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THE DIGITAL ADDICTIVE GOODS MARKETS: FEEDBACK, EXPERIENCE, REGULATION

Roman Skokov (a)*
*Corresponding author

(a) Volgograd State Agrarian University, 26, University St., Volgograd, Russia, rskokov@mail.ru

Abstract

Digital goods markets operate with significant deviations from standard economic models and patterns. Many digital products, like alcohol and drugs, fulfill the need to escape from reality and cause addiction, so they are addictive: applications for smartphones, tablets, video and digital games, social networks. The world is actively discussing the ban of gadgets in schools. The purpose of the research is to identify digital addictive goods in economic theory to substantiate the conceptual model and directions for improving their regulation. The theoretical and methodological basis of the research is the works in the field of General economic theory, institutional and evolutionary economics, consumer behavior, state administration. The research results are positioning markets for digital addictive goods in economic theory, systematization of international experience in regulating the use of gadgets in schools, and developing recommendations for public and state regulation of them. Demand, supply, and government regulation mechanisms are novel in the markets of digital addictive goods. Supply strategies in the digital network goods and drug markets are similar: prices can be zero or negative; the cost of producing them is relatively low; there are significant efforts to monopolize the market. The characteristics of demand are: current consumption leads to an increase in future demand; the limited influence of the law of demand; there is a shift to criminal sources when there is a deficit of addict's income; market entry and "linking" are stimulated by "psychological manipulators"; children and youth are more exposed to marketing.

Keywords: Addictive goods, consumer behavior, digital addictive goods, digitalization, government regulation

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1. Introduction

For many years, it has seemed that digital transformation is of interest to businesses for improving their efficiency, extracting new additional value from information, modelling physical goods, and optimizing business processes. It is true that digital technologies are often crucial for business, but it has turned out that digital transformation, at its core, concerns each consumer personally. Especially today, during the COVID-19 coronavirus pandemic, it is necessary to take a new look at digital technologies (Dubey et al., 2020). Digital transformation provides much more than just the speed and growth of business, it meets the daily needs of people in goods that have become a "first necessity". These products have become the most important communication tool, a way to unite people in solving problems, both for business and for the community. Driven by the race for military goods, space industry, raw materials, and information products of local propaganda, first the USSR and then Russia found themselves falling behind in the global digital goods market. Today, digital goods, on the one hand, have entered the everyday life of almost every person; on the other hand, they have become tools of information propaganda and cyberwars of the world's leading powers. Nobel laureates have studied various aspects of consumption: Friedman, Becker, Akerlof, Spence, Stiglitz, Kahneman and Smith, Deaton, Thaler. While in Russian economic textbooks, the section of consumer behavior theory was given in review or absent, and teachers could not include it in their course without compromising the logic of presentation and understanding of the meaning of the following chapters, in foreign economic science and practice, research on consumer behavior of buyers has become a breakthrough (Hellman et al., 2020). The market leaders are multinational technology corporations that build their business on consumer data collected from various sources.

Table 1 shows the ranking of the 12 most expensive companies in the world, based on market capitalization, which is calculated by multiplying the number of shares issued by the company by the value of one such share.

Table 1. The most expensive companies in the world in 2020 (as of May 23, 2020)

Company name	Market capitalization, bln. $	Product	Specialization in digital goods	Localization of property
Saudi Aramco	1 685	Oil, gas and other petrochemical products.	No	Saudi Arabia
Apple inc.	1 359	Personal computers and tablets, mobile phones, and audio players.	Yes	USA
Microsoft	1 286	Microsoft Office, Microsoft Windows, Xbox.	Yes	USA
Amazon Inc.	1 233	Retail consumer goods.	No	USA
Alphabet Inc.	919	Google, AdWords, Android, YouTube.	Yes	USA

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Facebook	584	Social networks.	Yes	USA
Alibaba Group	545	E-Commerce, hosting онлайн-аукционов, online money transfers, mobile Commerce.	No	China
Tencent	510	Social networks, instant messaging, media, web portals, online games, etc.	Yes	China
Berkshire Hathaway Inc.	455	Insurance, Finance, railway transport, utilities, manufacturing of industrial goods.	No	USA
Johnson & Johnson	395	Production of medicines and medical equipment.	No	USA
Visa Inc.	384	Electronic payment.	No	USA
JPMorgan Chase	292	Banking service.	No	USA

Five of the twelve most expensive companies in the world specialize in digital goods (digital or electronic goods): Apple inc. (personal computers and tablets, mobile phones, audio players), (USA); Microsoft (Microsoft Office, Microsoft Windows, Xbox), (USA); Alphabet Inc. (Google, AdWords, Android, YouTube), (USA); Facebook (social network), (USA); Tencent (social networks, instant messaging, media, web portals, online multiplayer games), (China). Their market capitalization is 48 % of all Top 12 companies.

Three other companies, largely due to digital transformation, entered the Top 12: Amazon Inc. (e-Commerce of various goods), (USA); Alibaba Group (e-Commerce, online auction hosting, online money transfers, mobile Commerce), (China); Visa Inc (electronic payments), (USA). Their market capitalization is 22 % of all Top 12 companies.

Together, the market capitalization share of eight companies that have become directly or indirectly leaders in the global market thanks to digital technologies is 70 % of all Top 12 companies.

Four companies account for 30 % of the market capitalization of all Top 12 companies: Saudi Aramco (oil, natural gas and other petrochemical products), (Saudi Arabia); Berkshire Hathaway Inc. (insurance, Finance, rail transport, utilities, food and non-food production), (USA); JPMorgan Chase (banking services), (USA); Johnson & Johnson (manufacturing of medicines, medical equipment), (USA).

There are no Russian companies in the Top 12.

In a pandemic, the people turned into digital workers, making digital products. A striking example is how companies and individuals around the world quickly, and some even overnight, moved from face-

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to-face meetings to video conferencing. The Google Meet video conferencing app has seen daily growth of more than 60%. There is a clear increase in the number of providers of video conferencing and digital work to meet new needs. They expand connectivity and create functions that help people feel more connected and active.

It is obvious that the modern market, the system of commodity production, distribution, exchange and consumption, has changed in comparison with the representations of classical and neoclassical economic theory. Therefore, it is relevant to study the markets of digital goods, many of which at the same time have the characteristics of addictive goods, network goods, and virtual simulation goods that function with significant deviations from standard economic models and patterns.''.

2. Problem Statement

Many digital goods, such as alcohol, cigarettes, gambling, and drugs, fulfill the need to escape from reality and cause addiction, so they are addictive goods: applications for smartphones, tablets, video and digital games, social networks, and e-cigarettes. Foreign countries and Russia are actively discussing the ban of gadgets in schools. It is obvious that the research conducted by scientists in the world is not enough, because the complexity of the problems that arise is high.

3. Research Questions

The objectives of the research are: to characterize the markets of digital addictive goods; to identify the specifics of supply and demand mechanisms; to systematize foreign and Russian experience in regulating the market of digital addictive goods on the example of gadgets.

4. Purpose of the Study

The purpose of the research is to identify in economic theory, in particular in its sections – in the theory of branch markets, consumer behavior theory, the theory of state regulation, digital addictive goods, to substantiate the conceptual model and directions for improving their public and state regulation.

5. Research Methods

The theoretical and methodological basis of the research is the works in the field of General economic theory, institutional and evolutionary Economics, as well as private theories of goods and specific markets, consumer behavior, and state administration. When describing the markets of digital addictive goods, the synthesis of economic knowledge with sociology, psychology, addictology, and narcology played an important role.

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6. Findings

With digitalization, the subject of political economy is evolving. Economic relations, while preserving their nature, acquire new forms-rational, irrational, transformed. Commodity relations and the market that represents them acquire specific features in comparison with traditional conseption. In the markets, along with material products and utilitarian services, virtual phenomena are identified. Multinational companies manipulate markets and artificially create demand ("dependency fields") for virtual simulation products. The market economy becomes a space of production not so much of real use values that satisfy real needs, but rather a world of creating simulacra goods that satisfy simulation needs artificially created with the help of marketing, PR, and various ways of manipulating the consumer's consciousness (Bodrunov, 2018). The digital revolution has led to the expansion of the list of products that are highly addictive. Traditional addictive goods, such as alcohol, cigarettes, gambling, drugs, etc. (Becker & Murphy, 1988); (Baltagi & Griffin, 2002) digitalization has added applications for smartphones, tablets, video and digital games, social networks, e-cigarettes, etc. (Tuchman, 2019). Types of goods that are products of digitalization that do not correspond to traditional theoretical forms are network goods, digital (electronic) goods (McKenzie & Tullock, 2012), and virtual simulation goods.

Many digital products have the characteristics of virtual simulacra and network products, such as social networks. Virtual goods-simulacra include computer games, web surfing, which are a set of items and services for virtual consumption. Many digital goods, like addictive goods, fulfill the need to escape from reality and cause dependence, so they are digital addictive goods (Bukin, Levin, & Shilova, 2016); (Cavaiola & Smith, 2020). Digital addictive products are not accidentally intended by manufacturers to be addictive. Online services Facebook, YouTube, Twitter, Instagram etc. are called masters of manipulation, because they are made so good that people do not stop using them.

Demand, supply, and state regulation mechanisms are specific in the markets of digital addictive goods (Skokov, 2018a). Supply strategies in the markets of digital network goods and drugs are similar: prices can be zero, negative, they depend on the number of consumers; the cost of their production is rather low according to conventional goods; there are great efforts on aggressive monopolization of the market. The characteristics of demand are: current consumption leads to an increase in future demand; limited influence of the law of demand; with a deficit of the addict's income there is a shift to criminal sources; market entry and linking are stimulated by psychological manipulators; exit is associated with barriers (shifting costs); children and young people are more exposed to marketing (Chaloupka et al., 2018).

Digital addictions, such as alcohol, nicotine, drugs, and gaming, can lead to physiological disorders and negative social and economic effects, which are increasingly needed to be regulated in society. In 2018, gaming addictions are included in the 11th edition of the International classification of diseases by WHO.

In Russia, the public and authorities are actively discussing the ban of mobile phones in schools. Regional and municipal authorities in the field of education are officially recommended to consider restricting the use of mobile communication devices in schools by students, as well as teachers and

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parents. According to a public opinion by VTSIOM (Russian Public Opinion Research Center), 73% of Russians supported banning students from using smartphones and other gadgets during classes.

In Germany, according to a survey of parents conducted by Deutschen Schulbarometers, 76 % of mothers and fathers are for banning smartphones in their children's schools, 82% in primary schools. According to a uSwitch survey, 49% of British parents believe that mobile phones should be banned in their child's school.

At the present stage, regulators and society do not have a clear position when it comes to banning or allowing smartphones in schools. When properly managed, smartphones can be used as tools to help children learn in class: educational learning apps; incorporating digital platforms into lessons; adding digital materials to lessons; and providing easy access to additional new information. However, digital addictions can lead to physiological disorders, negative social and economic effects (tunnel syndrome, computer eye syndrome, hearing loss, decreased productivity, academic performance, cyberbullying, self-absorption, online shopping addiction, traffic accidents, cyber fraud and increased risk of depression.

Society and the state are in search of tools for regulating digital addictions (markets of digital addictive goods). Table 2 shows the world experience in regulating certain digital dependencies.

Table 2. State and public regulation of the use of smartphones and tablets in educational organizations

Country localization	Regulation
France, Switzerland, Canada, Australia, Great Britain, Belgium, Malaysia, Nigeria, Uganda	Ban in primary and secondary schools by decision of the administration.
China, USA, Italy	Specialized centers for the treatment of addiction.
Switzerland, Italy	Courses for teachers to prevent and eliminate addiction in children, an information campaign and therapy for parents.
Finland	Deferral from conscription for Internet-dependent people
New York, Ireland, Paris, Singapore, Japan	The annual wisdom 2.0 conference discusses ways to avoid becoming addicted.
Russia	Recommendations to local authorities to consider restricting use in schools.
Without localization	Children's camps and places without a digital environment, special applications for monitoring usage, online support and personal meetings, helping children and teenagers with authority figures, encouraging other interests, phones for children without cameras and the Internet, traditional days without a phone, etc.

In Russia, the use of mobile phones has been restricted in 10,000 schools. In three regions of Russia, in the Belgorod region, North Ossetia and Ingushetia they have decided to ban smartphones in classes completely.

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An example of government regulation of the digital goods market is antitrust regulation. In 1998 the US Department of justice accused Microsoft of monopolizing the operating system market by making an antitrust complaint.

As a result of large-scale and network effects, Microsoft's high market share leads to more applications be written for its operating system, which strengthens and increases Microsoft's market share. However, during the trial, no evidence was presented to show that Microsoft acted as a monopoly.

In the markets of addictive goods, in particular alcohol and tobacco products, the preferred form of market organization is the state monopoly that reduces supply, increases prices, reduces the influence of the private profit motive, reduces the shadow sector, increases budget revenues, and makes it possible to effectively combine the fiscal and social interests of the state (Skokov, 2018b). At the present stage, the state's monopolization of the markets for digital addictive goods is an almost impossible task. The largest markets for digital addictive goods are dominated by a monopoly-oligopolistic offer from private companies. From the point of view of state regulation, this is more appropriate than competition, since it is easier to control and regulate the activities of fewer organizations. After the ban on gambling activities in Russia in 2009, with the exception of bookmakers, sweepstakes and lotteries, and activities in special gambling zones, there was an increase in the illegal organization of gambling on the Internet.

State regulation of relations on the Internet is one of the most relevant problems in modern society. The government of China considers the Internet as a type of information weapon that can be used to carry out subversion to the state security, so it implements total regulation of the information industry using a set of tools: censorship; Rules for regulating the development of the Internet; Rules for Internet service providers; licensing of Internet service providers; filtering, monitoring of users' activity on the Internet by Internet providers and reporting to government agencies; accounting by providers of information appearing on the site; legislative regulation of Internet users' activities; control over the social network (the army of five Mao); prohibition of access to Facebook, Twitter, Gmail, etc.; blocking sites without an ISP license whose registration data does not match real one or are fake; blocking Internet resources by special services, etc.

While special tools that allow people to control addictive consumer behavior on the Internet have not been sufficiently developed, it is possible to borrow them from the experience of regulating alcohol, tobacco, drug and gaming addictions (Gordon & Sun, 2015); (Laffer, 2016); (Pulliainen & Valtonen, 2017). Unlike other addictive environments, such as alcohol, technology can play a role in making its use more conscious (such as self-exclusion and blocking schemes).

7. Conclusion

Changes in the system of relations of commodity production, distribution, exchange and consumption in the era of digital transformation actualize research on the processes of formation, parameters and boundaries of new commodity markets, the interests and relationships of their stakeholders, the specific of supply and demand mechanisms, competitive and monopoly forms of market organization, the nature of pricing and profit, corruption prohibitions and shadow turnover, internal and external effects in the economy and society for priority modernization of mechanisms of state and public regulation of new spheres of economy and society.

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