubleClick (Google Display&Video 360 Google - 79%. Among advertising management and personalization services, Facebook CustomAudiences is the most frequently used - 61%. To get customer feedback, they use feedback services such as online chats, online calls and callback services, JivoSite accounts for 18%.

A growing trend in the digitalization of the clothing market is shopping from mobile devices. In 2019, mobile traffic reached 70% of total e-commerce traffic. The share of online clothing stores with GooglePay applications - 41%, a similar situation with AppStore applications - 41%. The growing common usage of mobile devices when shopping for clothing is driven by the desire of shoppers to complete transactions without the need for a PC. With their mobile devices, shoppers can now view, analyze and purchase items anytime, anywhere. This means that the clothing business is participating in the development of mobile shopping by optimizing the mobile version of the site and launching its own application, while encouraging in-app purchases.

A relatively new digital channel in clothing sales is voice control technology. The introduction of voice tools like AmazonEcho and GoogleHome has already led to new ways people interact with brands.

This feature has been widely adopted by customers, and nowadays voice trading is developing quite dynamically all over the world. Voice commerce is the term used to describe any business transaction that takes place using voice. This tool has opened a new digital channel for apparel companies to sell and grow their businesses.

An analysis of the implementation of triggers for market digitalization will be considered in Table 3.

Table 3. Country analysis of apparel market digitalization triggers implementation.

Developed countries (China, USA, UK, Germany, India, Brazil) (share of e-commerce in GDP)	Russia
Development of digital platforms. Consolidation of a fashion oriented business. A new way to interact, connect and build relationships digitally. (FCIGroup, EnvoyTextiles, Leverstyle, EsquelGroup and DBL.Amazon)	Development of digital platforms. Online platform for fashion professionals (FashionID)
View clothes using augmented reality (ASOS)	Implementation of robots for tracking goods under the order and sending to customers (Inditax)
Perfect fit suit service. Service for clothing tailoring using individual measurements (Zozo, Japan)	Creation of a cross-border electronic platform (ZylanGroup)
Popup store opening in London (Amazon)	Launch of the application for the resale of branded items Reposh, C2C market (Mamsy)
Implementing a digital and responsive retail concept «fashionconnect» (Bonprix)	Development and implementation of unique technology AR Try-on(Wannaby), virtual sneaker try-on (Lamoda)

Development and implementation of a “digital passport” of things. (Pangaia)	Widespread introduction by large online stores of their own points of delivery of goods (postamats) (Wildberries, Ozon, Lamoda)
Implementation of the technology “virtual (digital) clothing for social networks” (Louis Vuitton, Carlings)	Implementation of the technology “virtual (digital) clothing for social networks” (Regina Turbina)
Creation of a blockchain platform, for luxury brands (Aura)	Phased introduction of mandatory numerical tagging (MNT)
Creation of a “digital label” to control the authenticity of things (AveryDennison)	
Development and implementation of intelligent clothing (Adidas, Nike, RalphLaurent, Google, LeviStrauss)	
Using digital 3D models to assess market demand: in addition to digital showrooms (Tommy Hilfiger, TaylorStitch)	
Using the technology “digital twins” - digital representation of clothing (Cloud Product Data Management)	

The development of the Russian market for online clothing trade is in line with popular trends - growth at a faster pace than retail trade in general, an increase in the role of mobile devices as the main tool for making online purchases.

The buyer’s market is characterized by key factors that will contribute to the development of digitalization of the clothing market:

- mass distribution of mobile devices among the population;
- an increase in the amount of time spent by users on the Internet;
- development of payment tools for online purchases;
- improvement of the logistics infrastructure.

Digitalization is the development and implementation of digital technologies in the business models of companies, the creation of certain models that allow the computer systems of the manufacturer and the consumer to be combined in one digital space and in this digital space to ensure the passage of orders in an automatic mode. Digitalization is one of the most important elements of the Industry 4.0 model. (The fourth industrial revolution). The structural model of digitalization is a global network of devices connected to the Internet (Internet of Things) that can interact with each other using built-in data transmission technologies. The key idea of the digitalization concept is to interconnect all objects that can only be connected, connect them to the network and thereby obtain synergy.

But digitalization also has a social dimension. Some experts call digitalization “a way of restructuring many areas of social life around digital communications and media infrastructures”. This definition implies that digitalization is primarily a social phenomenon such as social media or communication. In the case of the apparel market, both aspects apply. First, the digitalization of the apparel market is truly of social nature: consumers react and interact with each other and with their favorite brands in new, exciting ways. Second, digitalization has been equally business-oriented: brands having to change the way they showcase and retail in order to adapt to new constraints.

Like all industries facing the opportunities and risks of digitalization, the apparel industry needs to rethink whether the value of their products to customers will continue to grow as it does today.

4 Conclusion

Summarizing the above, we can conclude that digitalization is currently forcing companies to rethink the basic elements of their existing business models, including value proposition, value chain or revenue model. Whereas in the past the supply was determined by manufacturers, today markets are increasingly influenced by individual consumer demand. On the one hand, technological change has turned consumers into knowledgeable actors. Moreover, consumers exchange information via social media or messaging services. On the other hand, new players like Google, Uber or Amazon are successfully mixing traditional markets with innovative digital services and apparel offerings. All this is accompanied by changing customer expectations: better, personalized products, faster delivery and comprehensive services before and after purchase, free shipping and regular updates (Johnsonetal and others). However, it is worth considering the requirements, challenges and opportunities of this promising market.

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